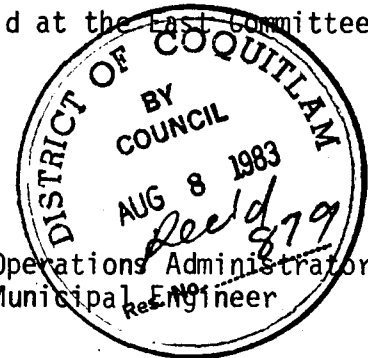


DRAINAGE COMMITTEE

Minutes of Meeting 83-2 of the DRAINAGE COMMITTEE held at the ~~East~~ Committee Room, Municipal Hall on Thursday, July 14, 1983.



Attending:

Committee

- Ald. G. Levi, Chairman
- Ald. L. Sekora
- Ald. L. Garrison

Staff

- J. Hockey, Operations Administrator
- N. Nyberg, Municipal Engineer

The Chairman called the Committee to order at 1215h to consider the agenda items.

504-1 TOWN CENTRE DRAINAGE PROJECT

The Committee reviewed Engineering status report 83-2 and discussed possible implications of recent provincial cutback of financial programs on potential funding for a servicing agreement via section 286 of the Municipal Act. The Municipal Engineer stated that negotiations were intended to commence in September, following presentation of the pre-design plan to the Ministry of Lands, Parks and Housing.

Discussion centered on the slippage of the program target dates from September 2, 1983 to November 30, 1983. The first factor was the extensive study undertaken by the Ministry of Lands, Parks and Housing on drainage of the Westwood Plateau. With results expected on July 30 this study would duplicate much of the data that was anticipated to be developed by the District's consultants. A second effect will be to reduce the consulting budget from the \$75,000 approved by Council to a new upset figure of \$30,000. The third factor was the heavy involvement of technical staff in supporting the current construction program approved by Council in May 1983. The same personnel carry out medium-term planning and short-term implementation, and the volume and complexity of the work on the Town Centre system cannot be sustained during the contracting season.

The Chairman enquired whether additional staff would assist in shortening target dates. The Municipal Engineer reported that the recruiting and training of new technical staff would consume from three to six months, and would have little effect on the current program.

504-2 DITCH ELIMINATION PROGRAM

Status report 83-2 for the ditch elimination program was reviewed by the committee. A slippage of approximately six weeks for start of work was anticipated owing to a more extensive pre-design requirement than was foreseen, and the aforementioned staff disposition for the current 1983 construction program. However, the completion and

504-2 continued

acceptance of the phase one project was expected to be about the same time as was originally envisaged owing to the possibility of weather interruption during early stages of the project.

The accumulation of interest proceeds in the Drainage Trust Fund is proceeding at a lesser rate than was foreseen one year ago.

The Committee requested the Department to 'fast-track' the project to attempt a start-of-work in mid-November (approximately twelve weeks). The Municipal Engineer outlined the possible methods of compressing the project length by:

- waiving the usual request for the proposal and evaluation process in favour of a short list and expedited appointment by the Municipal Engineer;
- shortening the tender period from three weeks to two weeks;
- turning over more of the pre-design and development work to the consultant than is normally the case.

The Municipal Engineer advised the Committee that waiving the usual procedure and expanding the consultant's assignment would cost additional funds over previous estimates. Shortening the tender period might reduce the number of potential bidders for the job. The Committee recognized these factors, and requested the Engineer to proceed on the expedited basis.

Resolution

That Council authorize the Municipal Engineer to 'fast-track' project 532343-005 Ranch Park Ditch Elimination by expediting the consultant selection procedures and increasing the consultant's assignment to include pre-design and project development phases; and

that the engineering budget for the project (Account 532343-006) be increased from \$25,000 to \$40,000.

Moved by Ald. Sekora, seconded by Ald. Garrison.

CARRIED

504-3 OR CREEK DIVERSION ISSUE

No report was available at the time of meeting. The Chairman advised that the projected evaluation of the Fisheries potential of Or Creek was not to be available before September and asked that this issue be brought forward to the next meeting.

*APP'D Pa
Co. Res # 880/83*

504-4 DRIVEWAY CULVERT APPLICATION PROCEDURE

The Driveway Culvert Application procedure prepared by the Engineering Department was reviewed by the Committee.

504-5 WESTWOOD DRAINAGE STUDY: MINISTRY OF LANDS, PARKS AND HOUSING

The terms of reference for this study were attached to the agenda for information.

The meeting was adjourned at 1300h.

Chairman

Neil Myberg

Secretary

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: Neil Nyberg DEPARTMENT: Engineering DATE: 1983 07 08
FROM: Tony Edwards DEPARTMENT: Engineering YOUR FILE:
SUBJECT: TOWN CENTRE DRAINAGE PROJECT: STATUS REPORT 83-2 OUR FILE:

1.00 BACKGROUND

- 1.01 A section 286 agreement under the Ministry of Lands, Parks and Housing Act provides a formula to impose all or part of the cost of works and services on the owners of real property in an area specified by Council, and for a loan from the Province to meet these costs.
- 1.02 On 1982 01 20 a consultation with Surrey officials was held to determine the results of their experience with development agreements under Section 286. On 1982 02 17, we met with representatives of the Ministry of Lands, Parks and Housing.
- 1.03 This memorandum sets out some objectives and timetables for negotiating a 286 agreement to finance the Town Centre drainage system.

2.00 OBJECTIVES

- 2.01 A. To develop, via Section 286 agreement, an avenue for different owners within the Town Centre area to provide a comprehensive municipal trunk drainage system..
- B. To demonstrate to the Ministry of Lands, Parks and Housing, via technical brief:
 - that the proposed works are technically feasible;
 - that the full costs of the program are recoverable at interest rates up to and including 20 percent;
 - that there is a public advisory sub-program to advise owners of the plan; and
 - that there will be strong and consistent management of the program throughout the duration.
- C. To explain to the affected land owners why the proposed 286 agreement is a good value for money, via public information program.
- D. To include all eligible costs under the umbrella of the 286 agreement, including those for the technical brief and public information program.

3.00 TIMETABLE BENCH MARK TASKS

3.01 FORMER

Pre-design Concept Plan Complete	March 21, 1983
Presentation of Pre-design to MLPH	March 31, 1983
Presentation of Pre-design to Environmental Agencies	March 31, 1983
Financial Forecasts: Construction	June 15, 1983
Public Information Program Design Complete	June 15, 1983
Draft of 286 Agreement to Manager	June 24, 1983
Penultimate draft of 286 Agreement to Committee	August 25, 1983
Final draft of 286 Agreement to Council	August 30, 1983
Draft Agreement to MLPH	September 2, 1983.

