

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



05

April 29, 2005

U.S. Environmental Protection Agency  
Water Technical Unit  
P.O. Box 8127  
Boston, MA 02114

Subject: CITY OF NEWTON, MA  
NPDES Phase II Small MS4 General Permit Annual Report, May 2005  
EPA NPDES Permit No: MA041080  
MaDEP Transmittal No: W-039247

Enclosed please find the NPDES Phase II Small MS4 General Permit Annual Report, May 2005, for the City of Newton, MA. The City has implemented a storm water 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 storm water 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 insure that all the objectives of the Phase II NPDES program will be met.

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 2005

Municipality/Organization: City of Newton, MA

EPA NPDES Permit Number: MAR 041080

MaDEP Transmittal Number: W-039247

Annual Report Number  
& Reporting Period:

No. 2: March 04-March 05

## NPDES Phase II Small MS4 General Permit Annual Report May 2005

### Part I. General Information

Contact Person: Louis M. Taverna, P.E

Title: City Engineer

Telephone #: 617-796-1020

Email: ltaverna@newtonma.gov

*Louis M. Taverna*

#### 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:

*David B. Cohen*

Printed Name: David B. Cohen

Title: Mayor

Date:

*5/4/05*

## **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.

An Administrative Order was issued by the U.S. Environmental Protection Agency pursuant to Section 309(a)(3) of the Clean Water Act, to the City of Newton on November 9, 2004 (Docket No. 05-05). Numerous meetings and correspondence occurred to discuss the intent and implementation of the order. In response to the order, the City's stormwater compliance plan dated April 19, 2005 is attached. As part of the order, and in fulfillment of this permit, water quality monitoring and sampling of some of Newton's Charles River outfalls was performed by EPA and City of Newton. A summary of water quality test results is attached.

Charles River Watershed Association monitors the water quality of the Charles River, and reports water quality results on a monthly basis. Data is available at [www.crwa.org](http://www.crwa.org).

An additional stormwater outfall into the Charles River will be constructed at Larkspur Road – Quinobequin Road in the spring and summer of 2005. See Notice of Intent attached.

The City of Newton, in partnership with the Massachusetts DEP, is selling rain barrels to residents at discounted prices. The rain barrels collect stormwater runoff from roof leaders, and can be used for irrigation. 107 rain barrels have been sold to Newton residents to date.

The Sewer-Stormwater Task Force was activated and has met monthly to discuss illicit connections into the stormwater system, as well as infiltration/inflow removal of stormwater from the sewer system. A draft private inflow removal program was approved and will be submitted for inclusion in the City ordinance.

### 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 2 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 3
1.1	Develop Stormwater Press Release	Engineering, L. Taverna	Submit annual press release to newspaper, CATV.	Draft stormwater press release prepared.	Submit press release to newspaper, CATV in May 2005.
Revised					
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.	Annual update of web site on stormwater issues. Include e-mail address for comments and responses from public.
Revised					
1.3	Develop Stormwater Brochures	Engineering, L. Taverna	Distribute annual brochures with water/sewer bills	Brochures developed including "Scoop the Poop" and "Stormwater/Wastewater, Put it Where It Belongs". Urban runoff/stormwater pollution prevention flyer prepared draft.	Distribute brochures with water/sewer bills starting July 2005.
Revised					
1.4	Develop Stormwater Newsletter/Report	Engineering, L. Taverna	Prepare/distribute annual newsletter/report.	Draft newsletter prepared	Distribute newsletter/ report. To be added to web site in May 2005.
Revised					
1.5	Explore Volunteer Task Force	Environmental, E. Gentile	Solicit volunteer educators to develop education program.	No action to date.	Solicit volunteer educators to develop education program, in spring, summer 2005.
Revised					
1.6	Explore Partnering with Schools	Environmental, E. Gentile	Explore education programs.	Provided F.A. day school newspaper interview for article on bacteria levels in Cheesecake Brook, and the City's stormwater program.	Explore education programs, upcoming spring, summer 2005.
Revised					

1.7	Explore Education Program	Environmental, E. Gentile	Explore programs with high school students.	Healthy lawn care seminar held. Rain barrels sold to residents with stormwater information.	Explore programs with high school students, upcoming spring, summer 2005.

1.8	Explore 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.	Implement Comprehensive Stormwater Management Plan, beginning May 2005.

## 2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 2 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 3
2.1 Revised	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 monthly.	Committee to meet monthly. Discussions to include stormwater issues, sewer Infiltration/Inflow issues, and impact of I/I removal on storm drain system.
2.2 Revised	Implement Public Meetings for Citizen Input	Environmental, E. Gentile	Hold meetings once per year, publish results.	No action to date.	Upcoming public meeting to be held fall 2005.
2.3 Revised	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.	Establish dedicated e-mail address for stormwater comments summer 2005.
2.4 Revised	Explore Volunteer Organizations, Watch Groups	Engineering, L. Taverna	Observe outfalls, find illicit discharges, stream clean-up.	Charles River cleanup group formed, along with Friends of Hemlock Gorge, for clean up of banks of Charles River on April 30, 2005, as part of Newton Serves Day.	Continue annual Newton Serves Day, for Charles River cleanup day.
2.5 Revised	Implement Storm Drain Marking Program	Utilities, T. Jerdee	Volunteers mark catch basins with decals.	Boy Scout and Girl Scout volunteers marked approximately 5000 catch basins with “No Dumping, Drains to River” decals, summer 2004.	Continue with decals, and storm drain stenciling. Expand volunteers to include High School students.
2.6 Revised	Promote Community Clean-Up day	Engineering, L. Taverna	Promote annual community clean-up day	Newton community clean-up day held April 30, 2005. Volunteer groups target specific areas of the City for clean-up, including Charles River and Hemlock Gorge.	Continue with annual community clean-up day.

