HALIFAX
REGIONAL MUNICIPALITY

PO Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Item No. 8.2

Halifax Regional Council
June 24, 2008
July 8, 2008

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY: Brad Anguish, Director of Business Planning & Information Services

DATE: May 14, 2008

SUBJECT: **Harbour Solutions Project - 4th Quarter Report - January 1, 2008 to March 31, 2008**

INFORMATION REPORT

ORIGIN

This report originates from the Council session of October 22, 2002 when staff was authorized to submit quarterly reports for the duration of the project.

BACKGROUND

HRM has entered into five contracts to date for the implementation of the Halifax Harbour Solutions Project, namely:

- an infrastructure development agreement for the construction of the three Wastewater Collection Systems on October 15, 2003 with Dexter Construction; and
- a development agreement for the construction of three advanced primary Wastewater Treatment Facilities on June 15, 2004 with D&D Water Solutions, Inc.; and
- a development agreement for the construction of a Biosolids Processing Facility on November 30, 2004 with SGE Acres Limited, and
- an operating and maintenance agreement for the Biosolids Processing Facility on November 30, 2004, with N-Viro Systems Canada Inc.; and
- an operating agreement for the transportation of dewatered biosolids from the three new Wastewater Treatment Facilities on May 31, 2006, with Seaboard Liquid Carriers Limited.

DISCUSSION

Completion of the wastewater treatment facilities and wastewater collection systems is progressing well overall and within budget. D&D has reviewed the scheduling for the commissioning of the Herring Cove Wastewater Treatment Facility (WWTF) and is forecasting a delay in the Herring Cove schedule.

Halifax

The Halifax Wastewater Collection System (WWCS) work during the 4th quarter of 2007/08 was focused on start-up activities of the various regulation structures. All major pumping stations were started with the exception of two pumping stations at Atlantic School of Theology (AST) and Balmoral. These two remaining stations will start during the 1st quarter of 2008/09.

At the time of writing of this report, the Halifax WWTF has been continuously treating sewage from Halifax and has completed the contract performance test. Test results are being evaluated by the Owner's Engineer and in consultation with Halifax Water. Deficiency lists for the Halifax WWTF and WWCS are being updated and will be forwarded to the contractor for remedial action.

Dartmouth

The Dartmouth WWCS work during the 4th quarter of 2007/08 was concentrated on completing the outstanding electrical and mechanical work at the various regulation structures.

The Dartmouth WWTF work during the 4th quarter of 20007/08 was mainly on the hydro-testing of the various tanks and channels and the "dry" commissioning of all plant equipment.

At the time of writing of this report, the Dartmouth WWCS diversion piping connection work has started as well as other remaining work required to send wastewater flows to the Dartmouth WWTF.

Herring Cove

The Herring Cove WWTF work during the 4th quarter of 2007/08 was concentrated on the remaining foundation and concrete work and underground piping installation.

D&D has finished their schedule assessment for the Herring Cove WWTF completion. It appears that equipment installation will not be complete until the 1st quarter of 2009/10 with commissioning completed in the 2nd quarter of 2009/10. The mass concrete work will be completed shortly (June 2008) and equipment installation will start shortly thereafter. In addition, all the major equipment has arrived and is being stored on-site. D&D continues to look for opportunities to move the schedule forward.

Biosolids Processing Facility
The Biosolids Processing Facility (BPF) continued to process biosolids from the Aerotech Dewatering Facility, and from the Halifax WWTF. There is a change in the business arrangement of the operator of the facility, N-Viro Systems Canada Inc. In January 2008, all of the issued and outstanding shares of N-Viro Canada Systems Inc. were acquired by the CFI Infrastructure Opportunities LP (the "**CFI Fund**") through an acquisition company. All assets were transferred to N-Viro Systems Canada LP, a limited partnership established under the laws of the Province of Ontario. The business and operations of N-Viro Systems Canada will be carried on by the partnership in accordance with the Agreements without any change in organization, management, policies and procedures, premises, personnel, equipment, facilities, working environment and resources.

N-Viro Systems Canada LP has submitted various samples for analysis and the product currently meets the "exceptional quality" biosolid standard as established by the Province of Nova Scotia.

Safety
There were no lost time incidents and no NSDEL inspections during the quarter.

BUDGET IMPLICATIONS

The Harbour Solutions Project spent $22.17 million in the 4th quarter 2007/08 and, since the start of the project, $290.35 million to March 31, 2008. Projections to meet the capital budget of $332.7 million are still on target.

