



MEMO

Date: August 22, 2013

To: Nick Benkovich – Director of Water/Wastewater Services

CC: Doug Nadorozny, Tony Ceccutti, Cheryl Beam, John Royer

From: Brian Bigger, Auditor General

**Re: Audit Follow Up – Emergency Water Main Repairs – 2013
Excavation / Trench Box Use**

SUMMARY

Background

- The Auditor General's January 2012 audit report for Emergency Water Main Repairs identified the need to improve adherence to Ontario Health & Safety Act for excavations.
- The audit report also identified opportunities to improve value for money through the purchase and use of trench boxes with hydro excavation equipment for water and waste water system repairs and maintenance. Although management was certainly aware of excavation practices using trench boxes and hydro excavation, the audit analysis and report to Council served as a catalyst in implementing changes and improvements.

Scope

- Observe water / waste water repair excavations using trench boxes in the 2013 construction season.

Objectives

- Determining whether action plans related to acquisition and use of trench boxes have been "Fully or Substantially Implemented".
- Determining whether expected outcomes have occurred.

Methodology

- We interviewed water / waste water construction staff about improvements implemented in the CGS water and waste water main excavation and repair process.
- We selected four construction projects where planned water system valve maintenance occurred in August 2013.
- Observed and documented the excavation process for each maintenance project.
- Reviewed accomplishments with supervisors.

GAGAS Compliance

We conducted our review in accordance with generally accepted government auditing standards. Those standards require that we adequately plan for the audit; properly supervise audit staff; obtain sufficient,

appropriate evidence to provide a reasonable basis for our findings and conclusions; and prepare audit documentation related to the planning, conducting, and reporting for each audit. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our review objectives.

Risks / Opportunities We Evaluated

- City maintenance crews use of trench boxes in completing water system valve repairs.
 - o Labour and equipment used in excavations using trench boxes
 - o Adherence to Health and Safety Act for trench box excavations
 - o Achievement of efficiencies expected from use of trench boxes
 - o Achievement of economies expected from use of trench boxes

Elements Operating Effectively

- Our follow up test procedures indicated that expected value for money improvements related to excavation, for maintenance and repairs of water and waste water systems have been realized.
 - The standard water /waste water excavation repair crew size had been reduced by one.
 - Three sets of trench boxes had been purchased.
 - We were advised that the City's hydro excavation equipment (two units associated with the Water / Waste Water Distribution Division), were in high demand. In addition to both of the City's hydro excavators, we also observed the use of contractor hydro excavation equipment to complete system maintenance using the trench box excavation method.
 - We were advised that the trench boxes were well received by construction crews, and had been used in approximately 80% of excavation repairs completed in the month prior to our review.
 - We observed that due to the introduction of excavation methods using trench boxes and hydro excavation:
 - o crew and equipment repair timelines (efficiency – freeing up productive hours for licensed workers) were significantly reduced,
 - o road cut dimensions with the trench box approach were as little as four percent of the area required with a sloping method (size of asphalt repairs on roads)
 - o with the trench box method, damage to surrounding curbs, sidewalks, medians, retaining walls, lawns, trees etc. was avoided (economy / effectiveness – significantly reducing remediation costs)

Elements Not Operating Effectively

- None observed through our follow up test procedures.

We thank Staff for their cooperation and assistance in the completion of this audit follow up review.

Regards



Brian Bigger, CGA, CRMA