### 3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 2 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 3
3.1	Establish Stormwater System Map	Engineering, J. Daghljan	Update GIS information, locate all outfalls.	System map established on GIS. Verification is ongoing.	Locate all outfalls in field, to verify GIS, ongoing spring, summer 2005. Verification of system map ongoing.
Revised					
3.2	Establish Stormwater Database Management System	Utilities, T. Jerdee	Add stormwater information to Hansen database.	Hansen database management system established. Stormwater system attributes now being input into database.	Continue input of stormwater system attributes into database.
Revised					
3.3	Locate and Inspect all Outfalls	Utilities, T. Jerdee	Collect outfall data for Hansen database.	Outfalls located on GIS. Field inspection is ongoing.	Outfall inspections and data collection continues spring and summer 2005.
Revised					
3.4	Explore Prohibiting Non-Stormwater Discharges	Engineering, L. Taverna	Explore adaptation of stormwater ordinance/regulations	Draft ordinance discussed and approved by Stormwater Advisory Committee.	Draft ordinance to be presented to Board of Aldermen fall 2005.
Revised					
3.5	Identify Illicit Discharge Sources	Utilities, T. Jerdee	Explore dry and wet weather screening, CCTV inspections, public input.	Eliminated 4 illicit discharge sources found by EPA. Eliminated 1 illicit discharge source found by City workers. Cause was faulty sewer underdrains.	Continue with CCTV inspections for stormwater system, per agreement with EPA. Continue sewer infiltration/inflow removal program. Solicit public input on illicit discharges.
Revised					
3.6	Establish Illicit Discharge Hotline	Engineering, L. Taverna	Receive and track citizen reports of illicit discharges.	Hotline established (customer service center).	Establish dedicated e-mail address for stormwater/illicit discharge. Establish Hansen database of citizen reports.
Revised					

3.7	Train Employees	Utilities, T. Jerdee	Employees to help identify illicit discharges.	No action to date.	Employee training upcoming spring, summer 2005.

3.8	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.

3.9	Explore Detection and Elimination Efforts	Utilities, T. Jerdee	Observe major outfall discharges.	Outfall inspections and data collection ongoing spring and summer 2005. Wet and dry weather samples taken.	Outfall inspections and data collection continues, spring and summer 2005, per Comprehensive Stormwater Management Plan.



#### 4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 2 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 3
4.1 Revised	Explore Regulations for Construction Site Stormwater Runoff	Engineering, L. Taverna	Explore adaptation of construction site runoff ordinance/regulation.	Draft ordinance discussed with Stormwater Advisory Committee.	Draft ordinance to be presented to Board of Aldermen fall 2005.
4.2 Revised	Implement Review of Construction Documents	Engineering, J. Daghlian	Explore policy for submittal of erosion control plans.	All construction documents now reviewed by Engineering for stormwater BMPs. Engineering now requires erosion control plans for all construction projects.	Continue to review all construction documents for stormwater BMPs, erosion control plans.
4.3 Revised	Implement Construction Inspection Program	Engineering, J. Daghlian	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.
4.4 Revised	Educate Developers on Proper Erosion Control Techniques	Engineering, J. Daghlian	Distribute erosion control procedures to all applicants.	Engineering requires erosion control BMPs for all construction. BMPs given to all applicants.	Continue to distribute erosion control BMPs to all applicants.
4.5 Revised	Encourage Citizen Input on Construction Projects	Engineering, J. Daghlian	Ensure citizen review procedures for construction projects > 1 acre.	Citizen review of construction projects occurs during Conservation Commission, Land Use, and Board of Survey hearings. Citizen review also occurs during draft and final environmental impact reports if required.	Explore citizen review procedures, to be discussed at Stormwater Advisory Committee.
4.6 Revised	Establish Information Management System	Engineering, J. Daghlian	Track construction reviews and construction inspections.	No action to date.	Explore implementation of construction inspection information management system, on Hansen database.

4.7	Explore Standards for Erosion and Sedimentation Controls	Engineering, J. Daghlian	Explore adaptation of MADEP SWMP Standard 8	Engineering requires implementation of MADEP SWMP Standard 8 for all construction projects > 1 acre.	Continue to require implementation of MADEP SWMP Standard 8 for all construction projects > 1 acre.

## 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 2 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 3
5.1	Explore Regulations for Post Construction Runoff	Engineering, L. taverna	Explore adaptation of post construction runoff ordinance/ regulation .	Draft ordinance discussed with Stormwater Advisory Committee.	Draft ordinance to be presented to Board of Aldermen fall 2005.
Revised					
5.2	Develop Stormwater Management Policy	Engineering, J. Daghlian	Explore policy to establish minimum BMPs for developers.	Engineering requires the use of stormwater BMPs for all construction. All new impervious surfaces must be mitigated with stormwater detention methods.	Continue to require requires the use of stormwater BMPs for all construction .
Revised					
5.3	Develop Operations and Maintenance Policy	Engineering, J. Daghlian	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.	Continue to require the submittal of stormwater operations and maintenance plans for all construction > 1 acre.
Revised					
5.4	Explore Controls to Minimize Impacts to Water Quality	Engineering, J. Daghlian	Explore use of structural and non-structural BMPs.	Engineering requires the use of stormwater BMPs for all construction. All new impervious surfaces must be mitigated with stormwater detention methods.	Continue to require requires the use of stormwater BMPs for all construction.
Revised					
5.5	Explore Reducing Directly Connected Impervious Surfaces	Engineering, J. Daghlian	Explore the use of grass swales and filter strips.	Discussed at Stormwater Advisory Committee.	Explore implementation for all construction > 1 acre.
Revised					
5.6	Determine Capacity of Stormwater System Elements	Engineering, J. Daghlian	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. Daghlian	Explore adaptation of ordinance/regulation for recharge to groundwater	Engineering requires the use of stormwater BMPs for all construction. All new impervious surfaces must be mitigated with stormwater detention methods.	Draft ordinance to be discussed at upcoming Stormwater Advisory Committee.
5.8	Explore Use of Groundwater Recharge Rates	Engineering, J. Daghlian	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.
5.9	Explore Post Development Peak Discharge Rates	Engineering, J. Daghlian	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.
5.10	Explore Requirements for Removal of 80% TSS	Engineering, J. Daghlian	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.

## 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 2 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 3
6.1	Develop Staff Training Program	Environmental, E. Gentile	Train staff on spill prevention control, vehicle maintenance, 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.	Stormwater Management Program has been developed. Flood Mitigation Plan has been developed.	Continue field exercises and update the stormwater and flood mitigation plan.
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.	Establish BMPs for municipal operations and maintenance.
Revised					
6.6	Establish Maintenance Procedures	Utilities, T. Jerdee	Vactor/flush storm drains to remove sedimentation	Vactor/flush 10,000 linear feet of storm drains to remove sedimentation.	Continue vactor/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.

