



WASTEWATER TREATMENT PLANT

Bradley L. Moore
Superintendent
wwtp@bangormaine.gov

November 15, 2013

U.S. Environmental Protection Agency, Region 1
5 Post Office Square – Suite 100
Water Technical Unit
Mail Code OES04-1
Boston, MA 02109-3912
Attn: Mr. Alex Rosenberg
617-918-1709

VIA E-Mail

RE: U.S. vs. City of Bangor
Civil Action No. 88-0048-B

Dear Alex,

Pursuant to Paragraph 16(B) of the 1991 Consent Decree between the City of Bangor and EPA, the City is submitting the October 2013 Combined Sewer Overflow (CSO) Progress Report (for the November 1, 2012 through October 31, 2013 period).

During the past year, Bangor has continued to monitor and perform Sewer System Evaluation Survey (SSES) work at strategic locations throughout the City, maximize use of the collection system, and take actions to reduce Inflow and Infiltration (I/I) through project implementation. Each of these actions is designed to reduce CSOs.

Actions taken on Bangor's Preliminary Draft Short-term Phase 2 LTCP projects are as follows:

Monitoring and SSES Efforts

- **CSO Outfall Monitoring and Assessment:** The City continues to monitor its CSO outfalls using SCADA on control structures or flow meters installed on outfalls, with the exception of Cemetery (016). The City also continues to monitor strategic locations within the collection system to identify sources of I/I.



- Kenduskeag East Subsection SSES: The City is has conducted CCTV work within the Kenduskeag East Subsection and is evaluating options for implementation of a sewer rehabilitation project along French and State Streets.
- Investigation of CSOs at Cemetery (016): The City has been conducting work in the Cemetery subsection to investigate elimination of the Cemetery CSO outfall. Flow meters were placed upstream of the Cemetery CSO discharge point in November 2012 and have been monitoring flow for the past year. A meter was installed downstream of the CSO in June 2013. A data analysis will be performed in the next reporting period to characterize hydraulic conditions.

Maximizing Use of the Collection System

- Modification of Regulators/Control Structures at Barkersville (002), Hammond Street (009), Meadowbrook (011), and Central Street (023) CSOs: The control structures at these four CSOs were initially modified in 2012 by incrementally increasing the elevation of the overflow controls in each structure to decrease CSOs at these locations and maximize flow to the Bangor Wastewater Treatment Plant. The Hammond Street (009), Meadowbrook (011), and Central Street (023) weirs were again raised in January 2013.

I/I Reduction

- Sewer Spot Repairs: Defects that potentially allow I/I into the collection system were observed during ongoing CCTV work. Repairs to correct these defects, including replacing deteriorated sections of pipe, were completed during the summer of 2013.
- Meadowbrook Subsection I/I Reduction: As part of the City's ongoing I/I reduction work, the City conducted systematic investigations of the Meadowbrook system.

Following the investigations, City staff repaired three locations where stormwater could be incorrectly diverted to the sanitary sewer line, thus potentially affecting the frequency and volume of CSO discharges at CSO 011: Center Street, just north of the intersection with South Park Street, Center Street, within the intersection of South Park and Center Streets, and Market Street, at the intersection with South Park Street.

Since these structures serve relatively significant drainage areas, City staff elected to install a plug in each line and monitor them until some significant storm events, particularly those events with high peak hourly rainfalls, have occurred. If no surcharging arises during extreme storm events, each line will be discontinued permanently. Otherwise, the City will take appropriate corrective actions.

This work will be further reported on in the Municipal Separate Storm Sewer System (MS4) Permit Year One Annual Report to be submitted on September 15, 2014, consistent with the requirements of the City's MS4 General Permit.