Although still a considerable factor, the risk of increases to inflation is gradually decreasing as the project is nearing completion. History of the Halifax Non-Residential Construction Index over the past twenty years shows average annual inflation of just over 2%. At the beginning of the project, staff conservatively estimated annual inflation at 2.8% for budget purposes. However, fiscal years 2004/05, 2005/06, and 2006/07 brought inflation of 7.87%, 4.31%, and 5.25% respectively. To mitigate this risk and financial impact, staff revised the inflation estimate to approximately 6% per year over the life of the contract and has committed a substantial portion ($14.7 million) of the $18.2 million contingency to address this issue.

In the 1st quarter of 2007/08, annual inflation was 5.8%, the 2nd and 3rd quarter saw inflation of 7.41%, and 7.33% respectively, while in the 4th quarter the inflation rose to 7.78%. The inflation component from the time of this report to the remainder of the project has therefore been estimated at 8%.

Staff are currently estimating the actual total inflation to the end of the project to be $25.5 million, based on an annual inflation rate of 8%. This would consume $1.25 million of the $2.59 million inflation room allocated in the contingency budget, leaving the remainder potentially available to deal

with possible project risk events.

It should be noted that there remain numerous potential project risks that may require funding from the uncommited contingency balance. For example, due to recent changes in the electrical code, D&D Water Solutions Inc. has identified various areas in which the design/construction of the Herring Cove WWTF will be impacted. D&D has not yet finished their analysis of this issue and, therefore, it is not possible to quantify the actual financial impact at this time.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ATTACHMENTS

Appendix A - Halifax Harbour Solutions Project - 4th Quarter Report - January 1 to March 31, 2008.

Attachment 'A' - Letter from D&D Water Solutions

A copy of this report can be obtained online at http://www.halifax.ca/council/agendasc/cagenda.html then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by :	Ted Tam, P. Eng., Project Manager, Harbour Solutions Project	490-6130
Report Approved by:	Brad Anguish, Director, Environmental Management Services	490-4769

Appendix A

Halifax Harbour Solutions Project
4th Quarter Report - January 1, 2008 to March 31, 2008

Introduction

The intent of this document is to provide Council and staff with a general overview of the Harbour Solutions Project progress during the period between January and March, 2008.

It is presented in sections:

Section 1 - Wastewater Collection System (WWCS)

Section 2 - Wastewater Treatment Facilities (WWTF)

Section 3 - Biosolids Processing Facility (BPF)

Section 4 - Pollution Prevention Program

Section 5 - Water Quality Sampling Program

Section 6 - Financial Information

Section 7 - Public Involvement and Information Program

Section 8 - Construction Safety

Section 1

Halifax Wastewater Collection System

Works during the 4th quarter of 2007/08 were focussed on start-up activities of the various regulation structures as well as identification and repair of deficiencies.

In addition to the Duffus Street Pump Station and the Pier A Pump Station, which were operational in the 3rd quarter of 2006/07, the two remaining pump stations at AST and Balmoral started operations during the 4th quarter of 2007/08.

Commissioning activities such as training for Halifax Water staff were also initiated in the 4th quarter.

During the 1st quarter of 2008/09, commissioning activities for Halifax are expected to be completed; the remaining landscaping will be completed, and the transfer of the Halifax Wastewater Collection System to Halifax Water is expected to commence.

Dartmouth Wastewater Collection System

Works during the 4th quarter of 2007/08 concentrated on completing the outstanding mechanical and electrical work at the various structures.

During the 1st quarter of 2008/09, final diversion piping connection work will commence as well as the other remaining work required to send wastewater flows to the Dartmouth Wastewater Treatment Facility (WWTF). In addition, remaining reinstatement work will be initiated.

Herring Cove Wastewater Collection System

During the 4th quarter of 2007/08, construction work continued at the Roaches Pond retention tank and the Herring Cove Pump Station. The Roaches Pond yard piping work was completed and preparations for hydro-testing the tank were completed. Work on the Herring Cove Pump Station included the advancement of the mechanical and electrical work as well as the completion of yard piping. Work on the off-shore section of the Herring Cove WWTF Outfall continued.

During the 1st quarter of 2008/09, remaining work on the Roaches Pond Retention Tank will be completed and it will be transferred to Halifax Water. The work at the Herring Cove Pump Station and the offshore section of the Herring Cove WWTF Outfall will continue.