3.02 REVISED

Pre-design Concept Complete Plan Complete (including check by consultant)	August 12, 1983
Presentation of Pre-design to Environmental Agencies	August 19, 1983
Presentation of Pre-design to MLPH	August 19, 1983
Financial Forecast: Construction	August 12, 1983
Public Information Program Design complete	August 12, 1983
Draft of 286 Agreement to Manager	September 16, 1983
Penultimate draft of 286 Agreement to Committee	November 18, 1983
Final draft of 286 Agreement to Council	November 28, 1983
Draft Agreement to MLPH	November 30, 1983

4.00 REASONS FOR VARIATION FROM FORMER TIMETABLE

4.01 Since the last drainage committee meeting, the MLPH have proceeded with their analysis of the Westwood Plateau drainage requirements using Ker Priestman Limited. Since much of the work that KPL is doing could be useful in the Town Centre Drainage Analysis, a

Neil Nyberg

1983 07 08

4.01 cont'd

saving in consultant fees will result. The amount projected in the budget for 1983 was \$75,000. It now can be reduced to approximately \$30,000 (high side). KPL has indicated that their first draft analysis will be complete by mid-July which would coincide with our first draft completion. The revised schedule reflects this timing.



Assistant Municipal Engineer

AJE/mw

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: N. W. Nyberg DEPARTMENT: Engineering DATE: 1983 07 14
 FROM: A. J. Edwards DEPARTMENT: Engineering YOUR FILE:
 SUBJECT: DITCH ELIMINATION PROJECT - STATUS REPORT 83-3 OUR FILE: 05 02 83/05

1.00 BACKGROUND

- 1.01 In January, 1983, final adoption was given to Bylaw No. 1294, 1982, the District of Coquitlam Municipal Lands Reserve Fund Bylaw, which authorized transfer of Four Million Dollars to a special reserve fund, the proceeds from which will finance the progressive enclosure of open ditches in the District of Coquitlam.
- 1.02 The scope of construction for the program depends on the interest yield from the account. The proposed 1983 Capital Budget contains \$450,000 of funds, based on a 12 percent average return over twelve full months. Expenditures for engineering could commence in spring, with work to start in fall or winter.
- 1.03 This memorandum outlines current tasks, benchmarks and progress.

2.00 STATUS REPORT

- 2.01 Date of report: 1983 07 14.
- 2.02 Preplan

<u>Benchmark</u>	<u>Coordinator</u>	<u>Target Dates</u>	<u>Revised Target Dates</u>
<u>Graphics</u>			
A. Base Plan for Ranch Park	JA	1983 05 15	1983 08 15
B. Topographic Overlay	JA	1983 06 01	1983 08 15
C. Profile Date	JA/HA	1983 06 01	1983 10 07
D. Preliminary Survey			1983 08 01
E. Graphical Concept for minor storm (1:10)	JM	1983 07 01	1983 09 01
F. Graphical Concept for major storm (1:100)	JM	1983 07 01	1983 09 01
G. Graphical Concept: development sequence	JM	1983 07 01	1983 09 08
H. Report: Predesign Concept Plan	JM	1983 08 01	1983 10 15
J. Presentation of Predesign to Environmental Agencies	DAK	1983 08 15	1983 10 30
K. Presentation of Predesign: Drainage Committee	DAK	1983 08 15	1983 10 30

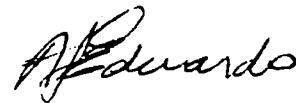
<u>Benchmark</u>	<u>Coordinator</u>	<u>Target Dates</u>	<u>Revised Target Dates</u>
<u>Engineering Design</u>			
A. Complete Request for Proposal		1983 08 30	1983 11 07
B. Consultant Evaluation and Selection		1983 09 20	1983 11 30
C. Review Contract Documents		1983 10 20	1983 12 30
D. Tender and Bid Evaluation: Phase One		1983 11 15	1984 01 22
E. Contract Award: Phase One		1983 12 01	1984 02 01
<u>Construction</u>			
A. Start of Work: Phase One	SR	1984 01 02	1984 02 21
B. Construction Acceptance: Phase One	SR	1984 06 01	1984 06 01

3.00 REASONS FOR VARIATIONS

3.01 The Ditch Elimination Program has been delayed to clear time for the comprehensive analysis of the Town Centre Drainage system. The acceptance of Phase I construction, however, is expected to occur at approximately the same time as originally envisaged (June 1, 1984).

4.00 PROGRESS TO DATE

- 4.01 To date we have investigated the Ranch Park area to select various alternative drainage areas for Council's consideration.
- 4.02 Our preliminary findings indicate that the south Ranch Park area extending approximately from Norman Avenue to the southerly boundary of the Ranch Park development area and from Sharpe Street to Starlight Way (see attached sketch) would be a reasonable starting area since an existing outfall drain is in place and our initial estimates reveal that the cost of filling the ditches in this area would approach the budgeted amount of \$450,000.