- Dow Trunk Facilities Plan Implementation: As a result of an SSO at the Odlin Road pump station on December 13, 2010, the City initiated an investigation of the sewer system within the Dow Subsection and launched a series of projects to eliminate I/I and protect wet weather capacity system wide. The Mildred Nason Sewer Rehabilitation project began in August 2012, which repaired sewer mains and services that introduced excess flow into the collection system. Post-construction metering was performed from November 2012 through June 2013 to collect data to assess the

effectiveness of the project. In August 2013, a second project began in the same area to provide a storm drain to which homes with basement sump pumps could connect. Historically, sump pumps in that neighborhood have flowed into the sanitary sewer main.

A third project, located on Silver Lane, will replace approximately 700 linear feet of old vitrified clay sewer main and disconnect a catch basin from the sanitary sewer. Work began in early November 2013 and the utility work is scheduled to be completed in December 2013.

Post-construction flow metering will be in place following the completion of the project and will be used to evaluate the reduction in I/I achieved. This evaluation will indicate whether further actions, including an increase in the Odlin Road pump station capacity, are necessary.

- Airport I/I Reduction: In March 2013, the City installed flow meters at seven (7) locations within the Airport sewer subsection (in addition to the meter it installed previously in February 2012, which monitored the entire sewer subsection). These meters are being used to identify sources of I/I.

Design of a new sewer rehabilitation project in the New Capehart area (Bolling, Mitchell, and Langley Streets), a known source of extraneous flows, is currently underway. As part of this project, approximately 6,000 linear feet of vitrified clay line will be replaced with new PVC or HDPE pipe. This project is expected to help reduce extraneous flows in the collection system and also eliminate some maintenance trouble spots that frequently need attention from the Sewer Maintenance Division (SMD).

- Kenduskeag West Sewer Improvements: In conjunction with a downtown revitalization project, a separate sewer main line will be constructed underneath West Market Square prior to upcoming surface restoration work. Several sewer lines in the vicinity of this project are combined, and this will separate a short section of them. The separated sewers will eventually be integrated into an overall CSO reduction strategy for this area. The project was recently approved by the City Council and construction is anticipated to begin in the spring of 2014.

Additional Measures

In an effort to replace revenue lost after one of the City's largest capacity sewer users closed their Bangor production facility in January 2013, the City increased the sewer user fee by 3.5%, effective July 1, 2013. Also, in an effort to raise sewer revenue and balance impacts to the individual rate payers, the City revised its policy on Sewer Connection Fees. Previously, a \$50.00 flat fee was charged for any new service connection, regardless of the anticipated flow contribution to the collection system. Under the new policy, the user is assessed a fee based on its anticipated flow rate in gallons per day, which is determined based on the anticipated use of the property. In this way, the City will be compensated for improvements it has made to the collection system over time to accommodate new development.

From 1987 through June 30, 2013, the City has spent \$47 million cumulatively on CSO control projects and long-term planning and analysis efforts. Please see Table 1, enclosed, for a complete summary of all associated costs incurred by the City from 1987 to June 30, 2013. Table 2 provides a more detailed version of this summary, which lists costs by project for each year. Please note that the costs identified in Tables 1 and 2 are not inflation adjusted.

Please feel free to contact me if you have any questions.

Sincerely,



Bradley Moore, Superintendent

CC: EPA: Tonia Bandrowicz, Esq.

DOJ: Chief, Environmental Enforcement Section (VIA U.S. Mail)

DEP: Mick Kuhns, P.E.

CH2M HILL: Gordon Garner P.E., Bethany Leavitt, P.E., Bill McMillin, P.E.

City: Art Morgan, P.E., Jeff Allen, P.E., Cathy Conlow, Sean Currier, Wynne Guglielmo, Norm Heitmann, Esq., Paul Nicklas, Esq., Amanda Soucier, P.E., Peralie Burbank, P.E.

PretiFlaherty: Sharon Newman, Esq.