Section 2

Halifax Wastewater Treatment Facility

During the 4th quarter of 2007/08, work concentrated on the completion of mechanical and electrical work and on identification and repairs of deficiencies. The Halifax WWTF continues to treat sewage from Halifax and the commissioning staff monitored operations, initiated operating changes where appropriate, and dealt with equipment reliability issues as they arose. The commissioning staff also

prepared the plant for the start of the performance test.

At the time of writing of this report, the Halifax WWTF has been continuously treating sewage and has started the contractual performance test. Deficiency lists for the Halifax WWTF and WWCS are being prepared and updated and will be forwarded to the contractor for remedial action.

Dartmouth Wastewater Treatment Facility

During the 4th quarter of 2007/08, work concentrated on hydro-testing of the various tanks and channels and "dry" commissioning activities were continued during the quarter. The permanent power connection was completed during the quarter. The remaining mechanical and electrical work was substantially completed.

At the time of writing of this report, the Dartmouth WWCS diversion piping connection work has started as well as other remaining work required to send wastewater flow to the Dartmouth WWTF.

Herring Cove Wastewater Treatment Facility

During the 4th quarter of 2007/08, work concentrated on the remaining foundation and concrete work and underground piping installation. It is anticipated that concrete work will be completed by the end of the 1st quarter of 2008/09 and the installation of mechanical and electrical equipment will start. All the major equipment has arrived and is being stored on-site.

D&D has finished their schedule assessment for the Herring Cove WWTF completion. It appears that equipment installation will not be complete until the1st quarter of 2009/10 with commissioning completed in the 2nd quarter of 2009/10 as outlined in Attachment A - Letter from D&D Water Solutions. D&D continues to look for opportunities to move the schedule forward.

Section 3

Biosolids Processing Facility

The Biosolids Processing Facility (BPF) continued to process biosolids from the Aerotech Dewatering Facility, and from the Halifax WWTF. There is a change in the business arrangement of the operator of the facility, N-Viro Systems Canada Inc. In January 2008, all of the issued and outstanding shares of N-Viro Canada Systems Inc. were acquired by the CFI Infrastructure Opportunities LP (the "**CFI Fund**") through an acquisition company. All assets were transferred to N-Viro Systems Canada LP, a limited partnership established under the laws of the Province of Ontario. The business and operations of N-Viro Systems Canada will be carried on by the partnership in accordance with the Agreements without any change in organization, management, policies and procedures, premises, personnel, equipment, facilities, working environment and resources.

N-Viro Systems Canada LP has submitted various samples for analysis and the product currently meets the "exceptional quality" biosolid standard as established by the Province of Nova Scotia.

Section 4

Pollution Prevention Program

In support of the Harbour Solutions Project and as a requirement of Provincial legislation, HRM initiated a Source Control Strategy, now referred to as the Pollution Prevention (P2) Program. This program has been designed and implemented to reduce the levels of organic and inorganic compounds, toxins and other matter currently entering the municipal stormwater and wastewater sewer systems, and ultimately, freshwater and marine environments including Halifax Harbour.

At the Regional Council meeting of July 17, 2001 (Item No. 9.1), Council approved the adoption of By-Law W-101 respecting the "Discharge of Wastewater into Public Sewers". This by-law regulates the discharge of specified substances that may comprise paints, inks, solvents and other hazardous, metal-rich and toxic products and wastes to the municipal sewer systems. The P2 program requires compliance with the Wastewater Discharge By-Law through planning, education, inspections and monitoring at the source of these discharges from all industrial, commercial and institutional locations within HRM. Additionally, educational information is provided through various mediums for the residential sector to allow direct participation by the public in the protection of our natural marine and freshwater resources. Staff previously provided updates to Council on the status of this program. Since the last update provided to Regional Council at its meeting of March 4, 2008, activities that P2 staff have undertaken or completed include the following:

- Staff, during this reporting period, have continued with inspections of businesses within the Dartmouth WWTF sewershed for compliance with HRM's By-Law W-101. It is the intent of staff to have this phase of activities completed prior to the completion and commissioning of the Dartmouth WWTF. To date, we estimate over 90% of identified businesses have been inspected within this sewershed.

- P2 staff responded to 13 separate environmental incidents or related investigations since the previous report. Many of these included lake water quality incidents which resulted in monitoring and inspections for the source of various contaminants.

- P2 staff produced and continue to deliver on-going pollution prevention television and radio advertisements to promote environmental responsibility and awareness for the general public.

