

Grand River Conservation Authority

Report number: GM-09-24-76

Date: September 27, 2024

To: Members of the Grand River Conservation Authority

Subject: Speed River Hydrologic Model Development Contract Award – Matrix Solutions Inc.

Recommendation:

THAT the Grand River Conservation Authority accept the bid from Matrix Solutions Inc. to carry out the Speed River Hydrologic Model Development at a cost of \$109,664 (excluding HST);

AND THAT a contingency of 10% be included in the overall project budget for a total project budget of \$120,630 (excluding HST).

Summary:

The GRCA plans to update the Hydrologic Model for the Speed River subwatershed (the Project). This Project involves development of a hydrologic model using the latest version of the US Army Corps of Engineers HEC-HMS software.

Staff developed a Request for Proposals (RFP) for the Project and posted on the Biddingo government contract portal. A total of 25 firms picked up the bid documents, with 9 complete proposals received.

The proposals were evaluated using weighted criteria including: Company and Project Team Qualifications and Relevant Experience, Project Understanding, Approach and methods, Schedule and Work Plan, and Cost and Value.

The proposal by Matrix Solutions Inc. at a cost \$109,664 is recommended to carry out this project.

Report:

Following the 2023 update of the hydraulic model for the Speed River, GRCA identified a need to update the 1988 hydrology study for the Speed River. The 1988 study carried out by Ecologistics Ltd. was comprehensive and innovative for the time as it was the first application of the Guelph All-Weather Sequential-Events Runoff (GAWSER) Model for estimating regional flood flows for the purpose of floodplain mapping.

Changes in land use and land cover over more than 35 years, rapid expansion of urban areas in Guelph and Cambridge, advances in hydrologic modelling tools and improved GIS datasets for model input are some of the factors driving the need to update the hydrology for the Speed River.

The Project involves building an updated hydrologic model using the most current version of the US Army Corps of Engineers' HEC-HMS software. This software is available free of charge, is being continuously improved and is very widely used in the US, Canada and around the world. The model will incorporate new or updated GIS layers including topography based on LiDAR (OMAFRA, 2018), updated land cover/land use information and data from the National Soils Database, Detailed Soil Survey.

The primary components of the Study include:

- Review of background information,

- Develop a hydrologic model including processing available GIS data to parameterize the model,
- Model calibration and validation using at least 6 storm events for calibration and another 6 storm events for validation,
- Run the model to determine peak flows at several locations of interest under Regulatory Storm conditions as well as 2- to 100-year frequency storms. The impact of Guelph Dam operations will be taken into account for points of interest downstream of the dam.
- Documentation and final report preparation

Staff developed a Request for Proposals (RFP) for the Project and posted on the Bidding government contract portal. A total of 25 firms picked up the bid documents, with 9 proposals received.

A committee consisting of the Deputy CAO, Manager of Flood Operations, the Senior Engineer – Flood Management (the Project Manager) participated in the proposal evaluations. The proposals were evaluated using weighted criteria including: Company and Project Team Qualifications and Relevant Experience, Project Understanding, Approach and methods, Schedule and Work Plan, and Cost and Value.

The ranked order of the evaluation and proposal costs (excl. HST) are as follows:

1. Matrix Solutions Inc
2. Stantec Consulting Ltd.
3. WSP Canada Inc.
4. Innovative Defensive Options Inc.
5. AECOM Canada Ltd.
6. Water's Edge Environmental Solutions Team
7. KGS Group
8. MPE A Division of Englobe Corp.
9. BluMetric Environmental Inc

There was significant variability in the estimated level of effort to conduct this project identified by consultants in their proposals, which resulted in significant differences in the proposal costs. Through the RFP evaluation process, based on GRCA staff professional experience and technical expertise, the consultants' direct previous experience with projects of similar scale and scope and complexity had a large impact in the overall scoring and subsequent ranking.

Matrix's proposal received the highest ranking in the evaluation and is recommended as the preferred consultant to carry out the Project. Strengths of the proposal and consultant include:

- Relevant recent similar projects carried out with similar levels of scope and complexity including recent hydrology study for Long Point Region,
- Project team with considerable local and national experience on project aspects and sufficient depth to improve efficiencies and ability to bring in other experienced staff, if any potential issues arise, e.g. proposed project team changes due to staff mobility,
- Strong, well-considered proposal which included excellent detail and insight into project approach and methodology, and understanding of project scope,
- Strong project management capability demonstrated on past GRCA and other CA projects,
- Appropriate estimation of the effort required to conduct the project, estimate of effort was consistent with expected level of effort estimated by staff,
- Costs met anticipated project budget and includes managed balance of senior staff,
- Demonstrated ability to work with GRCA staff.

The selection made by the committee represents its opinion at the current time for the recommended consultant providing the best overall value and approach to the project and ability to carry out the work.

The overall budget for the project is recommended to include consultant fees plus 10% contingency of \$10,966 to be applied for potential additional work such as meetings, additional analysis, or other incidentals that may be incurred. The overall recommended project budget is \$120,630 (excluding HST).

Financial Implications:

This project is included in the 2024 budget as part of \$250,000 Flood Forecasting and Warning special project budget (financial forecast report P&S #2) and is being funded by land sale proceeds reserve.

Other Department Considerations:

Corporate Services staff were consulted

Prepared by:

Mark Anderson, P. Eng.
Senior Engineer- Flood Management

Approved by:

Vahid Taleban, M.Sc., P.Eng.
Manager of Flood Operations