6.8	Establish Maintenance Procedures	Utilities, T. Jerdee	Clean catch basins every 2 years.	6500 catch basins cleaned in 2004.	6500 catch basins to be cleaned in 2005.

6.9	Establish Maintenance Procedures	Highway, S. Tocci	Sweep streets 2 times per year.	Streets were swept 5 times in 2004.	Continue to sweep streets 5 times per year.

6.10	Establish Maintenance Procedures	Highway, S. Tocci	Calibrate salt spreaders annually.	Salt spreaders calibrated fall 2004.	Calibrate salt spreaders fall 2005.

**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 2 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 3
7.1 Revised	Check Criteria for Meeting TMDL	Utilities, L. Taverna	EPA criteria for TMDLs checked.	No action to date.	No action planned.
Revised					
Revised					
Revised					
Revised					
Revised					
Revised					

**7a. Additions –N/A**


**7b. WLA Assessment – N/A**

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

An Administrative Order was issued by the U.S. Environmental Protection Agency pursuant to Section 309(a)(3) of the Clean Water Act, to the City of Newton on November 9, 2004 (Docket No. 05-05). As part of the order, water quality monitoring and sampling of some of Newton's Charles River outfalls was performed by EPA and City of Newton. A summary of water quality test results is attached.

**Part V. Program Outputs & Accomplishments (OPTIONAL)**

**Programmatic**

Stormwater management position created/staffed	(y/n)	N
Annual program budget/expenditures (catch basin cleaning + material)	(\$)	\$100,000

**Education, Involvement, and Training**

Estimated number of residents reached by education program(s)	(# or %)	Unknown
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 (May-Oct)
▪ community participation	(%)	2.5%
▪ material collected	(tons or gal)	8.45 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 (last completed in 1997, to be verified summer 2005)	(%)	100%
Estimated or actual number of outfalls (Charles River)	(#)	86
System-Wide mapping complete	(%)	100%
Mapping method(s)		
▪ Paper/Mylar	(%)	100%
▪ CADD	(%)	100%
▪ GIS	(%)	100%
Outfalls inspected/screened (summer 2004)	(# or %)	5%
Illicit discharges identified	(#)	5
Illicit connections removed	(#) (est. gpd)	5 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	(#)	20

### 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 two years
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	(times/yr)	once per two 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 (catch basin cleaning, included in cost)	(\$)	\$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 <sub>2</sub>	1%
	% MgCl <sub>2</sub>	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

**CITY OF NEWTON WATER QUALITY SAMPLING RESULTS ATTACHED:**

2004 Fertilizer and Pesticide Amounts  
 Department of Parks and Recreation  
 City of Newton

There have been 6 fertilizer applications made in the 2005 fiscal year. The fertilizer analysis, application rate, bags/acre, tonage, acreage, and dates are as follows:

FERTILIZER	APPLICATION RATE	BAGS/ACRE	TONS	ACRES	DATE
1. 10-2-8	1 lbs. Nitrogen/1000 sq. ft.	10	21.25 tons	85	June 2004
2. 10-2-8	.75 lbs. Nitrogen/1000 sq. ft.	7.5	15.9375 tons	85	August 2004
3. 8-5-5	1 lbs. Nitrogen/1000 sq. ft.	12.5	26.5625 tons	85	November 2004
4. 0-0-50	1.15 lbs. Potassium/1000 sq. ft.	2	4.25 tons	85	November 2004
5. Pelletized lime	1000 lbs./acre	20	4.5 tons	9	November 2004
6. 15-2-8	1 lbs. Nitrogen/1000 sq. ft.	6.67	14.5 tons	87	April 2005

Each fertilizer is all natural and organic. All bags are 50 pounds.

One pesticide application occurred at two locations: Newton South High School Football Field (1 acre) and the Russ Halloran Sports Complex (4 acres).

HERBICIDE	APPLICATION RATE	AMOUNT USED	ACRES	DATE
1. Drive 75DF Herbicide	1 lb./acre	5 lbs.	5	7/31/04
2. Power Zone Broadleaf Herbicide	80 fluid ounces/acre	400 fluid ounces	5	7/31/04

This pesticide application occurred with the approval of the City of Newton Integrated Pest Management Commission and was in non-regulated area for the Conservation Commission.

**HHW COLLECTION 2004**

Dates: (7:30-2:30) 8/25, 9/1, 9/8, 9/15, 9/22, 9/29, 10/6, 10/7 (7:30-12:30) 10/13, 10/14, 10/16, 10/20, 10/21, 10/27, 10/28

Number of days, hours = 15 days, 91 hours

Cars @ HHW: 318 (includes 51 unknowns); Cars triaged at Recovery Center: 250\*: unsigned cars 25; Total = 593

\*Cars triaged at Resource Recovery for non-hazardous material; paint, computers, mercury, waste oil, etc.

Estimated an average of 20 cars per day, starting 9/22 and 50 cars on 10/16.

On a one day collection, these materials would have dropped off at the collection site. Therefore 250 additional cars are added to the totals. NOTE: In 2005, comparison will be made to cars in HHW only.

**Material and cost breakdown:**

Paint: \$5495	Pesticides: \$3795	Other: Gas, bases, etc: \$1000
Acids: \$900	Oxidizers: \$300	
Materials: \$2275	Chemists: \$1350	Recovery/Security: \$1196
Transport and MA Fees: \$787		

In comparing to one day collections, the cost per car was \$28.91.

Estimated T diverted from HHW through trash: 5.5 T.

T diverted by triage (250 cars) is estimated at: 7.0 T.

Total T diverted from HHW: 12.5 T

The HHW T collected: 8.45 T

Average car: 53 lbs.

Saturday 10/16/04 incurred extra personnel costs: \$1,344.

Barbara: \$120 Nunzio: \$138 Paul: \$208 Rich: \$203 Mike: \$187 Courtney: \$152 Elaine: \$336

There were no Police Detail costs.