- Staff activities in the monitoring of food preparation sector continues to be a priority area Currently staff are participating in the development of a Canada-wide strategy for the management of fat, oil and grease(FOG) through participation in the Canadian Water and Wastewater Association. Reduction of the amount of (FOG) that is discharged to municipal sewer systems will correspond to a reduction in Soluble and Total BOD influent loadings to the HSP WWTF's and may result in a reduction of system operation and maintenance costs.

- The P2 program has been managing the disconnect of 30 private sewage outfalls to the Harbour, 15 located each in Dartmouth and Halifax. To date, in Halifax, 9 private outfalls are now connected to the new sewage collection system, 3 have been recently discovered and the owners have been served with notification of the requirement to disconnect and the remaining 3 are pending final connection activities to discharge to the collection system. In Dartmouth, 2 private outfalls are already connected to existing sewer, 8 are pending

connection approval from HHSP and the remainder are currently serviced by private on-site systems. Cooperation from owners has been good overall and no enforcement action appears necessary at this time

To date, the P2 program has been following a business plan in which the program objective is to have pollution prevention fully implemented on a sewer shed basis consistent with the HSP commissioning. As previously reported, the Halifax WWTF sewer shed has been completed and the Dartmouth WWTF sewershed will be completed in advance of the HSP WWTF commissioning. This represents in excess of 5,350 inspections to date. The program will then continue with inspections of all non-residential locations for the Herring Cove sewershed and eventually will extend to all businesses within municipally serviced sewersheds throughout HRM.

Section 5

Harbour Water Quality Monitoring

The Harbour water quality monitoring program was initiated in June, 2004. Samples are collected at 35 stations in the harbour, from the head of Bedford Basin to the harbour mouth past McNabs Island. Stations are located down the centre of the harbour, and at various additional points including areas of recreational use such as the yacht clubs. Since 2006, additional samples have been taken in Dartmouth Cove, Fairview Cove, and new sampling sites were established at Herring Cove. Additional sampling was performed at Fairview Cove during 2007 to monitor for effects of sewage diversion due to construction at the Duffus Street pumping station. Sites have been added in late 2007/2008 around the NW Arm to monitor for changes as the Halifax plant comes online.

Regular sampling continues on a bi-weekly basis for bacteria, metals, nutrients and water chemistry. Samples are collected at the surface and 10 metres at each site. The data are compiled into bi-weekly and quarterly summary reports. Testing for oils and biochemical oxygen demand (a measure of organic constituents in the water) has been discontinued at regular sampling sites due to levels which are routinely below detection limits. Methods for more sensitive detection of metals have been instituted. The program remains on schedule and below budget.

The purpose of the program is to establish existing baseline water quality conditions in the harbour, and to track changes as each of the three new treatment plants is commissioned in 2008 (Halifax and Dartmouth) and 2009 (Herring Cove). The sampling program is scheduled to continue through 2009.

Based upon oceanographic modelling of the harbour, it is predicted that the water quality objectives set by HRM, adapted from the Halifax Harbour Task Force, will be met through the advanced primary sewage treatment provided for Halifax and Dartmouth. Water quality objectives differ for different parts of the harbour, but for the Outer Harbour, Northwest Arm and Bedford Basin, it is predicted that guidelines for contact recreation will be met.

With full commissioning of the Halifax plant in 2008, conditions in the Northwest Arm and Point Pleasant Park areas have rapidly improved. Contact recreation guidelines should be met by summer of 2008, the only exceptions potentially being the few days during or immediately following very heavy rainfall events, when wet weather overflows may occur at some points in the collection system. A few remaining leak situations in the NW Arm trunk sewer can be detected in the bacterial data.

It is hoped that these can be remedied during 2008. A decision on opening of beaches for swimming is pending during spring 2008. More intensive monitoring for fecal coliform bacteria in the beach areas continues.

Fecal coliform bacteria levels are currently high throughout the middle and inner harbour, exceeding the swimming guidelines, particularly in winter months. Levels in NW Arm are greatly improved with diversion of the Chain Rock outfall and treatment of Halifax sewage. Metals levels are low throughout the harbour, as are BOD levels. Oxygen levels are depressed in the deeper waters of Bedford Basin at various times, likely due to decomposition of organic materials. Oxygen levels are often too low, below the desired objective. Overall, water quality objectives in the harbour are not currently met except in the outer harbour, based on the various measured parameters. Bacteria levels do now meet the CCME swimming guidelines in NW Arm and at Black Rock beach.

Quarterly reports and weekly/bi-weekly data reports and spreadsheets are available online at:http://www.halifax.ca/harboursol/waterqualitydata.html.

