CITY OF BANGOR, MAINE

FINAL REPORT
CSO ABATEMENT PROGRAM

U. S. vs. City of Bangor

Civil Action No. 88-0048-B

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Prepared by"
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INTRODUCTION

The 1978 Reauthorzation of the Federal Clean Water Act required all Wastewater Treatment Plants to provide a minimum level of treatment known as Secondary Treatment. Primary Treatment Plants, such as in operation in Bangor, were required to be upgraded to Secondary Treatment by July 1, 1988. Bangor was unable to achieve that deadline, and sought a legal process to provide the necessary time extension to achieve compliance with the requirements of the Reauthorized Clean Water Act.

On June 30, 1987, The City of Bangor entered into a Consent Decree with the State of Maine Department of Environmental Protection, Under the terms of this agreement, Bangor would upgrade the Wastewater Treatment Plant to Secondary Treatment, initiate a sewer rehabilitation Program, and abate Combined Sewer Overflow (CSO) discharges to the Kenduskeag Stream and the Penobscot River.

On June 28, 1991, the City of Bangor entered into a Consent Decree with the United States Environmental Protection Agency to address certain environmental issues including Combined Sewer Overflow (CSO).discharges into the Penobscot River and the Kenduskeag Stream.

The 1991 Consent Decree incorporated the terms and conditions of the 1987 Consent Decree, specifically the upgrade of the Waste Water Treatment Plant to Secondary Treatment. It further required the preparation and implementation of a CSO Facilities Plan,(later to be known as a Long Term Control Plan) designed to abate CSO discharges.

The Waste Water Treatment Plant Upgrade construction was substantially completed in December of 1992. The secondary treatment operation has consistently performed with effluent much cleaner than permit requirements.

The CSO Facilities Plan was prepared by the City's Environmental Engineering Consultant CH2M Hill in 1992 and included a number of CSO Abatement Projects to be completed over a fifteen-year period ending in 2009.

The projects described in the CSO Facilities Plan have been completed, and it is appropriate at this time to terminate the 1991 Consent Decree.

The 1991 Consent Decree allows for termination in accordance with the following paragraph:

TERMINATION OF CONSENT DECREE

35. Any party may move for termination of this Consent Decree when Bangor has completed all actions required under the Consent Decree (except for the continuing compliance monitoring required under Paragraph 11.F. (3) hereof) and has achieved and maintained compliance with all terms and conditions of the Consent Decree and its NPDES permit continuously for a period of one year.

This document is the Final Report for the referenced 1991 Consent Decree.

BACKGROUND

The City of Bangor, Maine, with a 2000 census population of 31473 people, is located in east central Maine. The development of Bangor occurred initially along the banks of the Penobscot River and the Kenduskeag Stream. By the mid-nineteenth century, the city had grown to 20,000 people, and had evolved into a major trade center. The Penobscot River, connecting the large pine forests to the north and the Atlantic Ocean to the south became the catalyst for the development of Bangor as the largest port in the world for the shipping of lumber in the 1870's.

The early sewer records date back to around 1850, a time where cess pools and open ditches were the dominant waste disposal method. As development took place, piped sewers became more common to take residential sewage to the closest brook -- Barkersville Brook, Davis Brook, Sanford Brook, Carr Brook, Meadow Brook, or Arctic Brook. As more and more sewage entered the brooks, the conditions became intolerable, and there were requests for the City to do something about the situation. The solution was to construct large pipes in or near the brooks to carry both the brook (stormwater) and sanitary flows to either the Kenduskeag Stream or the Penobscot River, thereby creating the combined sewer system..

By the early 1960s, the Stream and the River were essentially dead, with dissolved oxygen readings of zero. Fishing and water contact recreation were non-existent, and odors were atrocious.

In order to alleviate this environmental, health and aesthetic nuisance, Bangor began a multiyear program to collect and treat its wastewater. The City constructed a wastewater treatment plan to provide Primary Treatment in 1968, and began construction of a nine-mile interceptor sewer system to collect flows from sewers that discharged wastewater into the Stream and River.

At 22 of these discharge points, Combined Sewer Overflow (CSO) structures were built. Wet weather flow that exceed the capacity of the interceptor sewer overflow untreated into the River and the Stream.

The 1980s saw two changes to water environment regulations. Wastewater treatment was required to be at the Secondary Treatment level by mid-1988. And in the mid-1980s, CSOs began to be recognized as a significant source of waterway pollution, and policies were developed to address the issue.

