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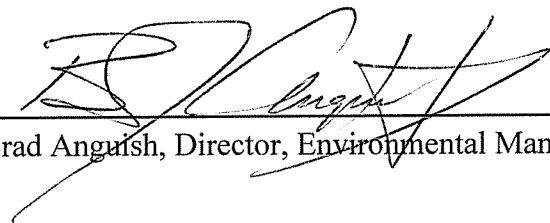
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Halifax Regional Council

July 5, 2005

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY:



Brad Anguish, Director, Environmental Management Services

DATE: June 21, 2005

SUBJECT: **Unforeseen Geological Conditions - Halifax Wastewater Treatment Plant**

INFORMATION REPORT

ORIGIN

This report originates from staff.

BACKGROUND

On June 2, 2005, D&D Water Solutions Inc., ("D&D") formally notified HRM that it encountered an unforeseen geological condition at the site of the Halifax Wastewater Treatment Plant (WTP) which it suggests has caused the Date of Substantial Completion for the Halifax WTP to move from September 6, 2006 to January 30, 2007. The Dates of Substantial Completion for each of the Dartmouth and Herring Cove WTPs are not affected and will remain the same (August 2007 and June 2008, respectively).

Under the WTP Development Agreement (the "Agreement"), if HRM is satisfied that D&D encountered an unforeseen geological condition, the Date of Substantial Completion, Implementation Schedule and Payment Schedule for the Halifax WTP are to be adjusted to reflect the period of time by which D&D was directly delayed or prevented from proceeding with the work on the Halifax WTP solely because of the unforeseen geological condition. Under the Agreement, D&D is not entitled to any adjustment to the Guaranteed Maximum Price ("GMP") for the Halifax WTP and is required to bear all increased costs arising from the delay, including the costs of inflation.

The overall completion of the entire Halifax Harbour Solutions Project ("HHSP") is expected to remain on time (June 2008) despite this occurrence.

DISCUSSION

The wet well at the Halifax WTP provides the link from the north end of the Halifax tunnel to the Halifax WTP itself, and it involves a large excavation, concrete works and installation of large pumps. D&D has reported a delay in the excavation of the wet well.

D&D advised HRM that it had in its possession, prior to contract signing, the following geotechnical documents in relation to bedrock conditions relevant to tunnels which were proposed for the Halifax Sewage Collection System ("SCS"):

1. Report No. 7834 by Jacques Whitford for Metro Engineering/Halifax Harbour Cleanup, dated 1992. That report did not contemplate a WTP at the location of the present Halifax WTP site, and there were no deep boreholes in that report which would provide any information on bedrock conditions at the ultimate Halifax WTP site.
2. Report No. NSD14417 by Jacques Whitford for HRM, dated July 28, 2000. This report covered the geotechnical investigation for potential land-based tunnels as they were anticipated in mid-2000. There are two boreholes of some relevance to the ultimate Halifax WTP site, (boreholes No. H110 and H111), and borehole H111 was closest to the actual wet well location.

In addition, D&D also had in its possession one geotechnical document that covered a shallow depth geotechnical investigation at the ultimate Halifax WTP site. This is report No. 29-4241-008.2 dated October 1999, prepared by ADI for HRM. Eight boreholes were put down at the site, but each borehole extended only approximately 3 m (about 10 ft) into the bedrock, which was the requirement. These boreholes were not intended to provide information for tunneling or for deep excavations to a tunnel. (BH-2 was the closest to the wet well excavation by D&D.) The results in this report do not relate to the actual wet well excavation, which extends to El. -20 m approximately.

From the outset, D&D planned to use rockbolting techniques. This was a reasonable approach to the open excavation and the provision of methods to secure the stability of the rockface as the

excavation advanced. D&D submitted to HRM for information, its initial design for rockbolting and the current actual rockbolting procedure showed that considerably more rockbolts were required. ~~The bedding planes and number of fractures in the bedrock which D&D encountered during~~ excavation were beyond what would have been reasonably contemplated from the available geotechnical information. In addition, the length of the rock anchors was substantially greater, on average, than the projected length.

During construction in the winter, some rock slides actually took place. All of these factors, combined with significant precipitation events (which had a strong impact on the passage of water through the fractures in the bedrock), contributed to the requirement for different techniques and a longer construction period for the Halifax wet well. Safety conditions for workers were a major concern in the actual methods which D&D had to employ.

After reviewing the geotechnical documents and the borehole record for Borehole No. H111 (from report No. 2 above), HHSP staff have concluded that the difficulties encountered by D&D in excavating the wet well at the Halifax WTP were considerably beyond those which would have been reasonably contemplated from a review of the available borehole information.

Further, HHSP staff have concluded that D&D took significant and reasonable measures to mitigate the impact of the problems it encountered at the Halifax wet well by reorganizing the construction plan for the balance of the Halifax WTP construction and equipment installation. These efforts were undertaken to minimize the impact and duration of the delay at the wet well.

BUDGET IMPLICATIONS

The unforeseen geological condition will not affect the GMP for the Halifax WTP. Extra costs incurred as a result of the delay and the additional work required to ensure the safety of the work site and to mitigate schedule disruption are the responsibility of D&D under the Agreement. Similarly, the costs of inflation are D&D's responsibility.

The delay until January 2007 in completing the Halifax WTP has implications for HRM under the Biosolids Processing Facility (BPF) Development Agreement. The BPF contract requires HRM to pay interest to the BPF contractor, SGE Acres Ltd. ("Acres"), on the unpaid balance of the GMP for the BPF (relating to commissioning), at HRM's prime rate of borrowing plus one percent, and to pay Acres its reasonable direct expenditures incurred due to the delay in receiving dewatered biosolids from the Halifax WTP to permit final commissioning of the BPF.

HHSP staff continue to forecast that the overall Halifax Harbour Solutions Project will be completed on time and within budget.

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.

ALTERNATIVES

There is no recommended alternative.

ATTACHMENTS

N/A

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.

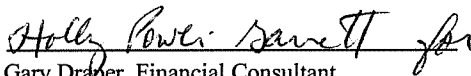
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