Section 6

Financial Information

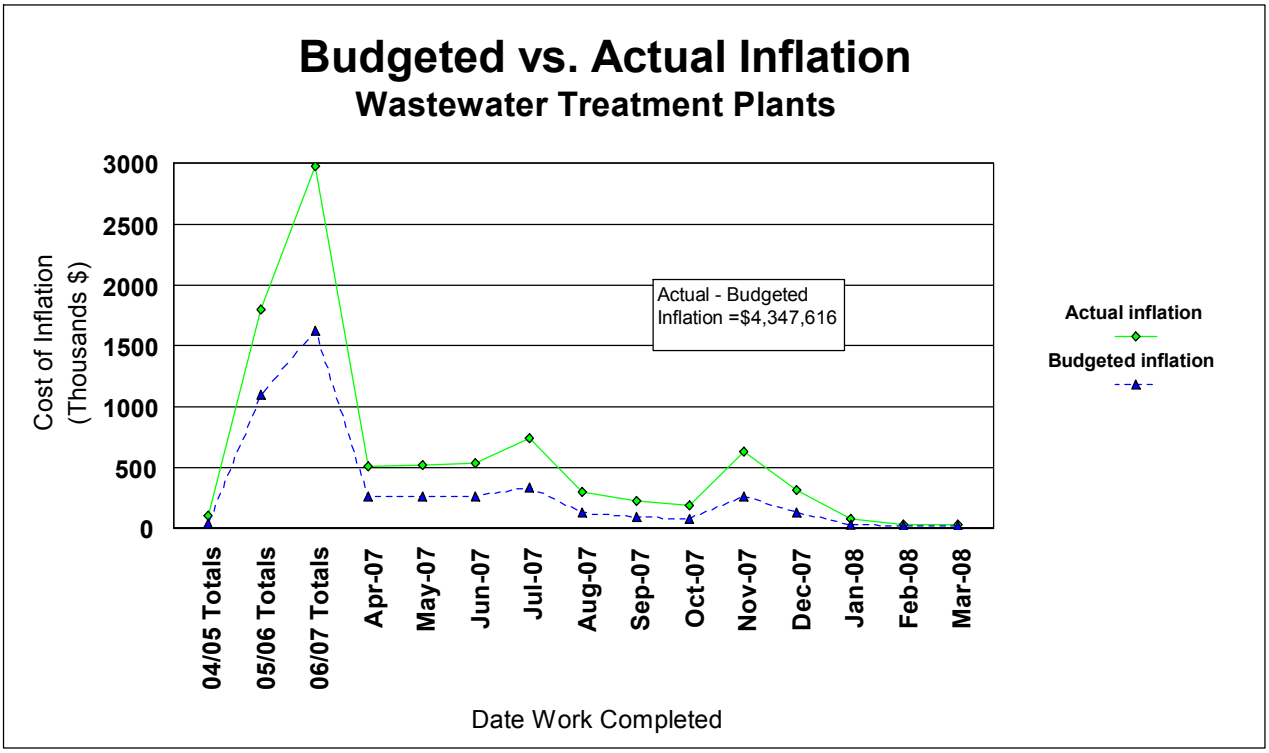
As of March 2008, the Harbour Solutions Project has spent $ 290.35 million of its $332.7 million capital budget. Spending for the 4th quarter of 2007/08 just completed was $22.17 million which is largely comprised of $2.42 million for the wastewater collection system and $16.61 million for the wastewater treatment facilities. Contract management, the Public Involvement & Information Program, aggressive pollution prevention, water quality monitoring, inflation, and administration totalled $3.0 million.

