

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON MAY 14, 2012
FROM:	JOHN BRAAM, P. ENG. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL AND ENGINEERING SERVICES & CITY ENGINEER
SUBJECT:	TENDER 12-46 GREENWAY POLLUTION CONTROL CENTRE DEWATERING PROJECT PROJECT ES2095

RECOMMENDATION

That, on the recommendation of the Acting Executive Director Planning, Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to the award of a contract for the Greenway Pollution Control Centre Dewatering Project:

- (a) the proposal submitted by Baseline Constructors Inc. 550 Conestogo Road, Waterloo, Ontario, N2L 4E3, at its price of \$8,434,000.00 excluding H.S.T., for the installation of Greenway Pollution Control Centre (PCC) Dewatering Project **BE ACCEPTED**; it being noted Baseline Constructors Inc. submitted the lowest bid and meets all the terms, conditions and specifications;
- (b) the financing for this capital project **BE APPROVED** in accordance with the "Sources of Financing Report" attached hereto as Appendix "A", it being noted that \$700,000 of annual operating savings are anticipated from this initiative and will be identified in future wastewater & treatment budgets;
- (c) R.V. Anderson Associates Limited **BE AUTHORIZED** to carry out resident inspection and contract administration for the said project in accordance with the estimate, on file, at an amount of \$520,807.00 including a 10% contingency excluding H.S.T., noting that this firm completed the design, based upon the Fee Guideline for Professional Engineering Services, 2006, recommended by the Ontario Society of Professional Engineers; and in accordance with Section 15.2 (g) of the Procurement of Goods and Services Policy;
- (d) The Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with these projects; and,
- (e) The approvals given herein **BE CONDITIONAL** upon the Corporation entering into a formal contract or issuing a purchase order for the work to be done relating to this project.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
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BNEC Report of 2011-07-25, Item 1, Proceeding with Greenway Biosolids Upgrades While Investigating Alternative Sludge Disposal Options.

BNEC Report of 2011-07-18, Item 30, Appointment of Consulting Engineer - Bio-solids Dewatering Optimization and Upgrade.

BNEC Report of 2011-07-18, Item 34, Supply and Delivery of Sludge Dewatering Centrifuges for the Greenway Pollution Control Plant.

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BACKGROUND

Purpose:

The purpose of this report is to recommend Baseline Constructors Inc. to construct the Greenway PCC Dewatering Project and recommend R.V. Anderson Associates Limited to carry out resident inspection and contract administration.

Context:

A Biosolids Study completed by RV Anderson identified centrifuges as the preferred dewatering technology for the Greenway plant. The study estimated \$700,000 in annual operations savings over the existing belt filter presses (BFPs) and an extension of the existing incinerator capacity for 20-30 years due to a drier dewatered product. A larger incinerator will cost approximately \$30-\$50 million and dewatering capacity upgrades will still be needed if the current practice of belt press dewatering were continued. Requests for proposals were issued for the system design and centrifuge and cake pump supply. This equipment was pre-purchased due to long delivery times, the desire to realize the operational savings as soon as possible, and the need to vacate the existing press room area for the new Southern Ontario Water Consortium's (SOWC) London Wastewater Facility (LWF).

Through a Request for Expressions of Interest, REOI No. 11-46, the City has also invited submissions to examine the generation of biogas from biosolids at the City's W12A landfill site; the dewatering upgrades at Greenway are an integral part of this disposal option also. Preliminary conclusions from an independent consultant "Appendix B" indicate an increase of \$7.7 million in annual amortization and operating costs may be associated with the biogas; this will have a very significant effect on sewer rates.

Staff are also evaluating a preliminary report which identifies the potential to generate 700 kW (\$633,000 annually) of electricity through waste heat recovery from the Greenway incinerator. The cost, feasibility and potential funding of this option are being evaluated further.

Background:

London operates six wastewater treatment plants which remove approximately 17,000 dry tonnes of biosolids annually from the wastewater flows. These solids are dewatered using BFPs at the Greenway plant. Dewatering increases the solids content of the biosolids from an average of 4% to approximately 22% after which it is burned in the plant's fluidized bed incinerator. The incineration process consumes approximately \$600,000/year in natural gas as the low solids content prevents the sludge from burning autogenously (without auxiliary fuel). Increasing the solids content to the 26%-27% range will allow the sludge to burn without the use of supplementary natural gas. Centrifuges were selected as they are a proven technology with sufficient capacity to dewater the required volumes of sludge to the solids content needed. Centrifuges also offer operational savings through reduced staffing levels, elimination of recycled newsprint, reduced odour control costs and reduced maintenance costs. Some of these savings will be partially offset by higher electricity and chemical consumption; the expected net savings is estimated at \$700,000 annually.

Eliminating the use of natural gas will also reduce the Greenhouse Gas (GHG) emissions from the incineration process by 39%. The total GHG CO₂ equivalent will be reduced from 8,703 tonnes CO₂ equivalent to 5,277 tonnes per year, well below the Ministry of Environment (MOE) reporting threshold of 25,000 tonnes per year.

