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File No. 17182

VIA EMAIL ONLY

February 20, 2020

Gregg Furtney, Director of Operations
Municipality of Brockton
100 Scott Street, Box 68
Walkerton, ON N0G 2V0

**RE: Walkerton Wastewater Treatment Plant (WWTP)
Preselected Equipment Quotations - UV**

Quotations have been received and reviewed for the proposed UV disinfection equipment being preselected for the Walkerton WWTP upgrade. Three quotations were received and will be emailed separately for your records. A summary of the quotations received, and our comments follow.

Manufacturer (Supplier)	Total Price (Incl. HST)	Model No.	No. of UV Banks¹	Total No. of UV Lamps¹
Trojan (H2Flow)	\$271,006.77 ²	UV3000Plus	2	64 ²
Wedeco (Xylem Canada)	\$141,554	C ³ -500D	1	42
Calgon Carbon	\$260,000	TAK 55	2	36

Notes:

1. The specification for the project stated a need to disinfect to 150 *E.coli* units/100 mL in accordance with the plant Environmental Compliance Approval, with a minimum UV dose of 40 mJ/cm². There was no requirement on minimum of maximum banks or lamp count, though multiple banks were requested.
2. Trojan provided an alternate proposal, with 48 lamps and a UV dose of 36 mJ/cm². This is less than the minimum UV dose specified but they indicate it is still capable of treating to the level required. The alternate proposal cost is \$242,858.47.

All supplier quotations indicated conformance to the treatment and design flow rate requirements of the specification. Installation requirements vary among the equipment of the three manufacturers, but the most notable differences are:

- The Trojan equipment may be installed as a retrofit in the existing chlorine contact tanks, saving the need for construction of a new concrete UV structure.
- The Trojan equipment may be installed in outdoor conditions, while the Wedeco and Calgon Carbon equipment each require some degree of shelter.

Although the Wedeco proposal is the lowest purchase cost, we note that the need to install a new concrete channel and modify plant outlet piping accordingly would cost several \$10,000s. An enclosure above the equipment that provides sun/rain protection will have a further cost. Furthermore, Wedeco is proposing only a single UV bank which limits operational flexibility during maintenance, and they did not provide any Canadian installation references (most recent reference for USA installation is 2001). In our opinion the additional costs related to installing the Wedeco unit, relative to the Trojan unit, negate a large proportion of the initial purchase price savings. It is also our opinion that the lack of demonstrated Canadian experience for the Wedeco unit is a potential concern. For these reasons, we do not recommend acceptance of the Wedeco proposal.

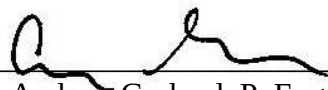
Both Trojan and Calgon have numerous UV installations within the province of Ontario, with demonstrated ability to achieve the performance requirements of this project. The pricing is competitive between the original and alternate Trojan proposals and the Calgon proposal for the equipment only. However, similar to the Wedeco unit, the need for a new concrete channel and need for an equipment enclosure (climate controlled in the case of Calgon) will certainly negate purchase price savings between Calgon and the original Trojan proposal. Therefore, our recommendation is to accept one of the Trojan proposals.

The key differences between the two Trojan alternatives are UV dose and purchase price. While a 40 mJ/cm^2 UV dosage is a relatively common target in water and wastewater applications, there is no regulatory need to achieve this. The critical treatment criteria is to achieve effluent quality in accordance with the Environmental Compliance Approval document for the site. Based on Trojan's proposal to achieve the necessary treatment with a UV dose of 36 mJ/cm^2 , it is our recommendation to accept the alternate proposal of Trojan at a total price (including HST) of \$242,858.47, which is a savings of approximately \$28,000 from their original proposal.

If you have any questions or comments regarding our review of this quotation, please do not hesitate to email or call. Please confirm as soon as possible if you are in agreement with our recommendation and we will proceed to incorporate the selected equipment into a Ministry approval package and construction tender documents.

Yours very truly,

B. M. ROSS AND ASSOCIATES LIMITED

Per  _____
Andrew Garland, P. Eng.

AJG:hv