In 1986, Bangor began to look at options for complying with the requirements for Secondary Treatment. City staff scheduled many field trips around New England and New Brunswick to gather information on various options for Secondary Treatment. The City retained the firm of Woodard and Curran to prepare an Options Report for moving forward. The Report recommended entering into a Consent Decree with the State of Maine. The Consent Decree required the City to design and construct a treatment plant upgrade to secondary treatment by the end of 1992, and to begin a sewer rehabilitation program that would remove extraneous flows into the sewer system and abate combined sewer overflows.

The Consent Decree was signed on June 30, 1987, and the City went to work. The Engineering firm of CH2M Hill was retained to design the treatment plant upgrade to secondary treatment. A sewer maintenance department was created, staffed, and equipped. Additional engineers were hired to design sewer rehabilitation projects. Sewer rates were systematically increased ten percent every six months to provide the necessary funding. Sewer system index maps (200 scale) were developed to aid staff in understanding sewer system functions. Flow monitors were purchased. An aerial mapping program was undertaken to provide detailed 40 scale maps for a design base for sewer rehabilitation projects. All 22 combined sewer overflow locations were located. A sewer rehabilitation plan was developed.

During this period of time, the U. S. Environmental Protection Agency determined that the State Consent Decree did not adequately address the issue of Combined Sewer Overflows. The City and the EPA entered into negotiations that resulted in a 1991 Consent Decree that replaced the 1987 State Consent Decree. The 1991 Decree incorporated the terms and conditions of the 1987 Decree and further required the preparation of a CSO Facilities Plan to address the CSO issue.

Construction of the secondary treatment plant was completed in December of 1992. At a total constructed cost of approximately $25 million, the facility is designed to treat wastewater from Bangor, Hampden, and Hermon.

Also in 1992, a CSO Facilities Plan was prepared. The Plan identified the most cost effective and water quality effective projects to control CSO discharges. The plan called for a variety of methods, such as sewer separation, treatment plant upgrade, pump station upgrade, overflow structure modification, and storage -- treatment. The Plan had a target goal of 80% reduction of CSO discharges with projects scheduled through 2009.

SEWER RATES

FY	$ / HCF
1988	$1.09
1989	$1.32
1990	$1.60
1991	$1.93
1992	$2.33
1993	$2.82
1994	$3.37
1995	$3.75
1996	$4.09
1997	$4.14
1998	$4.14
1999	$4.14
2000	$4.14
2001	$4.14
2002	$4.14
2003	$4.14
2004	$4.14
2005	$4.14
2006	$4.45
2007	$4.45
2008	$4.72
2009	$5.00

GRANT FUNDING

In 1997, the City of Bangor, Maine was the recipient of a $6 million grant from EPA. The grant was to cover 55% of the costs that the City incurred in approved projects in its Combined Sewer Overflow (CSO) Control Program. Between 1997 and 2002, the City expended $10,928,798 on CSO control projects, of which $6,000,000 was from the EPA grant. The grant allowed the City to stabilize its sewer rates following a 400% increase between 1987 and 1997. The projects were administered by the City of Bangor Engineering Department with Financial Administration by the City Finance Department.

SEWER SYSTEM

Bangor began its sewer rehabilitation / CSO Abatement program in 1987 with a mapping project that provided the foundation for understanding the system and the development of projects to meet the requirements of the Consent Decree.

At the commencement of the program, Bangor had 123.73 miles of collector sewers,. Pipe size ranged from 8 inch to 72 inch diameter. Pipe materials included stone, brick, clay, concrete, iron, steel, and plastic. 71.17 miles (57.52%) of the collection sewers were combined sewers, carrying a combination of sanitary wastewater and stormwater runoff.

Bangor is a city of hilly topography, and consequently, there are 29 individual sewer subsystems that compose the Bangor collection sewer system. Prior to the construction (1968 to 1981) of the 9 mile interceptor Sewer that tied these subsystems together, each subsystem discharged into either the Kenduskeag Stream or the Penobscot River.

In 2008, Bangor had 156.64 miles of collector sewers. A large portion of Bangor's CSO Control Program has been sewer separation projects where the single pipe combined sewer is replaced with two pipes, ome for sanitary wastewater and one for stormwater. As a result, Bangor's length of combined sewers has been reduced to 38.65 miles, or 24.3% of the total 2008 collection system.

