



**ENGINEERING AND OPERATIONS DEPARTMENT  
ENGINEERING DIVISION**

**Report Number: 2011-17**

**Date: November 28, 2011**

**SUBJECT: UPDATE REPORT ON THE ARENA PUMPING STATION CATCHMENT  
AREA EXTRANEOUS FLOW REDUCTION PROGRAM**

**1) PURPOSE:**

This report is prepared by Jim Hupponen, Manager of Engineering Services under the permission of Ron Hanson, Director of Engineering and Operations to update Council on the progress and status of the Arena Pumping Station (PS) Area Extraneous Flows Reduction Program.

**2) HISTORY, BACKGROUND, COUNCIL POLICY, PRACTICES**

The City has been actively engaged in the identification and remediation of extraneous flows since the 1970's, when the first sections of the 1929 vitrified clay sanitary sewer system were replaced. Today, that system now consists of PVC pipe materials, which is substantially superior to previous materials such as asbestos cement. Emphasis on rehabilitation and remediation in the past has focused primarily on the infrastructure located within the road allowances, with few attempts to rectify sources of extraneous flow from the private sector.

In conjunction with the Region of Niagara, the Port Colborne Pollution Control and Infrastructure Study was completed in 2006. The study identified existing Combined Sewer Overflow (CSO) locations and sources of extraneous flow contributing to the problem. As a result of the study, recommendations for source control in key areas have been identified. As detailed in the Strategic Planning sessions and at Budget deliberations, Staff presented a proposed Pilot Program for the Arena Sewershed, with an initial allocation of \$200,000 for 2008. A successful application under the Region's CSO Plan matched those funds with an additional \$200,000 for the project.

The results of source control measures will be lower treatment costs to the Municipality, reduced capital costs to the Region for pumping station, treatment plant upgrades and forcemain, gravity sewer replacements/upgrades and additional capacity for future development connecting to the system.

Redirection of any sources of storm water from the sanitary sewer system should be encouraged, since the payback in treatment costs is immediate. A source of sewer surcharging is removed, which could result in reduced instances of basement flooding.

By-law No. 5228/134/08 was adopted by Council in December 2008. The bylaw prohibits any form of storm water connection to the sanitary sewer system and provides the means to disconnect such connections. While the owner of the building is responsible for the cost of disconnection of the sources of storm water, section 4.8.2 provides for a reimbursement program, subject to budget and Council concurrence,

which would provide financial incentives to assist in the work. To date, it has not been necessary to levy fines under this by-law.

As reported to Council over the past four years, we have been actively pursuing a CSO remediation program in the Arena PS catchment area. Post-flow monitoring was completed in the Arena PS area in the fall of 2010 and a summary report was prepared by Veritec Consulting Inc. in February 2011 and submitted to Associated Engineering for review. In anticipation of the completion of that project, the next phase of the CSO work has moved into the Omer PS catchment area, where pre-flow monitoring, Closed Circuit Television (CCTV) work and private property inspection of the area has been completed. The Omer area is significantly larger than the Arena area and has presented new challenges to identification of sources of extraneous flow. The CSO projects are funded on a 50 % basis, jointly by the Region of Niagara and the City. The City's Arena CSO program was initiated in 2008 under the previous Region of Niagara guidelines which allowed the 50% funding from the Region to be utilized to complete spot repairs and disconnection of sump pumps in the private sector.

### **3) STAFF COMMENTS AND DISCUSSIONS**

To date there have been 15 sump pumps identified and removed in the Arena area. The average cost of the sump pump disconnections which were removed by a contractor for the City was \$2,762.00. The 50% funding received by the City from the Region allowed for the disconnections of all sump pumps in the private sector with no cost to the private property owner. The total cost to remove all sump pump connections from the sanitary sewer was \$41,440.00. There has been tremendous cooperation from all residents throughout the project.

A spot repair program was initiated and completed in 2009 which removed 27 points of infiltration by trenchless repair methods. The 2009 contract for the sewer rehabilitation was completed at a cost of \$56,550.00. The repaired sections of sewer are currently inspected under the City's CCTV program.

The Arena area CSO program has been completed. The final report was received by City Staff on November 15, 2011 from Associated Engineering. Additional works that were completed in the summer of 2011 were repairs to 5 sanitary laterals on First Avenue that were experiencing a significant source of inflow. Additional flow monitoring took place and additional CCTV work has been completed to further investigate the structural integrity of the riser pipes connecting the laterals. With these repairs it has substantially reduced the wet weather flows to the Arena Pumping Station along with reducing flows to Union Pumping Station and the Seaway Treatment Plant respectively.

The total project costs for all works associated with the Arena PS CSO program to date are \$684,786.20 including all sump pump disconnections, spot repairs, lateral repairs, investigative and administrative work.

By removing extraneous flows from the sanitary system, the capacity of the entire system is theoretically increased allowing the City and the Region to delay future capital upgrades to the system such as construction of CSO tanks, sewer replacement, upgrade of pumping stations or the upgrade of the treatment plant.

Attached is an Executive Summary report, prepared by Associated Engineering, to provide Council with a final overview of the project. The attached summary outlines the findings and potential cost savings found during the Arena PS CSO project. A final report on the Arena PS CSO project has been submitted to City Staff by Associated Engineering.

Below is an excerpt from the attached Executive Summary:

*Comparison of sewer flow data recorded prior to the field investigation program, and subsequent to the completion of all repairs and retrofits indicates a reduction in extraneous flow of 163,433 m<sup>3</sup> annually, which is equivalent to an annual savings of \$115,874. Projecting this reduction in extraneous flow over the entire City suggests a potential savings of approximately \$1.2 million (assuming that the entire City will have a similar response to the program).*

*The City of Port Colborne has invested \$600,000 in the Pilot Study; this investment is expected to be offset in approximately 5 years (end of 2016) by the observed reduction in extraneous flow and resulting treatment cost savings. Over the next 10 years, the Pilot Study will result in a savings of \$1,098,632 yielding a strong Benefit to Cost Ratio of 1.83 and Internal Rate of Return of 16%.*

Based on the above estimated investment; the City has shared the \$600,000 expense equally with the Region of Niagara. By factoring in the estimated annual savings of \$115,874; the City is expecting the project to be paid back within a 3 year period.

The report recommends that the City carry out additional inspections on the repairs that were completed under the Arena PS CSO which will be covered during the City's annual CCTV contract as well as additional flow monitoring to verify a lasting reduction in extraneous flows.

**4) OPTIONS AND FINANCIAL CONSIDERATIONS:**

**a) Do nothing.**

This report is presented as information for Council.

**b) Other Options**

None.

**5) COMPLIANCE WITH STRATEGIC PLAN INITIATIVES**

Not applicable.

**6) ATTACHMENTS**

1. Executive Summary prepared by Associated Engineering.

**7) RECOMMENDATION**

***That the update report on the Arena Pumping Station Catchment Area Extraneous Flow Reduction Program be received for information.***

**8) SIGNATURES**

Prepared on November 14, 2011 by:

Reviewed by:

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Reviewed and Respectfully Submitted:

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