Enc: Table 1: Financial Summary of CSO Control and Improvement Project Expenditures

Table 2: Financial Detail Summary, CSO Costs 1987 – FY2013

**Table 1: Financial Summary of CSO Control and Improvement Project Expenditures,
1987 – FY2013.**

PRE-1993 CSO CONTROL PROJECTS

PRE-1993 SEWER PROJECTS	\$6,295,181.96
CSO FACILITIES PLAN	\$1,764,687.85
PAF EXPANSION TO 43 MGD & KPS EXPANSION TO 28 MGD	\$1,727,055.50
MEADOWBROOK SEWER PROJECTS	\$7,392,328.19
ONGOING INFLOW / INFILTRATION	\$573,405.96
KENDUSKEAG WEST INTERCEPTOR	\$67,818.69
ARCTIC BROOK SEPARATION	\$2,115,548.57
FOURTEENTH STREET PROJECTS	\$3,511,083.52
HAMMOND ST CONNECTING PIPE	\$204,268.26
BARKERSVILLE CONNECTING PIPE	\$19,221.28
CEMETERY SEPARATION	\$1,509,955.39
DESIGN WORK	\$1,176,108.59
DAVIS BROOK SEWER PROJECTS	\$2,101,980.76
KENDUSKEAG EAST PROJECTS	\$2,330,261.74
FY 2002 - 2004 PROJECTS	\$5,787,735.07
FY 2005 - 2010 PROJECTS	\$7,796,218.52
FY 2011 PROJECTS	\$445,647.10
FY 2012 PROJECTS	\$812,549.38
FY 2013 PROJECTS	\$1,485,220.34
Total Expenditure, 1987 - Present	\$47,116,276.67

Table 2: Financial Detail Summary, CSO Costs 1987 – FY2013

DESCRIPTION	FY	ACCOUNT #	AMOUNT DISBURSED
PENJAJAWOC	87	52605185	\$232,113.79
WOODLAWN	87	62605230	\$98,715.44
MILL STREET	88	52605273	\$397,549.62
HANCOCK STREET 1	88	52605275	\$72,885.34
CARR BROOK	88	52605270	\$1,943,338.94
BARKERSVILLE	88	52605271	\$247,682.46
OLD CAPEHART 1	88	52605272	\$232,360.71
OLIVE STREET	88	52605279	\$807,077.90
DOW TRUNK 1	88	52605278	\$274,202.13
CATELL STREET	88	52605274	\$299,675.28
BLANCHARD STREET 1A	88	52605277	\$11,440.56
GENERATORS	90	52605323	\$53,063.00
AIRPORT 1A	91	80790000	\$5,039.09
EVERETT STREET	91	80810000	\$189,244.59
OLD CAPEHART 2	91	80800000	\$177,965.55
DOW TRUNK 2	91	80780000	\$316,742.82
HANCOCK ST 2	91	80750000	\$12,759.76
BLANCHARD ST 1B	91	80770000	\$562,645.52
ODLIN ROAD	92	80840000	\$360,589.16
AIRPORT 1B	92	80870000	\$90.30
SUBTOTAL			\$6,295,181.96
CSO FACILITIES PLAN			
CSO PROGRAM	91	52605341	\$103,889.52
CSO FACILITIES PLAN	91	80730000	\$1,587,505.65
SEWER RATE STUDY	93	80960000	\$69,317.09
FLOW MONITORING EQUIPMENT	99	80910000	\$3,975.59
SUBTOTAL			\$1,764,687.85
PAF EXPANSION TO 43 MGD			
KPS EXPANSION TO 28 MGD			
WWTP CSO EXPANSION	93	80950000	\$15,516.29
WWTP CSO EXPANSION	94	80650000	\$2,857.90
WWTP CSO EXPANSION	97	80710000	\$21,864.35
KPS / WWTP CSO UPGRADE	97	80720000	\$1,686,816.96
SUBTOTAL			\$1,727,055.50
MEADOWBROOK SEWER PROJECTS			