COMBINED SEWER OVERFLOWS

Combined sewers carry a lot of flow during rain or snowmelt events. Collection and treatment of such large volumes of flow is not practicable. Common engineering practice prior to the mid 1980s was to intercept only a portion of the wet weather flow (approximately four times the dry weather flow) for treatment. Flow volumes in excess of the intercepted volume discharge untreated as combined Sewer Overflows.

n 1987, Bangor had 22 CSO structures that discharged an unknown volume of diluted untreated wastewater into the Kenduskeag Stream and Penobscot River. At the conclusion of the CSO Control Plan, the number of CSO discharge locations has been reduced to 7. Collection system improvements in those remaining seven CSO sewer subsystems have reduced CSO discharges.

CSO LIST

CSO SER. NO.	CSO SYMBOL	CSO NAME	1987 CSO	2008 CSO
002	BV	BARKERSVILLE	1	1
003	DB	DAVIS BROOK	1	1
004	MS	MAY STREET	1	ELIMINATED
005	US	UNION STREET	1	ELIMINATED
006	KW	KENDUSKEAG WEST	1	1
007	KE	KENDUSKEAG EAST	1	1
008	HK	HANCOCK STREET	1	ELIMINATED
009	HM	HAMMOND STREET	1	1
010	SS	STATE STREET	1	ELIMINATED
011	MB	MEADOWBROOK	1	1
012	MS1	MILL STREET #1	1	ELIMINATED
013	MS2	MILL STREET #2	1	ELIMINATED
014	EV	EVERETT STREET	1	ELIMINATED
015	14	FOURTEENTH STREET	1	ELIMINATED
016	C	CEMETERY	1	ELIMINATED
017	AB	ARCTIC BROOK	1	ELIMINATED
018	BL	BLANCHARD STREET	1	ELIMINATED
020	CB	CARR BROOK	1	ELIMINATED
022	W	WOODLAWN	1	ELIMINATED
023	CS	CENTRAL STREET	1	1
024	FS	FRANKLIN STREET	1	ELIMINATED
025	OS	OLIVE STREET	1	ELIMINATED
TOTAL CSO STRUCTURES			22	7

CSO EVENT HISTORY 1990 – 2008

The following table shows the CSO annual discharge data for the period 1990 through 2008.

YEAR	TOTAL ANNUAL RAIN (IN)	RAIN EVENTS CAUSING CSOs	EVENTS - LTCP MODEL = 583 ANNUAL CSO EVENTS	% REDUCED	VOLUME - LTCP MODEL = 635 ANNUAL VOLUME (MG)	% REDUCED
1990	50.19	53	568	3%	525	17%
1991	36.99	52	542	7%	533	16%
1992	26.06	37	403	31%	386	39%
1993	34.72	46	376	36%	384	40%
1994	34.13	49	364	38%	403	37%
1995	32.26	49	374	36%	416	34%
1996	46.4	41	341	42%	344	46%
1997	34.46	38	322	45%	318	50%
1998	33.54	44	346	41%	329	48%
1999	47.12	33	280	52%	286	55%
2000	39.05	37	217	63%	231	64%
2001	24.64	20	91	84%	89	86%
2002	41.62	43	164	72%	161	75%
2003	43.26	49	181	69%	204	68%
2004	36.07	42	170	71%	193	70%
2005	59.78	49	292	50%	303	52%
2006	49.1	58	276	53%	282	56%
2007	44.21	25	117	80%	150	76%
2008	49.17	65	268	54%	378	40%

The average annual rainfall for the time period shown is 39.67 inches. The target of 80% reduction was nearly achieved in 2007 with an annual rainfall of 44.21 inches. 2008 was a very wet year with 49.17 inches of rain and 65 days where rainfall or snowmelt caused CSO discjarges. As shown in the tabulation, the 80% target was not achieved with the climate conditions of 2008. Conversely, in 2001, with only 24.64 inches of rain and 20 days of rain or snowmelt, the 80% target was easily achieved.

