

4

MEMBRANE EQUIPMENT SUPPLIER PRESELECTION FOR KESWICK WATER POLLUTION CONTROL PLANT EXPANSION

The Transportation and Works Committee recommends the following:

- 1. the communication from Dave Oliphant, Regional Sales Manager and Yvan Liegey, President, Veolia Water Solutions & Technologies/John Meunier Inc., dated June 10, 2008, be received (see *Attachment 1*);**
- 2. the recommendations contained in the following report, May 28, 2008, from the Commissioner of Environmental Services, be adopted.**

1. RECOMMENDATIONS

It is recommended that:

1. The Region enter into a contract with Zenon Membrane Solutions, part of GE Water and Process Technologies Canada (GE-Zenon), for the supply of ultrafiltration membrane media and related equipment for the Keswick Wastewater Pollution Control Plant (WPCP) phase one expansion as outlined in this report, at an upset limit of \$6,580,000; excluding GST, subject to the receipt of the Certificate of Approval from the Ministry of the Environment.
2. The Regional Chair and the Regional Clerk be authorized to sign the necessary contract with GE-Zenon, subject to review by Legal Services.

2. PURPOSE

The purpose of this report is to obtain Council authorization for award of the equipment Pre-selection contract for the supply of membrane ultrafiltration media and related equipment required for the Phase one expansion of the Keswick Wastewater Pollution Control Plant. Per Section 7.12 of the Purchasing By-law, Council authorization is required for the award of Proposals in excess of \$500,000.

3. BACKGROUND

Class Environmental Assessment for Keswick WPCP Expansion identified need to increase servicing capacity

The Class Environmental Assessment (Class EA) for expansion of the Keswick Water Pollution Control Plant (WPCP) identified a two stage expansion in which capacity would be increased from the current approved average day flow (ADF) of 12,070 m³/d in two phases. Phase one expansion is to an ADF of 18,000 m³/d and Phase two to an ultimate ADF of 24,000 m³/d. The Keswick WPCP provides tertiary level treatment for sanitary wastewater from the community of Keswick, in the Town of Georgina and currently services approximately 23,400 people.

Ministry of the Environment mandates reduction in Total Phosphorus loads and effluent limits for Keswick WPCP

The preferred design alternative for expansion in both Phases one and two, identified by the Class EA, is the utilization of the technology currently used at the WPCP, which comprises an extended aeration process for secondary treatment and shallow bed granular media filtration for tertiary treatment.

Subsequent to completion of the Class EA, detailed discussions took place with the Ministry of Environment (MOE) regarding the acceptable effluent concentration and phosphorus loading limits for the expanded plant. MOE's position was that the Total Phosphorus (TP) load to Lake Simcoe cannot be increased over the current operating load of the existing Keswick WPCP. The current operating conditions of the plant and the comparable MOE requirements for the Phase one expansion are summarized in Table 1.

Table 1
Summary of Current and Required Phase 1 Expansion TP Loading

Condition	Design Flow (m³/d)	Average Effluent TP Concentration (mg/L)	Projected Annual TP Loading at Design Flow (kg)
Current	12,070	0.12	529
Phase 1 Expansion	18,000	0.07	460

On that basis the Region undertook an Assimilative Capacity Study (ACS) to determine the appropriate effluent criteria for the treatment facility. The ACS demonstrated that stringent TP limits were required to expand the plant. These limits are not attainable with the existing tertiary treatment technology. As a result, the Region studied a range of options to meet the stringent effluent phosphorus criteria. Results indicated that the best available technology is membrane ultrafiltration.

Keswick WPCP tests membrane ultrafiltration technology to meet tertiary effluent limits

Two suppliers were invited to run pilot scale membrane units at the Keswick WPCP in the summer of 2007 to determine the relative performance of various membrane

ultrafiltration technologies and configurations. Both systems demonstrated that the technology was feasible and could consistently achieve the low effluent TP concentrations required.

It is worth noting that if Council approves the recommendations of this report, the Keswick WPCP will be the first such facility in Ontario to apply this leading edge tertiary ultrafiltration technology.