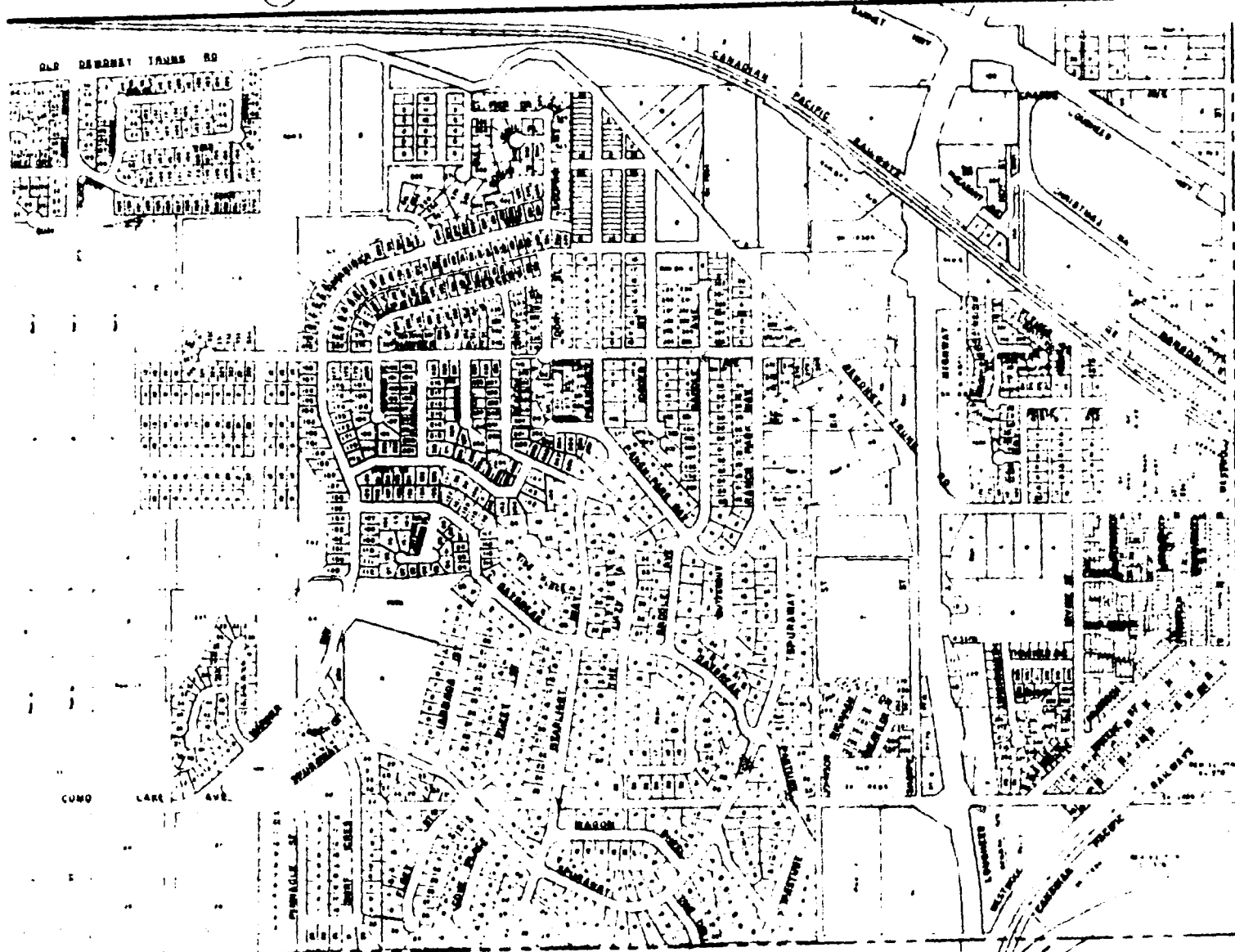


A. J. Edwards, P. Eng.
Assistant Municipal Engineer



DAK: 1s

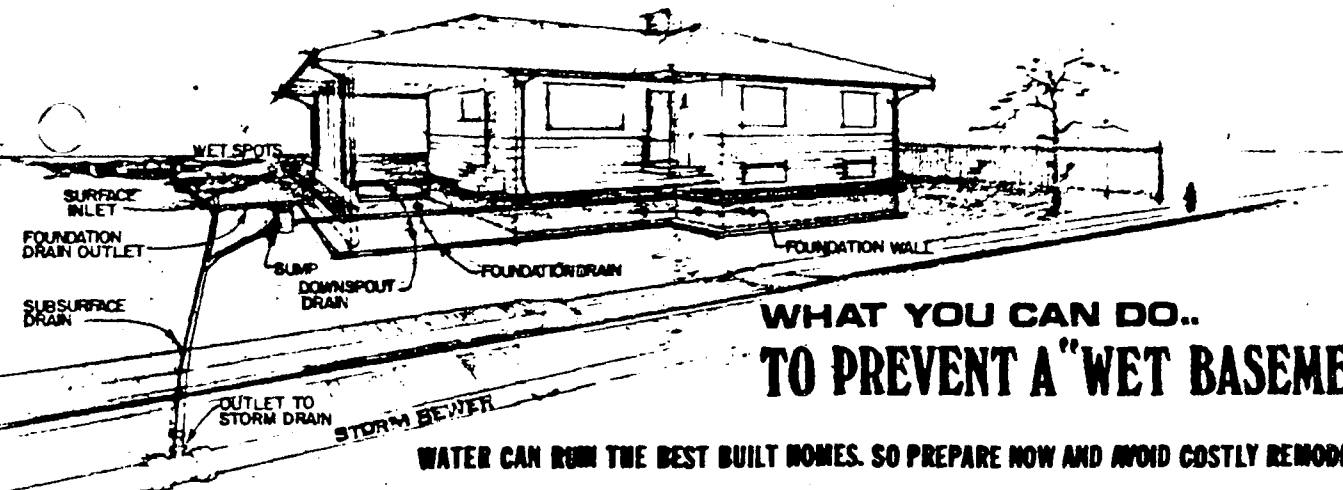
DITCH ELIMINATION PROGRAM - 1903



EXISTING STORM SEWERS

PROPOSED STORM SEWERS

- SUBJECT TO REVISION -



WHAT YOU CAN DO.. TO PREVENT A "WET BASEMENT"

WATER CAN RUIN THE BEST BUILT HOMES. SO PREPARE NOW AND AVOID COSTLY REMODELING.

-You may have a drainage problem around your home if the basement is wet, the yard is flooded periodically, water ponds on your lawn for long periods after a rain, or trees, shrubs and other plants grow poorly. Wetness is generally caused by flooding, springs and seeps, seasonal high water tables, ponding of surface water, or slow soil permeability.

FLOODING

-In upland areas, flooding can occur if your house is built in the path of a natural drainageway or in a pothole or site that is lower than the surrounding area. A drainageway or low area may appear safe in dry seasons but carry runoff water in wet seasons. In housing developments where the landscape has been greatly modified natural drainageways are often blocked or altered. Runoff from areas as small as 1/2 hectare can cause flooding.

SPRINGS AND SEEPS

On many sites, natural springs and seeps occur because of existing soil, rock and landscape characteristics. Water may flow throughout the year or only seasonally during periods of heavy rainfall.

Water may flow into or around your house if it is constructed over or near a spring or seep.

Springs and seeps also affect lawns and onsite septic fields. You can install subsurface drains to collect the ground water and divert it from such areas.

Subsurface drains are commonly made of clay and concrete tile, perforated plastic, metal, asbestos-cement, or bituminous wood fiber. Be sure to check local building codes for approved materials and other drainage regulations.

SEASONAL HIGH WATER TABLE

-A water table can be defined as the upper surface of ground water or the level below which the soil is saturated with water. This level may fluctuate by several feet throughout the year depending on soil, landscape, and weather conditions.

In selecting a new homesite, the level of the seasonal high water table is a very important consideration. On some sites the seasonal high water table may be at or near the ground surface for long periods.

If you are building a new house, you can use a sump pump with a system of subsurface drains to lower the water table. You need a good outlet for the discharge flow from the pump. A safer method is to limit excavation and build the house on a reinforced concrete slab above the seasonal high water table.

