

Section I – Items for Authority Action

TO: Chair and Members of the Authority
Meeting #7/18, Friday, September 28, 2018

FROM: Nick Saccone, Senior Director, Restoration and Infrastructure

RE: **HUMBER RIVER FLOODPLAIN MAPPING UPDATE**
Contract #10008446 - Comprehensive Floodplain Mapping Update of the Humber River Watershed within York Region

KEY ISSUE

Award of Contract #10008446 for engineering consulting services to undertake a detailed hydraulic model and floodplain mapping update of the Humber River Watershed within York Region.

RECOMMENDATION

THAT Contract #10008446 for the engineering services required to complete the floodplain mapping update for the Humber River watershed in the Region of York be awarded to Aquafor Beech Ltd. at total cost not to exceed \$95,850, plus HST, it being the highest ranked proposal resulting from the evaluation criteria set out in the Request for Proposals (RFP);

THAT Toronto and Region Conservation Authority (TRCA) staff be authorized to approve additional expenditures to a maximum of \$19,200 (approximately 20% of the project cost) in excess of the contract cost as a contingency allowance if deemed necessary;

THAT should staff be unable to negotiate a mutually acceptable agreement with the above-mentioned proponent, staff be authorized to enter into contract negotiations with the next highest ranked proponent;

AND FURTHER THAT authorized TRCA officials be directed to take such action as is necessary to implement the contract including the signing and execution of documents.

BACKGROUND

TRCA has identified the need to update the hydraulic modelling and floodplain mapping for the Humber River watershed in the Region of York. The project will involve a comprehensive hydraulic model update of the Main Humber and East Humber River subwatersheds within the City of Vaughan, Town of Richmond Hill and Township of King, resulting in approximately 66 updated floodplain map sheets within the study area.

The hydraulic modelling for the Humber River watershed in York Region consists of hydraulic modelling and floodplain mapping updates completed in the early 2000's by various consulting teams using the HEC-RAS computer model. It is TRCA's best practice to update hydraulic models and floodplain mapping every 10-15 years to incorporate land use changes, hydrology modelling updates, new data and the latest modelling technology.

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Since the previous floodplain mapping updates, TRCA has completed a comprehensive hydrology modelling study of the Humber River watershed (2015, Addendum 2018) which established new Regional Storm flow values using the most up to date land use, meteorological and stream flow monitoring information. Due to updated Regional Storm flow estimates, and LiDAR topographic information, a comprehensive hydraulic modelling and floodplain mapping update is required.

The project will involve developing a comprehensive subwatershed scale hydraulic model utilizing the HEC-RAS (Hydrologic Engineering Center River Analysis System) hydraulic model to provide flood elevation estimates (2-350 year and Regional) throughout the Humber River watershed in the Region of York. HEC-RAS is well suited for this assignment as it is the industry standard for hydraulic modeling of river systems, and is used broadly across TRCA and the Province of Ontario. Once completed, the model will be used to update TRCA's floodline mapping, flood forecasting and warning systems and flood emergency response plans.

The project will take approximately 10 months to complete, with an anticipated completion date of July 2019.

RATIONALE

Engineering Services staff completed a public prequalification process through Biddingo (www.biddingo.com) and identified four firms to invite to the formal bidding process based on the following:

- Corporate Profile;
- Project Manager qualifications and experience;
- Relevant project experience;
- Staff qualifications;
- GIS expertise; and
- Experience in hydraulic modelling and mapping.

Request for Proposal #10008446 was sent to the following four engineering firms on July 16, 2018:

- Aquafor Beech Ltd.;
- RJ Burnside & Associates Ltd.;
- Cole Engineering; and
- Wood Canada Ltd.

Firms were required to provide TRCA with formal proposals on August 7, 2018. As per TRCA's standard procurement process an opening committee consisting of representatives from Engineering Services and Corporate Services opened the fee proposals with the following fee results:

Consulting Firms	Fees (Plus HST)
Aquafor Beech Ltd.	\$95,850
Cole Engineering	\$114,680
R.J. Burnside & Associates	\$156,723
Wood Canada Ltd.	\$206,934

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Members of the selection committee, consisting of Engineering Services staff (Nick Lorrain, Rob Chan and Ying Qiao), reviewed proposals based on a weighted scoring system consisting of the following:

Evaluation Criteria	Weighting (%)
Conformance with the terms of the RFP	5%
Similar Projects; scope and magnitude	20%
Understanding of scope of work, approach and methodology	35%
Expertise and availability of project team	15%
Cost	25%

The averaged results from the staff evaluation of the proposals are as follows:

Consulting Firms	Ranking (out of 100%)
Aquafor Beech Ltd.	90%
Cole Engineering	87%
Wood Canada Ltd.	80%
R.J. Burnside & Associates	75%

Based on the evaluation of the bids, it was concluded that the combined technical and fee proposal valued at \$95,850 submitted by Aquafor Beech Ltd. offered the best service for value among the engineering firms whose technical capacity matched the project needs.

Aquafor Beech Ltd. has extensive knowledge of hydraulic modelling, specifically modelling for floodplain mapping purposes and has completed a number of projects of similar size and scale. The fee schedule provided in Aquafor Beech's proposal was deemed reasonable and consistent with past fee estimates provided for similar types of projects. Staff is confident that Aquafor Beech Ltd. will provide TRCA with the desired product within the specified schedule and budget and therefore recommend that Contract #10008446 be awarded to Aquafor Beech Ltd. for the base cost of \$95,850, plus HST, as they are able to provide the valuable technical experience required and have a clear understanding of the scope of work as defined in the RFP.

FINANCIAL DETAILS

Partial funding for this assignment has been secured through the Government of Canada's National Disaster Mitigation Program (NDMP). The NDMP provides 50% matching funding towards initiatives which assess and remediate risks associated with natural disasters like flooding. The remaining 50% funding is available through York Region's capital contributions towards TRCA's Floodplain Mapping and Flood Protection Remedial Studies programs.

Funds required to complete this project are available in account 107-56 National Disaster Mitigation Program (NDMP) Floodplain Mapping Updates.

Funding Source	Account	Budget (Plus HST)	Contingency (Plus HST)
Region of York/NDMP	107-56	\$95,850	\$19,200

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A maximum upset limit of \$95,850 plus 20% contingency, plus HST has been set for this project.

DETAILS OF WORK TO BE DONE

TRCA is looking to complete a comprehensive floodplain mapping update for the Humber River watershed within York Region. The project will consist of the development of a one dimensional hydraulic model using the HEC-RAS hydraulic model (Version 5.0.5) of the study area, as well as the preparation of approximately 66 new floodplain map sheets. The base mapping will be derived from LiDAR topographic information, while the floodlines will be based on flow data from the 2018 Humber Hydrology Addendum.

As per the schedule identified in the request for proposals, and the proposal provided by Aquafor Beech, the general scope of work and associated timelines are as follows subject to Board Authority approval:

Work Plan	Start Date	End Date
Start Up Meeting	Week of October 5, 2018	
Background Review	October 4, 2018	November 11, 2018
Model Development	October 28, 2018	April 28, 2019
Floodline Generation	April 7, 2019	June 23, 2019
Project Completion		June 30, 2019

The timelines identified above include provisions for TRCA staff review of the model, floodlines, and associated reports, as well as consultation and meetings with TRCA municipal partners.

Report prepared by: Nick Lorrain, extension 5278
Emails: nlorrain@trca.on.ca
For Information contact: Sameer Dhalla, extension 5350
Emails: sdhalla@trca.on.ca
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