**COMPARISON TO PAST COLLECTIONS**

Year	2004	2003	2001	2000	1999	1991	1989	1988
# of days	15	6	1	1	1	2	2	1
# of cars	593	1,200	550	400	450	1,204	900	600
Cost	\$17,145	\$81,232	\$29,490	\$20,566	\$22,707	\$96,512	\$78,792	\$51,540
Cost/car	\$29	\$68	\$53	\$51	\$50	\$80	\$87	\$86

Includes materials and recovery costs as of 2003. Costs are for disposal only.

Other Costs: OT, Police Details, Trash, Advertisement not calculated for 1988-2003.



# G & L Laboratories

◆ Water Analysis    ◆ Food/Seafood Analysis    ◆ Metals/Chemical Analysis    ◆ Microbiological Testing

33 Newport Avenue, Quincy, MA 02171

Tel: (617) 328-3663

Fax: (617) 472-0706

## REPORT

Lab ID # 32630

April 22, 2005

Attn.: Ms. Maria Pologruto  
Engineering Dept.  
City of Newton, City Hall  
1000 Commonwealth Ave.  
Newton, MA 02459

Sample Received Date/Time: 4/15/05, 5:05 PM

Sample Received Temperature: N/A

Sample Analysis Date/Time: 4/15/05, 5:30 PM

Sample Identification: Four (4) water samples labeled:

- 1) Yacht UND (Collected Date/Time: 4/15/05 11:30 AM)
- 2) Hyde BK #1 (Collected Date/Time: 4/15/05, 12:00 PM)
- 3) Delay #1 (Collected Date/Time: 4/15/05, 11:45 AM)
- 4) Cheese Ck #1 (Collected Date/Time: 4/15/05, 12:45 PM)

### TEST RESULTS:

<u>Sample#</u>	<u>Total Coliform (CFU/100mL)</u>	<u>Fecal Coliform (CFU/100mL)</u>
1.	11,000	5,000
2.	7,700	5,800
3.	2,200	210
4.	700	70
<b>Method Reference</b>	<b>SM 9222B</b>	<b>SM 9222D</b>

G & L Labs, Inc.

Diana Liu  
Laboratory Director

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive  
Westborough, Massachusetts 01581-1019  
(508) 898-9220 www.alphalab.com

MA:M-MA086 NH:200301-A CT:PH-0574 ME:MA086 RI:65 NY:11148 NJ:MA935 Army:USACE

CERTIFICATE OF ANALYSIS

Client: Weston & Sampson Laboratory Job Number: L0413396  
Address: Five Centennial Drive  
Peabody, MA 01960-7985 Date Received: 02-DEC-2004  
Attn: Mr. David Elmer Date Reported: 08-DEC-2004  
Project Number: 202192.B Delivery Method: Alpha  
Site: EPA SAMPLES

---

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0413396-01	NEWUD-1	NEWTON, MA
L0413396-02	76L	NEWTON, MA
L0413396-03	CHEE-1	NEWTON, MA
L0413396-04	76R	NEWTON, MA

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

---

Authorized by: Kathleen M. O'Brien

This document electronically signed

ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS

MA:M-MA086 NH:200301-A CT:PH-0574 ME:MA086 RI:65 NY:11148 NJ:MA935 Army:USACE

Laboratory Sample Number: L0413396-01      Date Collected: 02-DEC-2004 10:14  
NEWUD-1      Date Received : 02-DEC-2004  
Sample Matrix: WATER      Date Reported : 08-DEC-2004

Condition of Sample: Satisfactory      Field Prep: None

Number & Type of Containers: 2-Bacteria

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Coliform, Fecal (MF)	5000	col/100ml	100	30 9222D		1202 14:45	JT

---

Comments: Complete list of References and Glossary of Terms found in Addendum I





ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS

MA:M-MA086 NH:200301-A CT:PH-0574 ME:MA086 RI:65 NY:11148 NJ:MA935 Army:USACE

Laboratory Sample Number: L0413396-03  
CHEE-1  
Sample Matrix: WATER  
Condition of Sample: Satisfactory  
Number & Type of Containers: 2-Bacteria  
Date Collected: 02-DEC-2004 11:09  
Date Received : 02-DEC-2004  
Date Reported : 08-DEC-2004  
Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Coliform, Fecal (MF)	430	col/100ml	10.	30 9222D		1202 14:45	JT

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS

MA:M-MA086 NH:200301-A CT:PH-0574 ME:MA086 RI:65 NY:11148 NJ:MA935 Army:USACE

Laboratory Sample Number: L0413396-04      Date Collected: 02-DEC-2004 10:42  
76R      Date Received : 02-DEC-2004  
Sample Matrix: WATER      Date Reported : 08-DEC-2004  
Condition of Sample: Satisfactory      Field Prep: None  
Number & Type of Containers: 2-Bacteria

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Coliform, Fecal (MF)	9600	col/100ml	100	30 9222D		1202 14:45	JT

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES  
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0413396

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01-04 (WG188400-1)							
Coliform, Fecal (MF)	ND	col/100ml	1.0	30 9222D		1202 14:45	JT

ALPHA ANALYTICAL LABORATORIES  
ADDENDUM I

---

REFERENCES

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.  
METHOD Method number by which analysis was performed.  
ID Initials of the analyst.  
ND Not detected in comparison to the reported detection limit.

ug/cart Micrograms per Cartridge.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

# EPA RESULTS

Sampling results from December 2, 2004 in Newton

## Preliminary Results

NO			col/10ml	col/100ml
339	NEWUD1	10:11	9,364	9,273
340	NEW76L	10:36	34,000	34,000
341	NEW76R	10:38	21,636	21,636
342	CHEE01	11:05	300	300
343	CHEE12	11:36	712	703
344	CHEE16	11:55	1,045	955

Cheese 01 is mouth of Cheesecake Brook

Cheese 12 and Cheese 16 are Cheesecake Brook upstream of Underdrain 2. Site 12 is west end of Arbermarle St. and 16 is at Watertown Street.