If your house is already built, you can install drains around the outside wall or under the basement floor. Lowering the water table under the basement floor should be done with caution. On some soils, especially slow-draining silts and clays, unequal settlement may crack the walls.

PONDING OF SURFACE WATER

-If surface water ponds on your lawn or driveway, you can install small diversions or ditches to channel off the water. In developed residential areas, these structures usually are installed near property lines in back of or alongside houses.

For low flows of surface water, you can install a surface inlet leading to a subsurface drain. The drain outlet can empty into street gutters or storm sewers if permitted by local building codes.

You should grade your yard so that surface water drains away from the house. A minimum grade of 1 foot in 100 is generally adequate. When filling in low areas during grading, use the most permeable soil available. Save the topsoil and spread it over the newly filled and graded areas to help establish vegetation.

SLOW SOIL PERMEABILITY

-If the soil at your homesite has a dense layer, especially a layer of clay, flow of water through the soil may be restricted and water may pond on your lawn.

If the dense layer is near the surface, you can dig a small trench through the layer and fill it with sand, gravel, pinebark, sawdust, or other coarse material to improve permeability in a small low-lying wet spot.

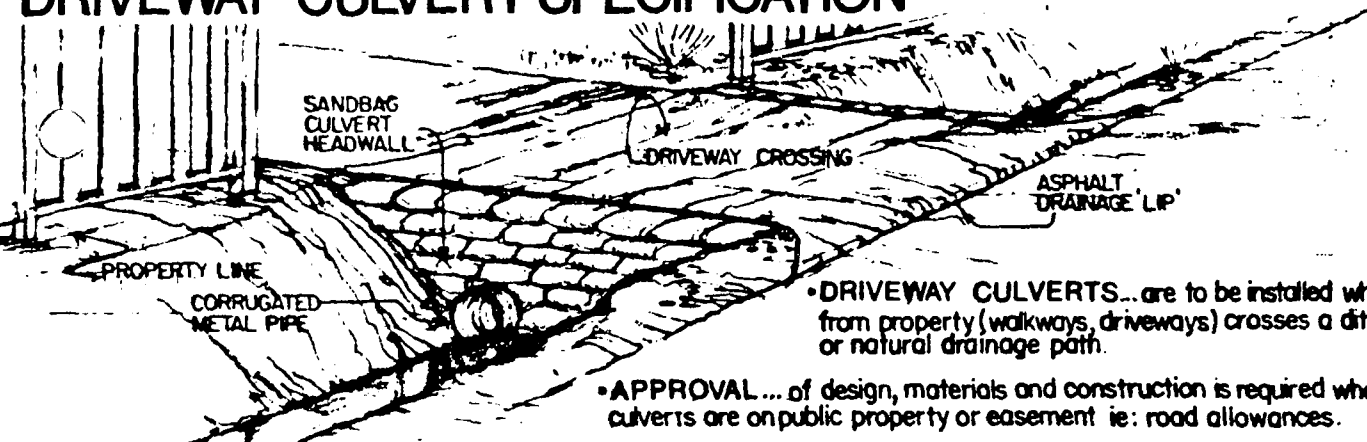
For larger wet areas, you can install subsurface drains 100mm to 150mm in diameter at a depth of .60 to 1.52 metres. The drains should be packed with 100mm to 150mm of porous material such as sand or gravel. If available, sand and gravel can be used to backfill the drain trench to within a foot of the ground surface. Topsoil can be used to fill the surface layer.

HOW TO GET HELP

-Local building suppliers, or municipal authorities may be able to provide more information about planning and installing specific drainage measures around your home.



DRIVEWAY CULVERT SPECIFICATION



• **INSTALLATION** ... may be done by the municipality at specified prepaid rate ... or by contractor or homeowners ... but must meet municipal standards ... and proper installation is secured by a refundable cash deposit deposited by the applicant with the municipality.

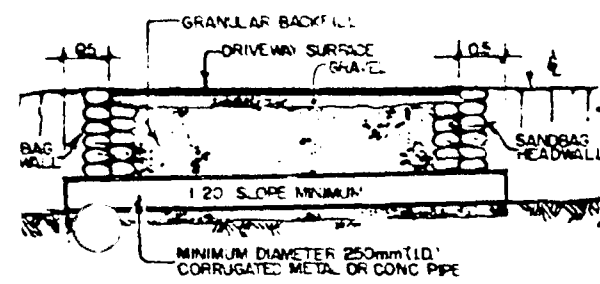
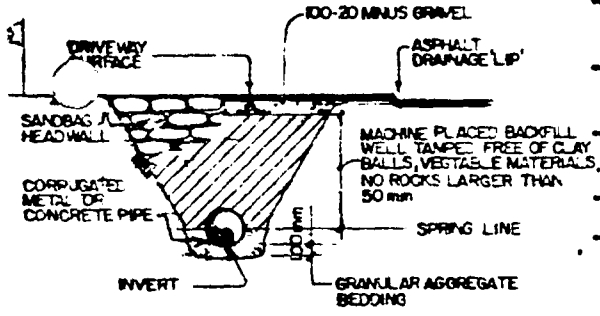
• SPECIFICATIONS:

• MATERIALS:

- PIPE MATERIALS shall be CMP 16 gauge coated or galvanized or concrete C-1465 Class III minimum diameter 250mm - maximum diameter 400 mm.
- PIPE BEDDING shall be granular aggregate less than 20mm, extending 100mm under pipe, up to spring line.
- NATIVE BACKFILL shall be free of clay balls, vegetable materials, rocks larger than 50mm.
- CONCRETE MIX shall be one part portland cement to four parts sand and/or gravel.
- SAND BAGS shall be burlap or jute, nominal size 550mm X 300mm.
- ENCASUREMENT CONCRETE where culverts are concrete cradled owing to shallow cover, concrete strength shall be 21 MPa minimum, 50mm maximum slump reinforcing mesh 100x100mm.

• INSTALLATION:

- FOUNDATION DRAIN OUTFALLS must be (a) re-located away from culvert (b) tied into culvert with a wye or saddle connection.
- CULVERT BEDDING must be laid, shaped and tamped to form a 100mm (min.) thickness of gravel extending below the pipe to the spring line.
- GRADE AND ALIGNMENT culvert inverts shall follow the slope of the ditch, but no less than a fall of 1:20 to allow free draining. Pipes should cross the driveway at right angles, and extend 0.5m passed the travelled driveway surface.
- HEADWALLS: headwalls to contain the driveway are required at both ends of the culvert. Jute bags filled with a dry concrete/gravel/sand mix are placed in running bond across the ditch or swale, up to the level of the driveway.
- SHALLOW INSTALLATION: where less than 150mm of cover over the pipe exists, culvert shall be protected (1) by concrete cradle (filling trench around CMP culvert with concrete) or (2) shall be reinforced concrete pipe.