4. ANALYSIS AND OPTIONS

Technical and financial evaluation of the proposals indicate that GE-Zenon provides the best value to the Region

Based on the pilot tests results, the Region proceeded to issue an open Request for Proposals (RFP) for preselection of a membrane ultrafiltration system. Pre-selection of this equipment is critical in allowing the Region's Consultants to complete the design and proceed to tender based on the successful proponent's shop drawings.

Proposals were evaluated using the two envelope system with technical and financial information kept in separate envelopes. The technical proposal was evaluated prior to any knowledge of financial information. Technical content was weighted at 70%. The Region's proposal evaluation team reviewed the technical/management proposal based on the following criteria for the proponent's project team experience and project implementation qualifications:

Qualifications and Experience

- Similar North America installation within similar climatic conditions.
- Similar worldwide installation within similar climatic conditions.

Technical Support and Installation

- Understanding of the scope of work and providing sufficient details.
- Technical support during commissioning and start-up including training.
- Design computation for proposed equipment.
- Operating procedures (start-up and shutdown).
- Installation procedures and work required by others.

Performance Requirements

- Process design criteria.
- Process system description and control systems.
- Operating environment.
- Expandability to accept phase two flows.
- Chemical and power usage.

Guarantees and Warranties

- Membrane Warranty (12 months from date of total performance).
- Equipment Warranty (36 months from date of total performance).

Compatibility with Design

- Design specific for the Keswick WPCP wastewater characteristics.

The financial evaluation composed the remaining 30% weight of the total evaluation. Technical and financial results are summarized in Table 2.

Table 2
Equipment Suppliers Proposal Evaluation Summary

Firm	Technical Score (out of 70)	Upset Fee (incl GST)	Financial Score (out of 30)	Total Score (out of 100)
GE-Zenon Water Systems	56.60	\$6,909,000.00	24.30	80.90
John Muenier Inc.	42.80	\$5,596,060.50	30.00	72.80

GE-Zenon's proposal demonstrated a superior level of experience with this technology having completed numerous similar projects throughout North America as well as Europe. GE-Zenon's proposal also provided a more comprehensive and clearer understanding of the detailed technical requirements. This is of critical importance given the stringent effluent compliance limits that will be enforced by the MOE at this WPCP. Finally, GE-Zenon clearly stipulated that the warranty conditions were in full compliance with that outlined in the Region's Request for Proposal, whereas John Muenier's proposal had some ambiguity in relation to warranty's.

GE-Zenon's proposal demonstrated superior experience and capabilities for the supply of the membrane equipment and auxiliary services as detailed in Pre-Selection document RFP P-07-41. GE-Zenon's proposal represents the best overall value to the Region.

5. FINANCIAL IMPLICATIONS

The pre-selected proponent will be carried by the general contractor upon tender of the contract

The value of the membrane equipment totals approximately 25-30% of the total capital cost of phase one expansion, currently estimated at \$26 million. Sufficient funds are

included in the 2008 Budget and Business plan for all anticipated expenditures in 2008 for this Phase one plant expansion.

The pre-selected equipment supplier would be carried by the General Contractor during the project. Prior to award of the general contract the only payments made to GE-Zenon will be \$91,420, plus GST, for preparation of shop drawings required to assist the Region's design consultants in completing the design and tender documents.

6. LOCAL MUNICIPAL IMPACT

The ultrafiltration membrane equipment is critical to the expansion of the Keswick Wastewater Pollution Control Plant as it will not only allow the community of Keswick and other serviced areas to meet growth and development needs but also meet the stringent effluent limits and loading cap being imposed by the MOE due to growing concerns over the health of Lake Simcoe.

7. CONCLUSION

Proposals for this project were evaluated in accordance with the Region's Purchasing By-law. It is recommended that GE-Zenon be engaged to supply membrane ultrafiltration equipment for undertaking tertiary level wastewater treatment for the Phase one expansion of the Keswick WPCP.

For more information on this report, contact Bala Araniyasundaran, extension 5131, Director, Capital Delivery of the Water and Wastewater Branch in the Environmental Services Department.

The Senior Management Group has reviewed this report.

(The attachment referred to in the Committee recommendation is attached to this report.)