Fluidized bed incinerators are limited in both the amount of solids and moisture they can process. The belt filter presses use recycled newsprint to enhance the dewatering process and

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eliminating newsprint will decrease the solids loading without decreasing the sludge loading; the newsprint/sludge ratio is typically in the area 6% to 10% on a dry weight basis. Eliminating the newsprint will essentially create 6% to 10% more sludge disposal capacity. Increasing the solids content of the sludge from 22% to 26% will also create more capacity within the existing unit through a reduction in the moisture loading. Together these efficiencies will add approximately 19 dry tonnes per day or 20-30 years of incinerator capacity. Without these upgrades the design of a new disposal system would need to begin now and the cost of the new system would be in the range of \$40-\$60 million including both enhanced dewatering and incineration capacity. The upgrades will also eliminate the need to spend \$1.5 million on odour control upgrades and \$0.5-\$1 million on BFP refurbishments which will be needed if this equipment is to remain in service.

Anaerobic digestion of the City's biosolids at the W12 A landfill site is being considered as an option to incineration and this alternative will still require the dewatering upgrades. Preliminary investigations indicate that the Biogas option may not be cost competitive with the proposed dewatering/incineration system. Projected annual costs, including operations and capital amortization, for the dewatering upgrades and anaerobic digestion are \$2.9 million and \$10.6 million respectively. The difference, \$7.7 million, represents an increase of 50% on the City's current wastewater treatment operations budget. A summary comparing the proposed dewatering/incineration process and anaerobic digestion is attached as Appendix "B". An opinion prepared by Stantec Consulting on the probable cost of an anaerobic digestion facility is also contained in this appendix.

Discussion:

Tender

Tenders for the Greenway PCC Dewatering Project were opened on Wednesday, April 11, 2012. All tenders have been checked by R.V. Anderson Associates Limited and the City of London's Wastewater & Treatment Operations Division.

Three contractors submitted tenders as follows:

CONTRACTOR		TENDER PRICE SUBMITTED (Exclusive of H.S.T.)	CORRECTED TENDER PRICE (Exclusive of H.S.T.)
1.	Baseline Constructors Inc.	\$8,434,000.00	-
2.	Hira General Contractors	\$8,600,000.00	-
3.	Finnbilt General Contracting Limited	\$8,873,832.00	\$8,873,831.00

Baseline Constructors Inc. was the lowest bid. All proposals included a contingency allowance of \$600,000.00. All tenders came in above the consulting engineer's estimate of \$7,300,000.00 (excluding H.S.T.) and this is due to the lack of bidders for this project, specified equipment in the tender, and complexity of the total works.

Annual operational savings of \$700,000 are associated with this tender.

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Capital Budget Implications

This project replaces two projects (new incinerator and new dewatering facilities at a total cost of \$36.8 million) that were identified in the 2009 Development Charges Study. Administration has identified a number of opportunities to leverage the use of technology to improve servicing capacity while reducing the overall costs. The Biosolids project is an example of the City pursuing innovative business solutions with the most current technology available.

This project proposes the use centrifuge technology to produce dryer cake and eliminate the use of paper pulp such that additional capacity can be gained from the existing fluidized bed incinerator. Incorporated into the project will be more advanced odour control equipment that will be further enhanced by using a more “self contained” system. Total cost of this project is now projected at \$12.8 million (formerly \$9.0M) of which \$4.4 million is funded by DC revenues and the balance (\$8.4M) is funded by utility rates.

In the July, 2011 DC Monitoring Report, Development Finance staff reported on a significant positive variance in the figures used to calculate the Sanitary Sewer DC rate, and the current capital plan to serve growth. The positive variance was largely attributable to the project described in this report. This report requests a significant increase in the capital budget now required for this work (\$3.8M), and offsets a portion of that positive variance. Despite the increase in capital cost, it remains a significantly less costly capital plan than envisioned in the 2009 DC rate study and is also expected to produce an annual net operating cost saving of \$700k. This is considered to be ample justification of the investment in this technology as opposed to new incinerator and dewatering facilities.

The Source of financing report (attached Appendix 1) reflects the increase to the project budget - \$3.8M – and the additional utility rate funded sources (\$2.5M or approximately 66% of the added budget) as well as the additional DC financed portion (\$1.3M or approximately 34% of the added budget). The original account for financing was to be ES2095. Funding for utility rate supported portion of the additional capital investment will be obtained from transfer of funding from ES5084-11(Replacement Equipment Pollution Control Plant) and ES5265-11(New Equipment Pollution Control Plant).

Resident Inspection and Contract Administration

Staff reviewed a proposal from R.V. Anderson Associates Limited and recommends the appointment of R.V. Anderson to carry out the resident inspection and contract administration. R.V. Anderson completed the design of the biosolids upgrades and are well suited to carry on during construction and commissioning.

Summary:

It is recommended that council endorse the award of this contract given the substantial capital and ongoing operational savings.

It is also recommended that Baseline Constructors Inc. be awarded the Greenway PCC Dewatering Project. It is also recommended that R.V. Anderson Associates Limited be awarded the additional Contract Administration given their previous involvement in the design.

Acknowledgements:

This report was prepared with input from Development Finance and within the Wastewater Treatment Operations Division by Geordie Gauld, Division Manager, Richard Todd, P.Eng., Environmental Services Engineer and Mark Elliott, Senior Engineering Technologist.

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SUBMITTED BY:	RECOMMENDED BY:
GEORDIE GAULD DIVISION MANAGER WASTEWATER & TREATMENT OPERATIONS	JOHN BRAAM, P.ENG. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER

May 9, 2012

/me

Attach: Appendix "A" – Sources of Financing.
Appendix "B" – Greenway Biosolids Upgrades and Biogas Generation Comparison.

c.c. Chris De Lange - Baseline Constructors Inc.
David Evans, P.Eng., R.V. Anderson Associates Limited