CONSTRUCTION:

- Applicant may choose to have the municipality install driveway culverts for a prepaid amount, or deposit an equal sum and make other arrangements.
- The Municipality will install culverts up to 400mm diameter for the prepaid amount of \$145/metre of length, including headwalls.
- Private owners or contractors installing driveway culverts on public lands or easements must deposit \$145/metre with the municipality, which sum is fully refundable after the complete work is inspected and accepted by the municipality.



DISTRICT OF COQUITLAM-ENGINEERING DEPARTMENT

DRIVEWAY CULVERT PERMIT APPLICATION

NOTICE TO APPLICANTS: Driveway culverts are located on municipal road allowances, and become, on acceptance part of the municipal drainage system. It is necessary for the District to ensure an acceptable standard of capacity, design, materials and workmanship before new or replacement culverts are incorporated into the municipal drainage system.

CONSTRUCTION METHOD District forces will install driveway culvert up to 400mm in diameter for a fixed cost per metre of length. Applicants wishing to use a contractor to install culverts on public property must deposit a performance guarantee with the District to ensure proper completion and submit proof of liability insurance in the form required by the District of Coquitlam.

COSTS: Installations by municipal forces cost \$145 per metre of length for culverts up to 400mm diameter. Larger culverts are estimated separately.

SECURITY GUARANTEE DEPOSIT Applicants who use a contractor must deposit a security guarantee of \$145 per metre of length with the Districts Treasury Department to ensure proper completion. This deposit is refundable after the contract installation has been inspected, and found to meet all specifications.

STANDARD OF WORK The culvert specification describes the minimum standard of work. All installations are subject to inspection and require approval by municipal construction inspectors.

APPLICANT _____ **APPLICATION NUMBER: 83-** _____ **DATE:** _____

ADDRESS OF INSTALLATION _____

LEGAL DESCRIPTION _____

REGISTERED OWNER _____

OWNERS MAILING ADDRESS _____

NAME OF APPLICANT _____ **Signature** _____

TELEPHONE NO. APPLICANT _____

ADDRESS OF APPLICANT _____

CULVERT LOCATION STAKES TO BE READY _____ **(date)** _____

INSPECTOR: Pre-Inspection Checklist

	Yes	No	Date	Initials
Field check to determine if stake location (driveway) is satisfactory?	___	___	___	___
Diameter, length, headwall location, drainage connection determined?	___	___	___	___
Sidewalk, road, manhole restoration required?	___	___	___	___
Cost of Construction/Performance deposit calculated?	___	___	___	___
Possible conflicts with power, gas, telephone, cable, water, sewer?	___	___	___	___
Sketch plan prepared and passed to work reception?	___	___	___	___
Cost information passed to work reception?	___	___	___	___

WORK RECEPTION: Application Processing Checklist

	Yes	No	Date	Initials
Customer notified of cost of construction or deposit?	___	___	___	___
Construction charges (if applicable) paid into treasury?	___	___	___	___
Performance guarantee deposit (if applicable) paid into treasury?	___	___	___	___
Contractor business licence and insurance documents cleared?	___	___	___	___
Work order to surface operations complete (if applicable)?	___	___	___	___
Inspection notified of work schedule?	___	___	___	___
Authorization to proceed given?	___	___	___	___
DATE OF CONSTRUCTION: _____	APPROVED BY: _____			

INSPECTOR: Post Construction Checklist

	Yes	No	Date	Initials
Meets driveway culvert specification?	___	___	___	___
Culvert and debris cleaned ready for use?	___	___	___	___
Construction debris removed from road R.O.W.?	___	___	___	___
Boulevard seeded?	___	___	___	___
Performance Guarantee release memo to work reception?	___	___	___	___
Insurance release memo to work reception?	___	___	___	___
Checklist filed with work reception?	___	___	___	___



**DISTRICT OF COQUITLAM
ENGINEERING DEPARTMENT**

Driveway Culvert Permit Application Processing Instructions

OBJECTIVE:
FORMAT:
SYNOPSIS:

To describe the steps necessary to process Driveway Culvert Applications. The permit application is a three part form for applicant, inspector and record purposes. At initial contract, the applicant learns the requirements and the application information is entered on the form. When either the construction charge or performance deposit is made, the work is authorized to commence, and is examined by the inspection staff. When certified complete, the permits finalized by closing the work order or refunding the performance deposit.

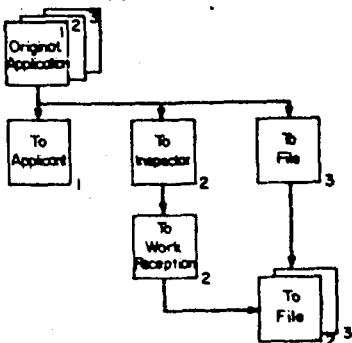
- Step 1 Applicant receives application form and learns requirements for construction, cost, deposits, insurance, and marking location in the field.
- Step 2 Applicant completes application section of form and retains copy 1.
- Step 3 Applicant installs wooden stakes, obtained from work reception, on predetermined date to mark desired location in the field.
- Step 4 Inspector visits site, and completes PRE-INSPECTION CHECKLIST.
- Step 5 Work reception contacts applicant, advises of any deficiencies determined during the PRE-INSPECTION, and advises the cost of either: CONSTRUCTION or PERFORMANCE DEPOSIT.
- Step 6 Applicant makes payment into Treasury for either construction or performance deposit.

Municipal Construction

Contract Construction

- Step 7A Work reception raises work order for construction by surface operations
- Step 8A Work reception obtains schedule date of construction, advises client and Inspector.
- Step 9A Work reception completes APPLICATION PROCESSING CHECKLIST (Copy 2 and 3).
- Step 10A Work reception turns file over to Inspection (Copy 2)
- Step 11A Inspector reviews work in field to determine deficiencies, arranges for correction
- Step 12A Inspection completes POST CONSTRUCTION CHECKLIST and returns to work reception
- Step 13A Work reception determines final cost of installation, and files photo stat of the completed municipal work order with the completed application form (Copy 2 and 3)

- Step 7B Work reception obtains name of contractor, checks business licence and establishes contact.
- Step 8B Work reception refers contractor to legal dept. for insurance clearance.
- Step 9B Work reception advises inspection of projected start of work, and gives authorization to proceed, completing APPLICATION PROCESSING CHECKLIST. (Copy 2 and 3)
- Step 10B Work reception turns file over to Inspection. (Copy 2)
- Step 11B Inspection reviews work in field, determines deficiencies, arranges for connection correction.
- Step 12B Inspection completes POST CONSTRUCTION CHECKLIST on satisfactory completion and returns to work reception.
- Step 13B Work reception advises treasury of released deposit.
- Step 14B Work reception advises customer of availability of deposits
- Step 15B File completed application form. (Copy 2 and 3)