Charles River Hot Spot Monitoring Data collected 10/13/04

Sample No.	Site (manhole)	Time	Fecal Coli (col/100ml)	E. Coli (col/100ml)	Temp (C)	D.O. (%)	pH	DO (mg/l)	Station (USGS)	Description
315	LCANAL	6:54	6	6	14.1	75.5	7.76	428		2/3 up Lechmere Canal
316	BCANAL	7:15	ND	ND	15.1	66.8	6.71	523		2/3 up Broad Canal
317	BCUTIL	7:25	ND	ND	18.7	110.7	10.31	613		pipe under upstream end of Broad Canal drawbridge
318	CAMSD4	7:34	ND	ND	19.3	103.6	9.54	616		Cambridge stormdrain #4
319	MDCMEM	7:38	ND	ND	14	80	8.09	5760		DCR Memorial drive drain by CAM SD4
320	BOS037	8:29	108	100	15	61.3	6.17	974		BWSC Telford St drain
321	SAW01	8:42	8	8	12.9	32.4	3.41	1326		Sawins Brook mouth- sewer odor
322	BOS174	9:00	ND	ND	15.3	54.8	5.47	1003		BWSC drain 174 at Nonantum Road sign - clear flow (fixed?)
323	HYDE01	9:16	1455	818	13.4	85.2	8.88	683		Hyde Brook mouth
324	LAUD01	9:31	61	61	13.7	91.5	9.48	400		Laundry Brook mouth
325	CHEE01	9:43	8	8	11.9	83.8	9.02	973		Cheesecake Brook mouth
326	BEB001	9:53	39	39	11.5	82.3	8.94	830		Beaver Brook mouth

Note:

Samples from canals and brooks

1/10" rain 24 hours prior to sampling

Samples and field measurements collected By Roger Frymire and Fecal and E.coli samples analyzed by EPA's New England Regional Lab

> = greater than the associated number

< = not detected above the associated detection limit

NA = Not analyzed

~ = approximate

Sample numbers, times, fecal & Ecoli data Qaed - TF

Field Data Qaed - RF

Charles River Hot Spot Monitoring Data collected 3/16/05 - Newton, Waltham & Watertown

Sample No.	Site	Time	Fecal col (col/100m)	E.coli (col/100m)	Temp (°C)	DO % sat (%)	DO (mg/L)	Secchi (US/cm)	Description/Comment
369	HYDE01	5:52	66	66	9.8	91.8	10.33	2356	Hyde Brook @ Charles
370	CHEE16	6:12	1486	1486	3.9	96.3	12.59	1197	Cheesecake Brook 1.5 miles from Charles - faint sewer smell
371	WATD08	6:54	ND	ND	NA	NA	NA	NA	Catch Basin on Pleasant street to drain #8
372	WATD75	7:06	ND	ND	5	52.3	6.66	1242	Midway between WAT D7 & D8 - pipe surrounded by bed of white rocks
373	NEWD76	7:48	4500	4500	10.9	62.1	6.84	1420	Derby Brook - Newton drain in WAT
374	WALRT1	8:10	ND	ND	4.1	80.9	10.53	1410	Cranberry Brook
375	WALRR1	8:21	600000	600000	8.5	38	4.44	577	Downstream from Bleachery Dam - clear/grey
376	WALR25	8:33	222	222	3.2	89.5	11.96	1032	under ped bridge near Bleachery Dam
377	WALRR1	8:50	1036364	1018182	8.6	43.4	5.05	529	Downstream from Bleachery dam - yellow color, floating waxy speck
378	BEB01W	9:11	1468	1468	2.1	96.9	13.3	1683	West side of Beaver Brook @ Charles - TP & paper towels
379	BEB01E	9:18	152	152	2.1	96	13.18	1682	East side of Beaver Brook @ Charles - suds
380	NEWTON	9:23	400	370	2.3	105.2	14.4	675	Charles River at Newton St.

Note:

Weather conditions noted by sampler: zero precipitation for four days, slight ongoing snowmelt

Samples and field measurements collected By Roger Frymire and Fecal and E.coli samples analyzed by EPA's New England Regional Lab

> = greater than the associated number

< = not detected above the associated detection limit

NA = Not analyzed

~ = approximate

Sample numbers, times, fecal & Ecoli data Qaed - TF

Field Data Qaed - RF



Charles River Hot Spot Monitoring Data collected 2/16/04 - Newton & Waltham

Sample No	site	time	Fecal col (col/100ml)	E. coli (col/100ml)	Temp (C)	DO % sat (%)	DO (mg/L)	Spcond (uS/cm)	Description - comment
357	HYDE01	6:28	13636	13545	5.9	98.1	12.18	1200	Hyde Brook
358	CHEE16	7:15	2700	2700					Cheesecake Brook 1-1/2 miles from Charles
359	WALPK1	7:29	<4	<4	4.8	91.8	11.72	1601	New pipe by river footpath
360	WALRR1	7:37	>200000	*					South bank, downstream of Bleachery Dam, in line with abandoned pier- unmapped pipes
361	WALR25	7:43	1090	1090					Under south bank footing of footbridge upstream of Bleachery Dam
362	WALL14	7:49	96	96	6.2	54.3	6.7	1809	North bank upstream of R/R, beside footbridge
363	WALRT1	8:04	212	212					Cranberry Brook
364	WALL13	8:19	<4	<4	3.2	101.5	13.59	186	North Bank midway between Elm and Newton St bridges
365	BEB01W	8:33	8046	8046					Beaver Brook west culvert- toilet paper
366	BEB01E	8:36	211	188	1.8	94.9	13.16	954	Beaver Brook East culvert- laundry foam
367	WALR17	8:54	16	16					South Bank Moody St drain
368	MOODY	8:59	820	811					Charles River center of Moody St Bridge

Note:

\* : extremely high fecal coliform counts obscure E. coli reading

Weather conditions: 0.4" rain ending 24 hours prior to sampling - continuing snowmelt, high flows

Samples and field measurements collected By Roger Frymire and Fecal and E.coli samples analyzed by EPA's New England Regional Lab

> = greater than the associated number

< = not detected above the associated detection limit

NA = Not analyzed

~ = approximate

Sample numbers, times, fecal & Ecoli data Qaed - TF

Field Data Qaed - RF



**R.I. Analytical**

Specialists in Environmental Services

1 of 2

**CERTIFICATE OF ANALYSIS**

Weston & Sampson Engineers  
Attn: Mr. David Elmer  
Five Centennial Drive  
Peabody, Ma 01960-7906

**Date Received:** 04/15/2003  
**Date Reported:** 04/19/2003  
**P.O. #:**  
**Work Order #:** 0304-04817

---

**DESCRIPTION:** NEWTON, MA JASSET STREET (ONE STORMWATER/GROUNDWATER SAMPLE)

---

Subject sample(s) has/have been analyzed by our Warwick, R.I. laboratory with the attached results.