MB 1 & 2 MAINLINE, BROADWAY	87	52605268	\$3,180,294.82
MB 3 GROVE, FOREST	91	80740000	\$437,811.12
MB 4 ELM, FOREST	92	80830000	\$581,294.56
MB 5 STILLWATER AVENUE	93	80920000	\$263,244.27
MB 6 ESSEX STREET	94	80630000	\$407,822.09
MB 7 FOUNTAIN STREET	98	80790000	\$814,707.82
MB 8 GARLAND STREET	98	80780000	\$344,940.61
MB 9 CENTER STREET	00	80830000	\$1,362,212.90
SUBTOTAL			\$7,392,328.19
ONGOING INFLOW/INFILTRATION			
NEW CAPEHART	88	52605261	\$21,641.32
BIRCH STREET	92	80850000	\$83,164.24
E SUMMER STREET	93	80940000	\$116,560.87
PARKVIEW AVENUE	93	80890000	\$72,280.90
WILLOW STREET	94	80610000	\$54.44
MISC SMALL PROJ FY 96	96	80990000	\$31,273.86
MISC SMALL PROJ FY 97	97	80770000	\$921.79
MISC SMALL PROJ FY 98	98	80820000	\$4,234.08
MISC SMALL PROJ FY 99	99	80900000	\$3,140.89
MISC SMALL PROJ FY 00	00	80880000	\$0.70
MISC SMALL PROJ FY 01	01	80610000	\$44,262.30
BMHI	01	80840000	\$192,136.42
MISC SMALL PROJ FY 02	02	80660000	\$3,734.15
SUBTOTAL			\$573,405.96
KENDUSKEAG WEST INTERCEPTOR			
K D INTERCEPTOR PROJECT	94	80660000	\$67,818.69
SUBTOTAL			\$67,818.69
ARCTIC BROOK SEPARATION			
ARCTIC BROOK 1 BANGOR GARDENS	88	52605276	\$590,534.96
ARCTIC BROOK 2A BANGOR GARDENS	90	80760000	\$15,358.65
ARCTIC BROOK 2B BANGOR GARDENS	92	80820000	\$313,685.14
ARCTIC BROOK 3 FOWLER AVENUE	93	80930000	\$83,297.78
ARCTIC BROOK 4 EARLE AVENUE	94	80620000	\$211,648.85
ARCTIC BROOK 5 POPLAR STREET	96	80590000	\$214,878.24
ARCTIC BROOK 6 LINDEN STREET	97	80740000	\$390,771.00
ARCTIC BROOK 7 CLYDE ROAD	97	80750000	\$295,373.95
SUBTOTAL			\$2,115,548.57

FOURTEENTH STREET PROJECTS			
14TH STREET	92	80680000	\$25,658.69
14TH STREET	93	80910000	\$536,924.58
15TH STREET	94	80640000	\$617,365.22
UNION STREET	96	80570000	\$1,308,768.63
FREMONT/TYLER STREETS	96	80580000	\$218,715.01
14TH STREET	97	80730000	\$803,651.39
SUBTOTAL			\$3,511,083.52
HAMMOND ST CONNECTING PIPE			
HAMMOND ST CONNECTING PIPE	96	80900000	\$204,268.26
SUBTOTAL			\$204,268.26
BARKERSVILLE CONNECTING PIPE			
BARKERSVILLE CONNECTING PIPE	96	80970000	\$19,221.28
SUBTOTAL			\$19,221.28
CEMETERY SEPARATION			
15TH STREET	98	80800000	\$615,077.38
CEMETERY	00	80850000	\$894,878.01
SUBTOTAL			\$1,509,955.39
DESIGN WORK			
DESIGN WORK FY 95	94	80690000	\$40,038.49
DESIGN WORK FY 96	95	80980000	\$90,735.40
DESIGN WORK FY 97	97	80760000	\$198,298.39
DESIGN WORK FY 98	98	80810000	\$196,683.78
DESIGN WORK FY 99	99	80890000	\$222,330.67
DESIGN WORK FY 00	00	80870000	\$149,987.85
DESIGN WORK FY 01	01	80600000	\$278,034.01
SUBTOTAL			\$1,176,108.59
DAVIS BROOK SEWER PROJECTS			
RAILROAD ST CONNECTING PIPE	94	80680000	\$193,179.88
CSO STORAGE FACILITY	99	80920000	\$1,281,053.03
PATTEN STREET UPGRADE	99	80930000	\$373,275.41
SHORT ST/UNION ST SEPARATION	99	80940000	\$254,410.83