DISTRICT OF COQUITLAM

Inter-Office Communication

TO: N. W. Nyberg DEPARTMENT: Engineering DATE: 1983 07 14
FROM: A. J. Edwards DEPARTMENT: Engineering YOUR FILE:
SUBJECT: MLPH - WESTWOOD DRAINAGE STUDY OUR FILE: 8-3149

1.00 BACKGROUND

- 1.01 On October 26, 1982 Triffo Engineering Ltd., on behalf of the MLPH, initiated a proposal call for a drainage study of the Westwood Plateau. (see attached)
- 1.02 Subsequently Ker Priestman & Associates Ltd. were retained to complete the study.
- 1.03 On March 24 a meeting was held with MLPH, Ker Priestman, and District of Coquitlam personnel present to discuss the terms of reference for the project. (see attached)
- 1.04 On March 29, 1983 a letter explaining the District's position with respect to the technical issues raised at the 1983 03 24 meeting was sent to the MLPH (see attached).

2.00 SCHEDULE

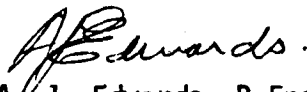
- 2.01 The schedule for completion of the project is attached.

3.00 PROGRESS

- 3.01 It is expected that a first draft report will be completed by the end of July.

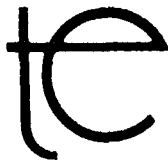
4.00 RECOMMENDATION

- 4.01 That this report be received by the Drainage Committee for information.


A. J. Edwards, P.Eng.
Assistant Municipal Engineer

AJE/mw
Attach.

8-2921



Triffo Engineering Ltd.

Professional Engineering, Planning & Management Consultants

Our File: T-81424

October 26, 1982

The District of Coquitlam
Engineering Department
1111 Brunette Avenue
Coquitlam, B.C.
V4K 1E9

Attention: Mr. Tony Edwards, P. Eng.

Dear Sir:

Re: Proposal Call for Drainage Study
Westwood Plateau
British Columbia, Ministry of Lands, Parks and Housing

This letter accompanies one (1) copy of the second draft of the Terms of Reference which we have prepared for the above Proposal Call.

Would you kindly inspect the document and provide us with any further comments that you may have prior to November 4, 1982.

Yours truly,

TRIFFO ENGINEERING LTD.

R. W. Triffo, P. Eng.

RWT/par
Encl.

DAN JIM ET, TOL NOUN	
OCT 28 1982	
af	



PROVINCE OF BRITISH COLUMBIA
Ministry of Lands, Parks and Housing

Housing Division

PROPOSAL CALL

Storm Water Drainage Study and Report
Westwood Plateau Coquitlam, B.C.

TERMS OF REFERENCE

TABLE OF CONTENTS

- I. NOTICE TO CONSULTANTS
 - II. CALL FOR PROPOSALS
 - III. PROJECT
 - A. Study
 - B. Report
 - C. Associated Information
 - IV. PROPOSAL REQUIREMENTS
 - V. SELECTION REQUIREMENTS
- APPENDIX A - Form of Agreement
- APPENDIX B - Maps
- 1. Site Plan
 - 2. Draft Community Plan
 - 3. Topographic Map of Area
(As revised by McElharney Associates)
 - 4. Suggested Locations for Flow Measurement Guages

I. NOTICE TO CONSULTANTS

The Ministry of Lands, Parks and Housing intends to engage the services of a Consultant to undertake a study and prepare a report in respect to the Westwood Plateau Area Storm Drainage.

In order to prepare a preliminary drainage plan, detailed hydro-logic, hydraulic, water quality and environmental assessment analyses will be required for both the existing and post-development conditions in the study area. The proposed study should define the optimum stormwater management plan to meet the requirements of future urbanization within the study area and recommend mitigative measures to minimize adverse environmental impacts.

Consultants wishing to submit a proposal for the above service may obtain Terms of Reference from the office of:

TRIFFO ENGINEERING LTD.
200 - 6245 - 136th Street
Surrey, British Columbia
V3W 5E3

Please direct all inquiries to Mr. Walter Johnson, P. Eng., Project Manager, at the above office. Telephone: (604) 591-6171.

DEADLINE for submission of proposals is 14:00 P.S.T. on Thursday, November 18, 1982. Late submissions will not be accepted. Proposals must be marked "WESTWOOD PLATEAU STORM DRAINAGE STUDY AND REPORT Coquitlam, B.C." and be submitted to the office of:

Ministry of Lands, Parks and Housing
Housing Division
Land Development Branch
Suite 510 POCO PLACE
Port Coquitlam, British Columbia
V3B 5Y9

Province of
British Columbia
Ministry of Lands,
Parks and Housing

Honourable Tony Brummet,
Minister

II. CALL FOR PROPOSALS

Westwood Plateau Area Drainage Study and Report

The Ministry of Lands, Parks and Housing is developing approximately 780 hectares of Crown-owned land^{f.o.r.} approximately 7,000 housing units in the Westwood Plateau Area of Coquitlam, British Columbia. In accordance with an Agreement with the District of Coquitlam, the Ministry has undertaken to develop a comprehensive development plan and to provide off-site services to the area. The Ministry is proposing to develop the property to the enclave and single family lot stage, commencing on a phased basis in 1983.

Prior to residential development, however, a preliminary drainage plan must be prepared and in this regard, detailed hydrologic, hydraulic, water quality and environmental assessment analyses will be required for both the existing and post-development conditions in the study area. The proposed study should define the optimum stormwater management plan to meet the requirements of future urbanization within the study area and recommend mitigative measures to minimise adverse environmental impacts.

A preliminary conceptual plan has been prepared for the development. This plan and the approximate area over which the study is to be conducted are shown on Map 2, attached.

This proposal is being called to address the concerns expressed by the District of Coquitlam with regard to the G.V.S. and D.D. Drainage Studies as a result of the considerable error recently detected in the existing topographic data for the area. In addition, several other constraints to further progress with regard to achieving an overall drainage plan have

been identified in accordance with the following:

1. Realignment of the David-Pathan Connector to the new alignment ("H") necessitates an adjustment in the drainage proposal since there is additional area that cannot be drained to an interceptor on the David-Pathan alignment.
2. Some areas which were originally assumed to drain into Hoy Creek above the dam actually drain into the creek south of the dam.
3. A need has been established to review the G.V.S. and D.D. drainage study to ensure that drainage systems in the Town Center area can handle flow concentrations that might result from urban development on the Westwood Plateau.
4. Assessment of implications of the Westwood Plateau Escarpment and Gravel Study recently completed by Thurber Consultants Ltd.
5. A need has been established to review and refine the overall approach to the Westwood Plateau drainage.

