

ITEM	7
MANAGER'S REPORT NO.	25
COUNCIL MEETING	90/04/02

RE: COMPREHENSIVE DRAINAGE PLAN FOR WESTERN SECTOR OF BIG BEND AREA

MUNICIPAL MANAGER'S RECOMMENDATION:

1. THAT the recommendation of the Director Engineering be adopted.

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TO: MUNICIPAL MANAGER 1990 MARCH 23

FROM: DIRECTOR ENGINEERING

SUBJECT: COMPREHENSIVE DRAINAGE PLAN FOR WESTERN SECTOR OF BIG BEND AREA

PURPOSE: To seek Council approval to award an engineering agreement for a comprehensive drainage plan for the western sector of the Big Bend Area.

RECOMMENDATION:

1. THAT Kerr Wood Leidal Associates Ltd. be retained to provide a comprehensive drainage plan for the Big Bend Area west of Byrne Creek, as further outlined in this report.

REPORT

1.0 BACKGROUND

The agenda for the Council meeting of 1990 January 29 contained a report from the Director Engineering regarding preparation of a comprehensive drainage plan for the western sector of the Big Bend Area. The report was tabled, however at the meeting of 1990 February 12 Council adopted the original recommendation, namely:

"THAT the Director Engineering initiate the preparation of a comprehensive drainage plan for the Big Bend Area west of Byrne Road."

Council had amended the original recommendation to include the following:

"THAT any new permits for removal of peat or land filling in the western sector of the Big Bend Area be held in abeyance pending preparation of the comprehensive drainage plan for this area."

Council at its meeting of 1990 March 12 adopted the amended motion.

The following report outlines the progress taken to date and seeks Council's approval to enter into an engineering agreement to proceed with the work.

2.0 SCOPE OF WORK

In the previous report, staff advised that given the objectives of the Big Bend Development Plan which provide for balanced development by designating lands for industrial, agricultural, institutional and public open space uses, it is considered necessary to retain a consultant to develop a master drainage plan for the area west of Byrne Road. In addition to providing a strategy for upgrading and/or replacing drainage facilities, this plan would provide a framework which will assist staff in reviewing proposals to implement the varied objectives embodied in the Big Bend Development Plan.

It is therefore necessary that a plan be prepared utilizing a multi-faceted approach, the elements of which would include:

- .Development of an overall plan for surface drainage, storm-water control and watercourse upgrading.
- .Development of environmentally based guidelines for land-filling and groundwater protection, with the latter covering both watertable levels and water quality.
- .Assessment of whether (and the extent to which) landfilling activities, including Marine Way construction, have had or could have an impact on the agricultural resource.
- .Assessment of whether (and the extent to which) landfilling activities have had or could have an impact on existing trees and vegetation in the foreshore park.
- .Identification of opportunities for fish habitat preservation and/or enhancement.

3.0 CONSULTANT REQUIREMENTS

The multi-faceted approach of the work program necessitates interdisciplinary consulting expertise. The areas of specialized expertise required for this project include water resource planning, hydrogeology, agricultural drainage management, fish habitat enhancement, and landscape architecture. The study team must be environmentally sensitive in considering the manner in which land development presently takes place, and in providing the Corporation with direction for implementing integrated resource management in the Big Bend Area.

In order to effectively coordinate the work program, staff have proceeded on the concept of retaining a prime consultant who in turn would assemble a team of specialized subconsultants. Staff approached the engineering consulting firm of Kerr Wood Leidal Associates Ltd. (KWL) to fulfill the role of prime consultant. KWL is a firm of recognized authority in the fields of water resource and wastewater management. The Municipality has drawn heavily in the past on the services of KWL to assist it in drainage projects within the Big Bend. Some of the more recent projects undertaken by KWL on behalf of the Municipality include:

- .Report on Big Bend Drainage (Eastern Sector), March 1986
- .Report on Drainage Outlet for the Byrne Creek Relocation Project, March 1986
- .Pre-Design Report on Meadow Drainage System, May 1987
- .Pre-Design Report on Marine Drive Culvert Upgrading Program, September 1988
- .Overview Assessment of Impact of Pumping on Agricultural Drainage, June 1989
- .Design Report for Meadow Avenue Pump Station, July 1989
- .Report on Dyking and Flood Protection for Big Bend Area, February 1990

Several of the above projects have direct relevance to the subject work program.