PAPERS AND PRESENTATIONS

Interest in the Bangor CSO Control Program has been widespread. When the Environmental Protection Agency issued the National CSO Control Policy on April 19, 1994, Bangor was nearly seven years into it's CSO Control Program. Bangor was viewed as a leader and as a resource for the other 1100 CSO communities nationwide. The City was invited to prepare papers and presentations at numerous venues to discuss Various aspects of the CSO Program. Following is a partial listing of papers and presentations:

Papers & Presentations

"Using the Water Quality Standards to Permits Process to Control Combined Sewer Overflows -- Experience of City of Bangor, Maine".
Presented at USEPA Technical Workshop, Washington, DC, February, 1992.

"Double Duty Structures in Sewer Rehabilitation Program in Bangor, Maine".
Presented at USEPA Technology Transfer Program, Westford, MA, December, 1993,
Presented at NEIETC/JETCC Training Seminar, Portland, ME, July, 1994.

"Using Aerial Mapping in Sewer Rehabilitation Program in Bangor, Maine".
Presented at NEWEA Collection Systems Conference, Marlboro, MA, September, 1994.

"Going in the Right Direction -- The CSO Program in Bangor, Maine".
Presented at NEWEA CSO Symposium, Boston, MA, December, 1994,
Presented at EPA Wet Weather Technology Workshop, Washington, DC, Sept., 1995.

"Maine's Wet Weather Water Quality Standards Legislation".
Presented at AMSA Winter Technical Conference, Santa Fe, NM, February, 1996.
Presented at EPA Invited Experts WQS Workshop, Washington, DC, Sept., 1999.

"A Sideways Pipe Solution for Tight Quarters". Co-authored with James F. Seiler.
Published in Public Works magazine, June, 1996.

"The EPA Advisory Committee -- Stakeholders Shaping the Future of Wet Weather Policies".
Presented at NEWEA Annual Conference, Boston, MA, January, 1997.
Published in New England Water and Wastewater News, April, 1997.

"Building Public Interest and Support for CSO Program in Bangor, Maine".
Presented at USEPA Small Communities CSO Workshop, Augusta, ME, Dec, 1997.

"And Now, the First of the Story -- Some Historical Insights into Bangor's CSOs".
Presented at MWWCA Fall Convention, Sugarloaf, USA, September, 1998.

"You Did WHAT? – Innovative Solutions for CSO Control in Bangor, Maine".
Presented at Maine Chapter, ASCE, Bangor, ME, November, 1998.

"Precast Tunnel is Cost Effective Option for CSO Storage Project".
Presented at Water Environment Federation Annual Conference -- WEFTEC 99, New Orleans, LA, October, 1999.
Published in WEFTEC 99 Conference Proceedings

Papers & Presentations, continued

"Davis Brook CSO Storage Facility in Bangor, Maine".
Presented at New England Water Environment Association Annual Conference -- Boston, MA, January, 2000.
Published in the Journal of the New England Water Environment Association, November, 2000.

"Precast Concrete Offers Innovative Solutions for Sewer, Storm, and CSO Projects".
Presented at National Precast Concrete Association Annual Conference Kansas City, MO, February, 2000.
Published in Manufactured Concrete magazine, Summer, 2000

"Storage Facility Brings City Closer to Compliance"
Published in American City & County magazine, March, 2000

"Innovative Construction Project Cuts Capital Costs"
Published in Water World magazine, July, 2000

"Bangor, Maine's Davis Brook CSO Storage Facility After One Year"
Presented at New England Water Environment Association Annual Conference -- Boston, MA, January, 2001.

"Kenduskeag East CSO Storage Facility in Bangor, Maine"
Presented at Water Environment Federation Annual Conference -- WEFTEC 2001 Atlanta, GA, October, 2001
Published in WEFTEC 2001 Conference Proceedings
Presented at New England Water Environment Association Annual Conference Boston, MA, January, 2002.
Published in Precast Solutions Magazine, Summer, 2002

"Bangor Sewer System -- 1875 to 2002, A Case Study"
Presented at Gulf of Maine Council on the Marine Environment Sewage Management Workshop-
Halifax, Nova Scotia, Canada, April, 2002.

"CSO Case Study – Bangor, Maine"
Presented at CSO Partnership National CSO Workshop Nashua, NH, May 2003

"Insystem Storage Capacity Enhances Sewer System Operation"
Presented at Water Environment Federation Collection Systems Specialty Conference Austin, Texas, June 2003.
Published in Conference Proceedings
Presented at Maine Chapter, ASCE, Bangor, ME, October, 2003.
Presented at New England Water Environment Association Annual Conference -- Boston, MA, January, 2004.
Published in the Journal of the New England Water Environment Association, Spring, 2004.