III. PROJECT

A. Study

The proposed study is to include the following:

1. A review of all available reports and background information related to the study area including hydrology, water quality, soils, vegetation, wildlife, aquatic life, slope stability, etc.
2. Delineate boundaries of natural watersheds within the study area, and determine the extent of defined natural water courses.
3. Undertake site investigations, as required, to define hydrologic characteristics and critical areas where adverse impacts may occur as a result of increased runoff due to urbanization, such as: erosion, sedimentation, slope stability, vegetation, wildlife and aquatic life, etc.
4. During the initial stages of the study, the Consultant shall install a number of streamflow gauging stations on the creeks draining the study area and be prepared to monitor these gauges for the first year of operation. Suggested sites for these gauging stations are at the approximate locations as shown on the attached Map 3. Each site has been cleared and access for an all-terrain type vehicle has been provided by the Ministry. While it may ultimately be left to the Consultant's discretion as to the model or style of gauging apparatus to be utilized, each proponent should submit his quotation based on the installation of a very simple wier and standpipe arrangement. In addition, it may become necessary to install rain gauging stations at strategic locations to provide additional information which would augment the flow data being recorded. It is intended that data collected at these sites be used to refine the drainage system design at the future detailed design stage.

(Item #4, Continued)

Once the Consultant has monitored the sites for the first year of operation, it is also intended the Consultant provide satisfactory training to District of Coquitlam personnel so the District of Coquitlam can carry on with the monitoring operation. Ownership of all streamflow and rain gauging stations shall revert to that of the Ministry

5. Determine average flows and seasonal flow variations in all major creeks and watercourses in the study area and estimate the flows for the 1 in 10, 1 in 50, 1 in 100 and 1 in 200 year return events for the existing site conditions. Hydrographs for each event are required at all key locations.
6. Develop alternative preliminary drainage system designs, including collector sewers and discharge facilities, to remove the critical 1 in 10 year runoff event from the proposed development. Each Alternative must meet the discharge requirements and limitations imposed on the outfall creeks concerning downstream flooding, erosion, sedimentation and fish habitat and the existing interceptor sewer capacity. In addition, these designs should provide for the conveyance and discharge of flows in excess of the system design capacity to the receiving streams.
7. Analyse the repose of each drainage alternative to average runoff conditions, the design conditions and to the 1 in 50, 1 in 100 and 1 in 200 year events. Again hydrographs are required at all key locations.
8. Assess the adverse impacts of the various drainage schemes considering such factors as: land-use limitations, overflows during extreme events, water quality, erosion, bank stability, sedimentation, vegetation, aquatic life, wildlife, etc. Develop mitigative measures where appropriate and reassess residual impacts.

9. The Provincial Fish and Wildlife and the Federal Fisheries and Oceans have strict limitations with respect to pollutant loadings entering the receiving streams. In this regard, the report must detail methods which can be utilized to limit pollutant loadings in the long term.
10. Evaluate the preliminary drainage designs on the basis of capital cost, operations and maintenance costs and residual impacts and determine the optimum drainage system.
11. Develop a routing model for natural watercourses, which can be adapted to the District of Coquitlam computer facilities.

The facilities which are available are as follows:

UNIVAC 90/30

MAXIMUM MEMORY 192 K

FOUR DISC DRIVES 224 MB (total)

LANGUAGES: ASSEMBLER

RPG II

COBOL

FORTRAN

The modeling program is to be developed by the Consultant and in this regard, a program listing and full documentation must be provided in addition to the input deck.

Once the program has been devised, it will be the responsibility of the District of Coquitlam to become familiar with the program through suitable training provided by the Consultant.

12. Prepare a plan of the proposed drainage system showing the locations and preliminary sizes of the major system components. The plan shall also delineate the 1 in 200 flood stage for all open water bodies within the study area and identify critical areas of concern for po-

(Item #12, Continued)

tential erosion, slope instability, and sedimentation problems.

Consultants are not precluded from drawing on their own experience or knowledge in proposing alternative approaches which may include modifications to the above to achieve the proposed study objectives.

B. Report

During the course of the work, regular briefing sessions must be held with the Ministry and possible meetings with Municipal personnel responsible for Westwood Plateau Planning and development. Several meetings to identify the possible outcomes should be arranged with the Municipal staff.

The reporting sequence shall be in accordance with the following:

1. A preliminary report with respect to all activities which have taken place during the first three months of the study period shall be submitted no later than March 15, 1983.
2. Ten (10) copies of the final detailed report shall be provided complete with summary and appendices to explain the development of the proposed drainage system no later than October 14, 1982. All back-up information including working calculations and design sketches shall be included in the report or bound separately and cross-referenced to the report. All technical data will be submitted and becomes the property of the Ministry.
3. Ten (10) copies of a revised version of the final report will be due no later than December 30, 1983.
4. A plan of the proposed drainage system shall be supplied based on the following criteria:
 - (i) Scale 1:4000
 - (ii) Developed land use designations; road alignments and 2m interval topographic information to be included.
 - (iii) Extent of levee strips and required easements to be shown.
 - (iv) All drainage facilities shall be dimensioned (diameter, length, slope, volume, area, etc.)

5. Plan and profiles of the proposed drainage system shall be supplied based on the following criteria:
 - (i) Scales 1:500 H: 1:50V
 - (ii) Plan - profile A1 paper to be used
 - (iii) All drainage facilities to be dimensioned.

6. Maps of historic and developed storm flows for the 10, 50, 100 and 200 year event shall be provided based on the following criteria:
 - (i) Entire area to be shown on one 1:4000 scale map.
 - (ii) Topographical and land use information to be provided.
 - (iii) Flows to be defined for each sub-area and stream for each storm event for the historical and developed condition.

7. Unit hydrographs and design storm hydrographs shall be provided based on the following criteria:
 - (i) Unit hydrography for each point of concentration and storm flow graphs for each point of concentration.
 - (ii) All hydrographs to be included in the main report.
 - (iii) All hydrographs to be printed on 28cm x 43cm paper.
 - (iv) Each point of concentration to have three hydrographs:
 - (a) Unit hydrograph showing the historic and developed condition.
 - (b) Historic design storm hydrographs showing the 10, 50, 100 and 200 year storm events.
 - (c) Developed design storm hydrographs showing the 10, 50, 100 and 200 year storm events.