Reference: All parameters were analyzed by U.S. EPA approved methodologies and all NELAC requirements were met. The specific methodologies are listed in the methods column of the Certificate Of Analysis.

Data qualifiers (if present) are explained in full at the end of a given sample's analytical results.

Certification #: RI-033, MA-RI015, CT-PH-0508, ME-RI015  
NH-253700 A & B, USDA S-41844, NY-11726

If you have any questions regarding this work, or if we may be of further assistance, please contact us.

Approved by:



---

Paul Perotti  
Data Reporting Manager

enc: Chain of Custody

**R.I. Analytical Laboratories, Inc.**

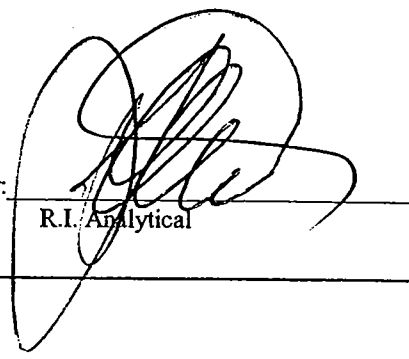
**CERTIFICATE OF ANALYSIS**

Weston & Sampson Engineers

Date Received: 04/15/2003

Work Order #: 0304-04817

Approved by:



R.I. Analytical

Sample # 001

SAMPLE DESCRIPTION: UNDER DRAIN #1 GRAB 04/15/03

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
FECAL COLIFORM (MPN)	>1600	2	MPN/100 ml	SM9221E 19 EDT	04/15/2003	VJA



**R.I. Analytical**

Specialists in Environmental Services

1 of 2

**CERTIFICATE OF ANALYSIS**

Weston & Sampson Engineers  
Attn: Mr. David Elmer  
Five Centennial Drive  
Peabody, Ma 01960-7906

Date Received: 04/15/2003  
Date Reported: 04/19/2003  
P.O. #:  
Work Order #: 0304-04816

---

**DESCRIPTION: NEWTON, MA JASSET STREET (ONE STORMWATER/GROUNDWATER SAMPLE)**

---

Subject sample(s) has/have been analyzed by our Warwick, R.I. laboratory with the attached results.

Reference: All parameters were analyzed by U.S. EPA approved methodologies and all NELAC requirements were met. The specific methodologies are listed in the methods column of the Certificate Of Analysis.

Data qualifiers (if present) are explained in full at the end of a given sample's analytical results.

Certification #: RI-033, MA-RI015, CT-PH-0508, ME-RI015  
NH-253700 A & B, USDA S-41844, NY-11726

If you have any questions regarding this work, or if we may be of further assistance, please contact us.

Approved by:



---

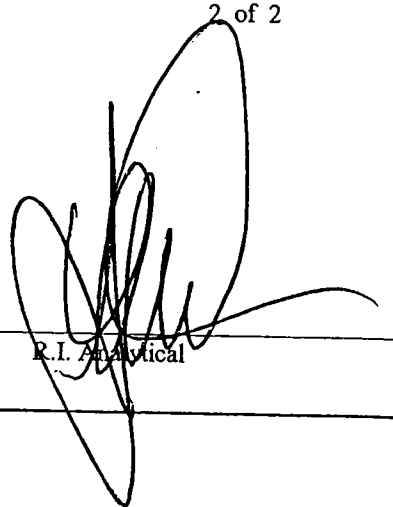
Paul Perotti  
Data Reporting Manager

enc: Chain of Custody

**R.I. Analytical Laboratories, Inc.**  
**CERTIFICATE OF ANALYSIS**

Weston & Sampson Engineers  
Date Received: 04/15/2003  
Work Order #: 0304-04816

Approved by: \_\_\_\_\_  
R.I. Analytical



Sample # 001  
SAMPLE DESCRIPTION: JASSET DRAIN #1 GRAB 04/15/03

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
FECAL COLIFORM (MPN)	<2	2	MPN/100 ml	SM9221E 19 EDT	04/15/2003	VJA



David B. Cohen  
Mayor

DEPARTMENT OF PUBLIC WORKS

OFFICE OF THE COMMISSIONER  
1000 Commonwealth Avenue  
Newton Centre, MA 02459-1449

April 15, 2005

**Newton's Comprehensive Stormwater Plan**

General Overview

The City of Newton has been aggressively addressing problems with its sewer, stormwater, and underdrain systems since 1995. Studies, designs, and construction projects have been performed on all three systems based on similar approach; focusing on the interconnections of the infrastructure with the underdrain system. Virtually all of these pipes, by design, drain directly to the Charles River or its tributaries. These underdrains have proven to be the most significant factor impacting the cross-contamination of the three systems.

The Plan focuses on the drainage basins with underdrains for these reasons:

- a) Sewer underdrains that discharge into the stormwater system have proven to be the largest source of fecal contamination.
- b) Leaking sewers are the only known source of contamination to the underdrain system.

The City of Newton's sewer/underdrain system is a complicated network of often-interconnected pipes. Repairing deficiencies in this network has the added benefit of not only reducing contamination of the underdrains (and subsequently the receiving waters) but by reducing Infiltration/Inflow to the sewer system reducing treatment costs and the potential of surcharging and overflows.

The 'Plan'

The purpose of this Plan is to improve the City's sewer & stormwater infrastructure by inspection/investigation and addressing any current or future contamination sources. It will be completed in three phases:

- Phase I: Investigation and repair of known illicit connections
- Phase II: Investigation of all outfalls for contamination into receiving waters
- Phase III: Continued monitoring and exhaustive investigation of all drainage sub-basins

Improvements to the system will be measured by repair of damaged manholes, pipes, and catch basins; cleaning of catch basins and storm pipes to improve system hydraulics and water quality; and removal of illicit connections to storm drains. These achievements will be demonstrated by cleaner discharges to local waterways and the Charles River, among other City goals.