CSO STORAGE PAPERS ON CITY WEBSITE

Bangor's CSO Control Plan includes a variety of CSO control technologies. Among these technologies is the capture and storage of CSO flows for subsequent treatment at the Bangor Wastewater \ Treatment Plant. Referred to as "Storage and Treatment", the CSO Plan recommwnded three locations where this technology would be most appropriate.

Bangor's approach to CSO Storage / Treatment was innovative and highly cost-effective. The approach generated much interest in the CSO arena and became the subject of three technical papers. These papers were placed on the City's website for access by CSO communities that are considering this technology,

The papers and titles are as follows:

"Davis Brook CSO Storage Facility in Bangor, Maine"

"Kenduskeag East CSO Storage Facility in Bangor, Maine?

"Insystem Storage Capacity Enhances Sewer System Operation"

AWARDS

The Bangor CSO Control Program has been honored with the EPA National First Place CSO Award in 1996 and again in 2003.

2003 EPA Award

Media Release on CSO Award

BANGOR TO RECEIVE U.S. ENVIRONMENTAL PROTECTION AGENCY FIRST PLACE CLEAN WATER RECOGNITION AWARD FOR ITS COMBINED SEWER OVERFLOW CONTROL PROGRAM

The City of Bangor will receive the US EPA's 2003 Clean Water Act Recognition Award in the Combined Sewer Overflow Control Program category at the Water Environment Federation's Annual Conference to be held in Los Angeles on October 13, 2003. Bangor, which also received this award in 1996, is the only community to be awarded the First Place CSO award on two occasions.

This award recognizes the overall accomplishments of the City's program as well as its creative and cost-effective approaches.

Older communities throughout the country operate combined sewer systems in which a single underground pipe often handles both storm water and wastewater from homes and commercial businesses. Historically, these systems were designed to release excess flows into rivers or streams during rain or snow melt events once the capacity of the pipe to carry the flow was exceeded. Most systems were designed to carry approximately four times the flow experienced in dry weather. Such overflows allow untreated wastewater to reach the receiving waters.

According to Assistant City Engineer John Murphy, who oversees this program for the City, "The City has aggressively addressed Combined Sewer Overflow controls since 1987 through a variety of approaches including sewer separation projects, upgrades to our treatment plant and pump stations, overflow structure modifications, and storage tanks. By 2002, Bangor had achieved a 72% reduction in CSO events and a 75% reduction in CSO volumes."

This award recognizes the aggressive, proactive, and innovative approaches to CSO control taken by the City. It also highlight's the City's strong teamwork and high level of cooperation with the staff of the Maine Department of Environmental Protection and U.S EPA and the innovative and cost-effective solutions that have been engineered and constructed.

According to City Manager, Ed Barrett, "The City's Engineering staff has done a superb job in developing and implementing creative and cost-effective solutions. The best example of this work are the three linear underground storage tanks that are now a part of our system. These tanks, which hold 3.8 million gallons of water until it can be routed to our treatment plant, were constructed at a cost of $5.7 million and replaced an original storage design that was estimated to cost more than $18 million. These projects alone saved our community and our sewer rate payers over $13 million."

Bangor's long term CSO control plan was prepared in 1992 with projects scheduled through 2009. Once completed, it will achieve an 80% reduction in combined sewer overflows. The City is five years ahead of this initial schedule and will complete the entire program within the next two years.

According to Bangor's Mayor, Nichi Farnham, "This award recognizes the long-term commitment of the City Council, our staff, and our citizens to improve the overall environment in Bangor and

the water quality in the Penobscot River and Kenduskeag Stream. We are proud of our community and our environment, and pleased that our hard work has once again been nationally recognized."