KWL have assembled a study team which complements their own in-house expertise. Members of the team include:

- Kerr Wood Leidal Associates Ltd.
 - .Water Resource Planning & Engineering
 - .Fisheries Engineering

- Piteau Associates Engineering
 - .Hydrogeological Engineering
 - .Groundwater Chemistry

- Dr. S. Cheng, U.B.C.
 - .Bio-Resource Engineering

- H.L. Haggard, Landscape Architect
 - .Tree/Vegetation Management

4.0 WORK PROGRAM

The work program as proposed by KWL is comprised of five parts:

- .Study Management
- .Master Drainage Planning
- .Hydrogeological Investigations
- .Environmental Impact Assessments
- .Summary Report

4.1 Study Management

Study Management refers to tasks directly related to team assembly and coordination, progress meetings, and liaison with Municipal staff. This also includes preparation and submission of monthly status reports.

4.2 Master Drainage Planning

The major tasks to develop a Master Drainage Plan complete with implementation strategy include:

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- .Preliminary reconnaissance survey
- .Detailed field investigation
- .Comprehensive drainage plan of existing patterns and facilities
- .Hydrologic analysis
- .Hydraulic analysis
- .Master drainage plan of alternatives and conclusions
- .Drainage report with implementation strategies

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4.3 Hydrogeological Investigations

This component would involve an overview assessment to identify historical watertable trends and groundwater patterns, a baseline data collection program and subsequent analysis including modelling of the groundwater regime. A long term monitoring program by Municipal staff is also recommended.

4.4 Environmental Impact Assessments

The environmental assessments for the agricultural and foreshore park sub-areas both involve a two phase approach:

- .Reconnaissance survey and information assembly on existing conditions.
- .Utilize the findings from the hydrogeological study and assess the possible impacts resulting from water level changes (if any), and then identify mitigation measures (if needed).

4.5 Summary Report

The Summary Report would condense information and data contained in the four individual reports (ie. on surface drainage, groundwater, agriculture, and parks) in order to provide the Municipality with a concise, comprehensive reference document.

The established time frame for completion of the work plan is four months.

5.0 FINANCING

The proposal submitted by KWL is presented in accordance with the Outline of Services and Scale of Recommended Fees for General Engineering Projects as published by the Association of Professional Engineers of B.C. Payment would be on a per diem basis in accordance with the Fee Schedule for Engineering Services submitted with the proposal. The rates contained within the Fee Schedule are consistent with other projects being undertaken by KWL on behalf of the Municipality and are competitive with the fee structures within engineering agreements of other consultants.

Due to the large number of variables and the investigative nature of the project, it is not realistic to submit a fixed fee for the project. KWL have anticipated that the study could range up to \$100,000 depending on the required level of

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investigation for each component study. The major factor affecting the range is a reflection of a "limited" versus "intensive" field investigation component (ie. depends mainly on the number of observation wells developed, and the number of water samples analyzed). The findings of the overview assessment under the hydrogeological assessment will determine the level of investigative effort required for the baseline data collection program.

For budget purposes it is recommended that the project budget be established with an upper limit of \$100,000. Funding for this project is provided for in the 1990 Provisional Operating Budget as a contribution to the Capital Budget, Storm Extensions.

6.0 CONCLUSIONS

Council has expressed its desire that future development in the Big Bend Area be undertaken in a manner which will ensure that potential environmental impacts can be first identified and then mitigated. A team of consultants led by the engineering firm of Kerr Wood Leidal Associates Ltd. has been brought together to address the issues of master drainage planning. Staff are of the opinion that this team have demonstrated an understanding of the project and a recognition of the environmentally sensitive aspects of the project. It is therefore recommended that the Municipality enter into an engineering agreement with KWL to develop a comprehensive drainage plan for the western sector of the Big Bend Area at a budget estimate of \$100,000.


DIRECTOR ENGINEERING

WCS:je

cc: Director Planning & Building Inspection
Director Finance