The components of this Comprehensive Stormwater Plan will be implemented as part of Newton's NPDES Phase II Stormwater Permit (accepted by the Massachusetts DEP on July 30, 2003).

## **Phase I: Investigation and repair of known illicit connections**

Currently known illicit connections or “hot spots” will specifically be addressed in this phase. All detected contamination will be reduced to acceptable levels using EPA standards for pollutants. As of this writing, outfalls exceeding minimum levels for fecal coliform are the following:

- 1) Yacht Club Underdrain (UD 1)
- 2) Derby Brook Outfall (76 & 76R)
- 3) Brookside Avenue and Watertown Street Drain (UD 2)
- 4) Mouth of Cheesecake Brook (CHEE01)
- 5) Hyde Brook (UD01)

Completion of work to reduce the contamination at these locations is projected for early 2005. Since the first four sites are listed in an Order of Conditions from the EPA, the project status is reported under separate cover as required by the Order. The fifth location was added in subsequent testing and not addressed in the Order. In all cases, the remediation plan includes a thorough investigation of the infrastructure working from the outfall upstream, CCTV inspections of both the sewer system and the storm drainage system, and design of the public works projects required to remove the contamination source from the drainage system. The solution will consider all impacts to the sewer, drain, and underdrain system.

The City will report to EPA the work required to repair any defects beyond the scope of our “in-house” workforce, and provide project schedules and cost estimates as per the Order.

## **Phase II: Investigation of all outfalls for contamination of receiving waters**

### **Field Survey:**

The City of Newton will locate, label, and sample (100% under dry weather and as many as possible under wet weather before Dec 2005) at each of the known 86 stormwater outfalls to the Charles River. When possible, samples will be taken during high groundwater to maximize possible underdrain contributions to the outfall. The sampling will continued to be performed on an annual basis as described in Phase III below. Reports summarizing the inspections and sampling results will be submitted to EPA for review on an annual basis (in conjunction with NPDES reporting).

### **Investigation of Problematic Sites:**

The City will further investigate all outfalls which exceed water quality thresholds and provide plans as needed to reduce the contamination to acceptable levels as well as the timeline for completion. Status updates will be apart of the NPDES Stormwater Permit reporting. Investigations of the areas tributary to these outfalls will follow the pertinent criteria detailed in Enclosure 1 to identify infrastructure maintenance problems and/or sources of contamination. Using the data gathered at the outfalls during this phase, water quality samples which exceed the allowable limits will be immediately investigated upstream to ascertain the source and the methodology needed to mitigate the contamination.

Should samples indicate no contamination of the receiving waters at any of the outfalls, the collected data will then be used to prioritize the drainage basins for further “top-down” investigations (see Phase III below).

### Recording and Follow-on Design:

Using previous studies and projects, the City will continue to enhance the GIS-based mapping (Enclosure 2) to include orthophotos of each outfall area during this Phase. "Hot-spots" and annotations of previously completed projects which had impact on the receiving waters will be included on the mapping data.

Based on the data collected during this 100% outfall inspection, any work exceeding "in-house" resources, will be prioritized for either immediate investigation (if counts exceed allowable standards) or further systematic drainage basin inspection (conducted in Phase III).

### Protocols for Suspect Contamination:

Phase II protocols to be used upon receipt of information on suspect stormwater contamination sources include:

- Inspect the storm drain in the vicinity of the underdrain connection
- Conduct water quality sampling to validate degree of contamination, if any
- Identify locations of tributary underdrains and appurtenant sewer infrastructure
- Inspect sewer manholes for inter-connections with the underdrain system
- Inspect sewer line segments in the vicinity for possible exfiltration sources
- Design a rehabilitation plan for identified sewer defects
- Design a sealing plan for the underdrain discharge
- Invoke the public bidding process for repair work beyond workforce capability
- Manage construction of repairs

### EPA Reporting of "Hot Spots":

A report summarizing validated "hot" field investigations and findings related to reported incidents, to include estimated flow from the connections, cost of mitigating the contamination source, and whether a third party was responsible for any illicit connections, will be submitted to EPA in writing within 5 business days with a follow-up report detailing the design and construction efforts taken within 90 days of the finding.

### **Phase III: Monitoring and exhaustive investigation of all drainage basins**

This phase of the Plan is the most resource intensive and a schedule that repeats indefinitely until the program goals are changed or a new program developed.

### Quarterly Water Quality Testing:

The City will perform quarterly sampling for fecal coliform, alternating between wet and dry weather conditions at any sites where sampling exceeded water quality standards. The results of each round of sampling will be provided to EPA. If two rounds of wet and dry sampling yield sample results are < 200 col/100 ml, quarterly samples at these locations will revert to annual testing in the program below.

### Annual Outfall Inspection and Sampling:

All known outfalls recorded in Phase II will be visually inspected for damage, blockage, or failure and tested for fecal contamination in addition to other water quality parameters as appropriate (if industrial discharge is suspected, then toxicity or metals may be tested for). Field notes will be logged and stored which describe the weather conditions, olfactory sensing, condition of periphery vegetation, and man-made use in and around the outfall.



### Drainage Area Investigation Prioritization Criteria:

At the completion of Phase II (outfall sampling and inspection) and review of engineering stormwater investigation reports dating back to 1995, the prioritization of drainage area will be made based on the following criteria:

- magnitude of any positive coliform counts
- dye test validation of cross-connection
- direct discharge to sensitive areas (environmental or public use)
- reports of storm-related drainage problems (possible I/I contribution)
- identification of other factors indicating chronic discharge with negative impacts

### Top Basin Priorities (4 ea) for Investigation:

Given the hydraulic and environmental impact of four (4) key drainage basins within the City of Newton, all Phase II data being equal, priority will be given to the following areas in order (depicted on the GIS map in Enclosure 3):

- 1) Drainage basin #68 (Cheesecake Brook)
- 2) Drainage basin #77 (Laundry Brook)
- 3) Drainage basin #81 (Hyde Brook)
- 4) Drainage basin #11 (South Meadow Brook)

Recent review of historical reports and spot field investigations have led to these top four priorities for the City due to the likelihood of potential illicit stormwater connections due to the extensive underdrain system in these drainage basins. Any other potential sources identified through daily operations in the future (predominantly by Public Works staff) will also be added to this list and plotted on GIS for reference and analysis.