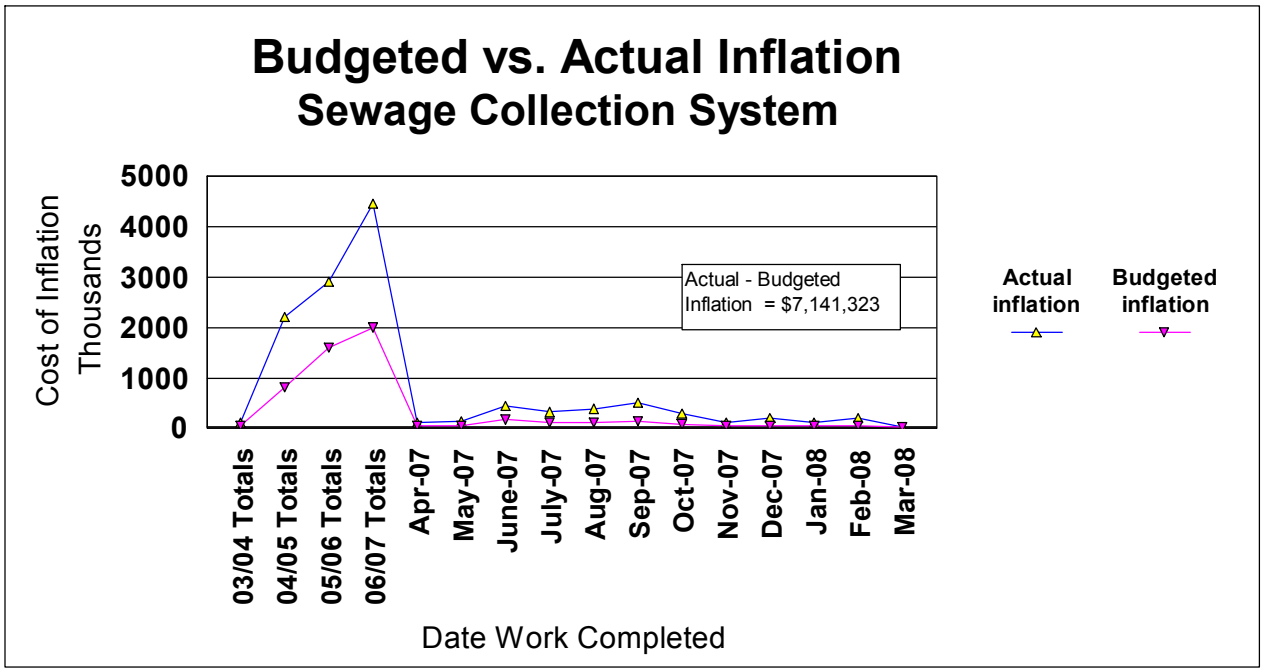
In October 2002, Council granted approval in principle to commence a series of increases, not to exceed $0.29, to the Environmental Protection Charge as a means of funding the Harbour Solutions Project. The series of increases has now been completed, with the HSP portion of the EPC rate now being $0.66.

Inflation

Over the life of the project, 2004/05 was an extraordinary year for construction-related inflation in HRM in terms of its strong increase. In 2005/06 the inflation trend stabilized somewhat, and was lower than the revised inflation projection of 6% (4.31% vs. 7.87% in 2004/05). Inflation for fiscal year 2006/07 was 5.25%. While there was only a slight increase in the 1st quarter of 2007/08 to 5.8%, the 2nd, 3rd, and 4th quarters of 2007/08 saw inflation of 7.41%, 7.33% , and 7.78% respectively.

The impact of inflation in terms of dollars is demonstrated in the two charts on the next page for the wastewater collection system and the wastewater treatment facilities. The difference between the actual and budgeted inflation represents the amount which must be taken from the contingency funds. As of March 2008, $11.49 million over and above budgeted inflation of $12.3 million has been spent on these two contracts.


Budgeted vs. Actual Inflation
Wastewater Treatment Plants
Cost of Inflation (Thousands $)
3000
2500
2000
1500
1000
500
0
Actual - Budgeted Inflation =$4,347,616
04/05 Totals
05/06 Totals
06/07 Totals
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Date Work Completed
Actual inflation
Budgeted inflation


Budgeted vs. Actual Inflation
Sewage Collection System
Cost of Inflation Thousands
5000
4000
3000
2000
1000
0
Actual - Budgeted Inflation = $7,141,323
03/04 Totals
04/05 Totals
05/06 Totals
06/07 Totals
Apr-07
May-07
June-07
July-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Date Work Completed
Actual inflation
Budgeted inflation

Contingency Spending

The contingency budget of $18.20 million is largely set aside for addressing inflation beyond budgeted levels. The contingency is also being used to fund small items that have arisen through the contract amendments.

Actual and planned spending of contingency funds is as follows (shown in millions).

Realized inflation in excess of budget	$11.49
Inflation room in excess of budget	2.59
Amount committed for amendments	1.64
Herring Cove Water & Sewer	1.66
Uncommitted	0.82
Total	$18.20

It should be noted that there remain numerous potential project risks that may require funding from the uncommited contingency balance. For example, due to recent changes in the electrical code, D&D Water Solutions Inc. has identified various areas in which the design/construction of the Herring Cove WWTF will be impacted. D&D has not yet finished their analysis of this issue and, therefore, it is not possible to quantify the actual financial impact at this time.