HAYFORD PARK	99	80860000	\$61.61
SUBTOTAL			\$2,101,980.76
KENDUSKEAG EAST			
KENDUSKEAG EAST CSO STORAGE	01	80620000	\$2,330,261.74
SUBTOTAL			\$2,330,261.74
FY 2002 - 2004 PROJECTS			
BARKERSVILLE CSO STORAGE	02	80630000	\$2,050,204.28
HANCOCK STREET SEWER PHASE I	02	80650000	\$3,302,899.32
FRANKLIN ST SEWER SEP PHASE 1	02	80640000	\$328,849.02
OTIS, PARKVIEW & WASHINGTON	03	80670000	\$105,782.45
SUBTOTAL			\$5,787,735.07
FY 2005 - 2010 PROJECTS			
HANCOCK STREET SEWER PHASE 2 2005	05	80650000	\$3,194,701.58
FRANKLIN ST SEWER SEP PHASE 2 2006	06	80630000	\$2,828,032.07
MUNROE STREET SEWER UPGRADE 2007	07	80590000	\$141,446.88
BANGOR MALL BORDERS SEWER 2007	07	80570000	\$73,739.48
KENDUSKEAG EAST TANK UPGRADE 2007	07		\$37,840.00
PERRY ROAD PUMP STATION UPGRADE 2009			\$230,847.51
SMALL PROJECTS 2008 - 2010			\$61,806.70
Ops Building Heating System Upgrade 2010			\$956,765.07
CSO Flow Monitors 2010			\$87,231.88
Preliminary Design 2010			\$88,421.84
FRENCH STREET SEWER 2010			\$9,567.45
STATE STREET MANHOLES 2010			\$83,713.24
OPS BUILDING ROOF 2010			\$1,300.00
STATE STREET RELINING 2010			\$804.82
SUBTOTAL			\$7,796,218.52
			\$7,796,218.52
FY 2011 PROJECTS			
Preliminary Design	11	8060	\$28,154.36
State Street Manholes	11	8061	\$84,875.76
Perry Road Pump Upgrade	11	8067	\$2,035.12
French/Penobscot/Pine Separation	11	8071	\$5,281.32
Relining State Street	11	8072	\$804.82
CSO Flow Monitoring Contract	11	8073	\$94,469.23
Subtotal Project Expense			\$215,620.61

CH2M Hill Expense 2011			\$230,026.49
SUBTOTAL FY 2011			\$445,647.10
FY 2012 PROJECTS			
Barkersville Sewer Project	12	8060	\$4,266.89
State Street Manholes	12	8061	\$1,534.71
Sewer Flow Monitoring Contract	12	8069	\$94,595.00
CSO Flow Monitoring Contract	12	8073	\$15,082.50
Odlin Road Pump Station	12	8075	\$8,401.47
Dow Trunk Mildred/Nason Sewer Rehabilitation	12	8076	\$1,658.69
Subtotal Project Expense			\$125,539.26
CH2M Hill Expense			\$687,010.12
SUBTOTAL FY 2012			\$812,549.38

FY 2013 PROJECTS			
Barkersville Sewer Project	13	8060	\$268,153.16
Hammond Street Sewer	13		\$17,360.00
Sewer and CSO Flow Monitoring Contract	13	8069	\$89,004.50
Dow Trunk Mildred/Nason Sewer Rehabilitation	13	8076	\$338,632.27
Collection System Spot Repairs	13		\$123,330.00
Subtotal Project Expense			\$836,479.93
Professional Consulting Services	13		\$482,964.13
SUBTOTAL FY 2013			\$1,319,444.06