### Systematic Approach to Smaller Basin Investigation (82 ea):

Without discernable factors that would place a higher priority on a given outfall/drainage basin, subsequent to the four priority basins listed above, a systematic investigation of numerous drainage basins serving smaller land areas will commence the farthest downstream at outfall #87 and working upstream to outfall #1 until each drainage basin has been investigated (see map in Enclosure 3). It is estimated that this work in Phase III will take approximately three (3) years to complete, at which point the investigation schedule would repeat itself starting with the initial four areas (#68,77,81,11) followed again by the 82 smaller basins. This schedule is coincident with the NPDES Stormwater Permit. Should these investigations reveal trouble spots developing requiring infrastructure monitoring or repair, this schedule will be modified and notice made to the EPA in the annual NPDES report.

If dry weather flows are detected in a manhole, chemistry-based sampling will be implemented to detect surfactants, potassium, ammonia, and fluoride. This specialized instrumentation will be either rented or purchased by the City and utilized upon the site inspections where contamination is suspected. Additionally, the CCTV apparatus will be deployed to visually inspect the drainage structures upstream of the observed flow. It may be determined that other field techniques be instituted to pinpoint the origins of the illicit connection.

The use of the instrumentation described above is scheduled to occur in time for the 2006 Phase III investigation of the drainage basins. Resources have been allocated to procure this equipment for future use and implementation of our NPDES Permit.

### “Top-Down” Systematic Inspections:

This proactive process is to be instituted where no problems in basins are known beforehand. Manholes at the “top” of the drainage system are to be inspected for dry weather flow. If none visually observed, efforts are further made to capture any possible flows during a 72 hour period to

ensure that flows are indeed not occurring at other (unobserved) times. Field techniques common to this process will be used to accomplish this.

Should a particular manhole provide confidence of no dry weather flow, the investigation then leap-frog down the drainage system to a "convergence point" where multiple sub-basins outlet at a common manhole. Here the test/observation process above is repeated. This process continues downstream in the system until reaching the outfall. If still no dry weather flows are noted, sub-basins would then be transversed with systematic manhole observations until complete coverage of the entire area is affected. Each observation and overnight test will be recorded and correlated to a map showing location, pipe size, category of activity in area, and general site notes.

Concurrent with this fieldwork, the Drainage Basin Investigation Framework in Enclosure 1 will be implemented.

### **Summary/Conclusion**

For Newton's Comprehensive Stormwater Plan, implementation will be conducted in three phases with the associated timelines:

Phase I: Investigation and repair of known illicit connections (NLT April 23, 2005)

Phase II: Investigation of all outfalls for contamination into receiving waters (NLT Dec 31, 2005)

Phase III: Monitoring and exhaustive investigation of all drainage sub-basins (2005-2008)

The City of Newton has endorsed this aggressive policy for investigating and monitoring our drainage systems and infrastructure to effectively identify and eliminate sources of contamination in our natural water bodies. It is through the full implementation of this Plan that the conditions of Newton's NPDES Phase II Permit will be met while improving the infrastructure and maximizing opportunities to protect, preserve, and enhance our water resources.

Robert R. Rooney  
Commissioner of Public Works

Date: \_\_\_\_\_

Cc: Theodore J. Jerdee, Water and Sewer Superintendent  
David M. Elmer, Weston & Sampson Engineers Inc.  
Madelyn Morris, MADEP  
Donnalyne B. Lynch Kahn, Associate City Solicitor

#### Enclosures:

- (1) Drainage Area Investigation Framework
- (2) GIS Map of All Newton Outfalls
- (3) Stormwater Investigation Project Schedule
- (4) List of Stormwater Reports (1995-date)

## Enclosure #1

# **Drainage Area Investigation Framework**

### Public Notification/Outreach

- Public education flyers distributed via sewer bill stuffers
- Catch basin labeling/stenciling "Do not dump, drains to river"
- Information posting on city's web site

### Mapping

- Create a standard structure inspection form to be used to collect information and enter into the city's Infrastructure Management System/GIS database.
- Locate and enter into GIS all existing outfalls.
- Verify sub-basin delineation

### Storm Drainage Infrastructure Cleaning Requirements

- Cleaning requirements will be generated from manhole inspections.
- Cleaning will be performed using either "in-house" resources or contract as required.

### Dry Weather Criteria

- A Dry weather condition will be defined as 48 hours following cessation of any precipitation.
- For some tasks, ideal conditions will be dry weather and high groundwater to observe and measure maximum underdrain contributions.

### Manhole Inspection/Field Measurement

- Manhole inspections will be performed to inventory the condition of the system, schedule cleaning, observe dry weather flow, and update the GIS.
- Sampling using instrumentation for surfactants may be taken during manhole investigations to assist in locating illicit connections.
- An upstream to downstream approach will be implemented when contamination is verified in a receiving water.
- A downstream to upstream approach will be utilized to evaluate drainage basins where underdrains exist, and no contamination is reported in receiving waters. This technique will utilize convergence point (intersections of sub-basin drainage pipes) inspection followed by increasingly smaller sub-divisions of the drainage basin.

### Isolation of Illicit Connections

- Television inspection and dye testing will be used to isolate and pinpoint sources of illicit connections.
- If identified sources are underdrain discharges to the storm drain, an upstream sewer investigation will be performed. The sewer investigation will be performed in all sewer structures located adjacent to the underdrain system that is tributary to the discharge. All underdrain/sewer connections and sewer defects in the investigation area will be repaired prior to sealing the underdrain discharge. This process will make sewer repairs easier and more effective and will not make plugging the underdrain discharge any more difficult. By taking this approach, two (2) problems will be addressed simultaneously; illicit discharges to the storm drain and infiltration to the sewer system.
- Follow-up monitoring will be implemented on a quarterly basis for a period of one (1) year, which includes two wet weather and two dry weather sampling, after the elimination of the illicit connection.