1996 EPA Award

DESCRIPTIONS OF THE 1996
AWARD WINNING
CSO CONTROL PROGRAMS
FIRST PLACE: CITY OF BANGOR, MAINE

The City of Bangor, Maine is continuing to implement a CSO control program that was initiated in 1987. Bangor's efforts include implementing control measures that are consistent with the Nine Minimum Controls (NMCs) identified in the Policy and the completion in 1992 of a CSO Facilities Plan which constitutes Bangor's Long Term Control Plan (LTCP).
Bangor has identified two sensitive areas: The upper Penobscot River as a prime fishing are and the Kenduskeag Stream as a prime swimming area. Bangor's efforts have focused on the elimination of CSOs to these areas. Bangor has already eliminated 8 of its original 22 CSOs, and has reduced overflow occurrences at several others. Bangor's LTCP implementation efforts continue with an annual expenditure of $2 to $2.5 million in local funds. To date, the City has spent nearly $20 million.
Bangor's LTCP contains 23 projects, including several multi-year sewer separation projects. Implementation of the LTCP will run through 2009. Other projects include upgrading the treatment plant to handle 13 MGD of combined sewage, enlarging connector pipes to capture, more flow, and installing a combination conduit to combine several large drainage areas as well as CSO control technologies. Bangor's LTCP contains four phases. When the first two phases are complete, the City will evaluate the effectiveness of the program in meeting its objectives. The City will update its SWMM model using the latest version and incorporate any changes to its sewer system that have occurred as a result of completed projects.
Bangor's CSO Control Plan contains a number of innovative approaches/aspects including:
_ Aerial mapping of the areas of the City where sewer control projects are planned. Used in conjunction with computer aided drafting and TV inspection videos, the aerial mapping has allowed the City to standardize its design methods, to generate sewer designs very efficiently, to produce well detailed construction drawings, and to standardize record drawings.

_ Use of the floatable block technique to determine when an overflow event has taken place. A wooden block is placed on the weir of an overflow structure. After each rainfall, overflow structures are inspected. If the block is gone, an overflow event has occurred.
_ All existing sewers crossing an Interstate highway were lined using the Isituform process to insure the longevity of those

pipes. At the same time, several cross country sewers, many under buildings, were lined using the same technique.

_ Two projects were undertaken that put a sanitary sewer pipe inside a storm drain, creating double duty structures. Both projects were Interstate crossings approximately four hundred feet in length. By using an existing crossing/easement, the City avoided the high cost of drilling, boring or jacking the new sanitary pipe under the highway. One of the projects placed a concrete encased double wall insulated polyethylene sewer pipe on the floor of a 10' by 14' box culvert that carries a stream beneath the Interstate. The other placed an 8" polyethylene pipe on the invert of a 24" storm drain pipe, effectively separating a former combined sewer.

_ One project was completed using 53" by 83" elliptical concrete pipe. The project was located in a narrow alleyway that contained an existing 42" sewer line. Site constraints prevented the addition of a second 42" pipe or the replacement of the existing pipe with a larger, 60" line. The elliptical pipe, which is vertically oriented, proved to be an innovative solution to what initially appeared to be an intractable problem.

_ Two projects were designed to increase flow between overflow structures and sewer interceptors to reduce CSO discharges. The concept was to increase the pipe size carrying normal flow. Each project required a very expensive railroad crossing. With the use of a computer program written by one of the City's Engineers, the projects were greatly simplified by modifying the overflow weirs such that the existing pipes were pressurized by additional head of water. Pressuring the existing pipes will allow them to carry the same flow as would the proposed larger sized pipe in a gravity situation. This avoided two very expensive railroad crossings.

_ One of the control options being implemented is to provide primary treatment and disinfection concurrently in an existing primary settling tank isolated during wet weather for up to 13 MGD of CSO flows. This will require a "generic bypass" permit modification although the combined primary and secondary effluent will most likely meet the current permit limits.

_ Future projects will include the possible use of hydro-brake type flow control devices, vortex separators, tank flushing devices, combing screens, and Supervisory Control and Data Acquisition (SCADA) systems.

PROJECT / FINANCIAL SUMMARY

Following is a listing of all CSO Control projects and cost for the years 1987 through 2008. The first table is a general summary. The remaining tables list the individual projects undertaken during the 22-year program. Total costs were $42.8 million.

PROJECT	DISBURSED
SUMMARY	
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 - 2007 PROJECTS	$6,214,511.50
TOTAL THROUGH December 31, 2008	**$42,791,152.83**

PROJECT	FY	ACCOUNT	DISBURSED
PRE-1993 SEWER PROJECTS			
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**

PROJECT	FY	ACCOUNT	DISBURSED
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**

PROJECT	FY	ACCOUNT	DISBURSED
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**

PROJECT		FY	ACCOUNT	DISBURSED
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
14 TH 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**

PROJECT	FY	ACCOUNT	DISBURSED
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**