NOTES: (1) All units shall conform to metric SI standards.

(2) All maps and plans shall conform to the District of Coquitlam mapping standards.

C. Associated Information

It is recommended that those firms interested in submitting proposals obtain the following background information (list not necessarily complete):

1. H.C.B.C. Report, September, 1978.
2. Westwood Plateau Draft Community Plan, 1982.
3. Westwood Plateau - Topographic and Legal Base, 1982.
4. G.V.R.D. Official Regional Plan.
5. Revised alignment ("H") for David-Pathan Connector.
6. Town Centre Linear Park Study - Aplin & Martin Engineering Ltd.
7. The District of Coquitlam Town Centre Study:
Dayton & Knight Ltd. Consulting Engineers - December, 1980.
8. Greater Vancouver Drainage District - Report on a Study of Drainage Alternatives for Northwest Coquitlam Town Centre - October, 1977.
9. Report on Flood Control for Scott Creek in the Eagle Ridge Development Area - Crippen Engineering Ltd. - November, 1974.
10. Southeast Town Centre - Interim Drainage Study - District of Coquitlam Engineering Dept. - February, 1982.
11. Overall Assessment of Land Use and Collector Road Status as prepared by Progressive Planners Canada Incorporated.
12. Guidelines for Land Development and Protection of Aquatic Environment - Department of Fisheries and Oceans Canada - July, 1978.
13. Coquitlam River Water Management Study - Province of British Columbia, Ministry of Environment - September, 1978.
14. Drainage Facilities Program - District of Coquitlam.
15. The Greater Vancouver Sewer and Drainage District Revised Drainage Scheme for Westwood Plateau - December, 1981.

The above listed background information could be made available
for viewing at the offices of:

Triffo Engineering Ltd.
200 - 6245 - 136th Street
Surrey, British Columbia
V3W 5E3

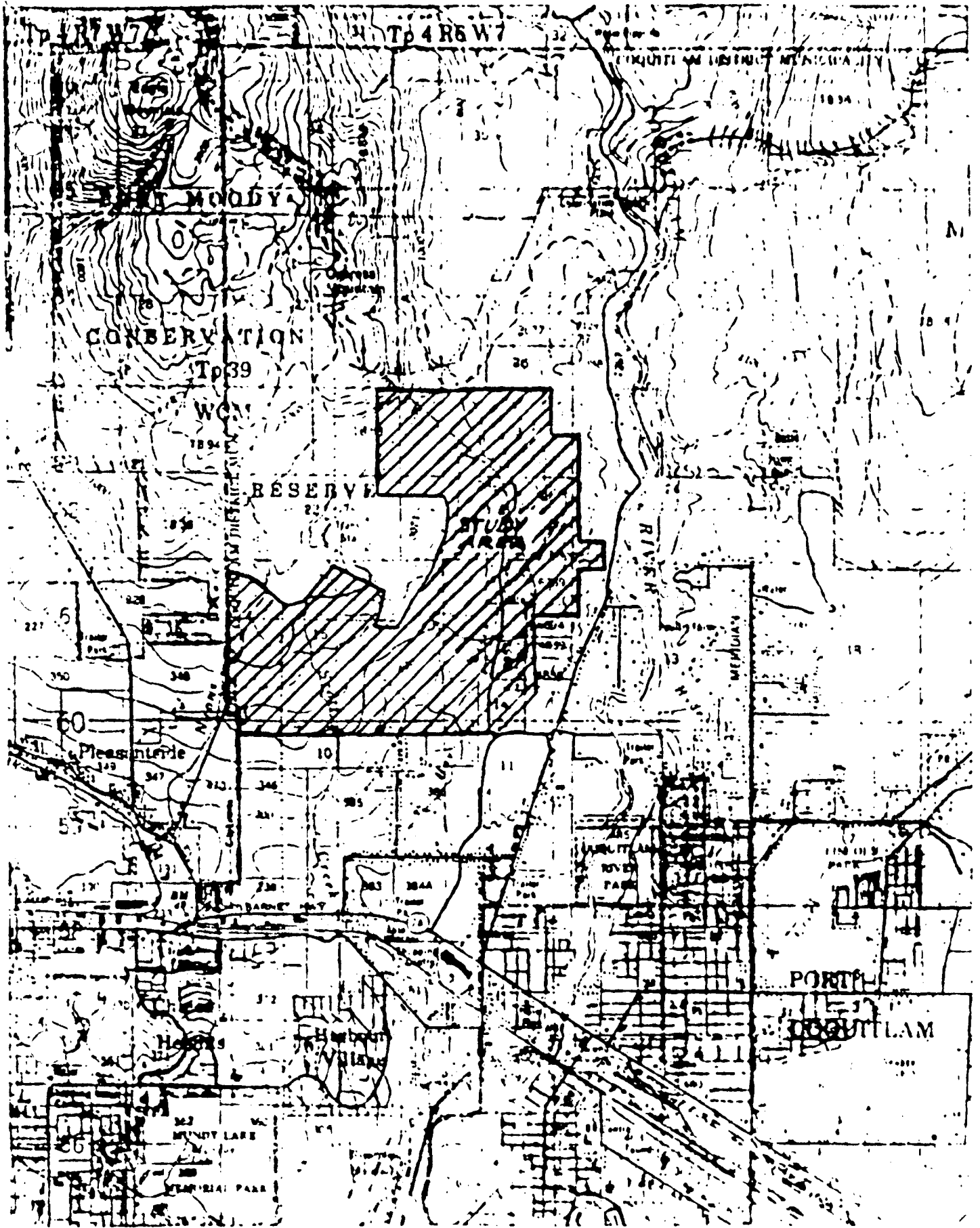
Telephone: (604) 591-6171

IV. PROPOSAL REQUIREMENTS

1. Description of the firm's ability and experience in the field of study which this proposal call addresses.
2. Identification of the personnel within the firm available to carry out work on the assignment.
3. Identification of the sub-consultants who would be utilized on the assignment.
4. Identification and description of the experience which the proponent has had on similar or related assignments, including client references and evidence of work completed on time and on budget.
5. Prepare a preliminary outline of the detilaed technical steps and general approach to obtain the objectives.
6. Provision of a preliminary schedule for completion of the study and submission of the report.
7. Provide a fixed fee for the project excluding the installation and monitoring of stream flow measuring apparatus and additional rain gauging stations.
8. Provide an estimate of disbursements and other expenses including a "Not to Exceed" maximum with regard to item 7, above.
9. Provide a separate fixed fee for installation and monitoring of the recommended stream flow measuring apparatus and additional rain gauging stations.

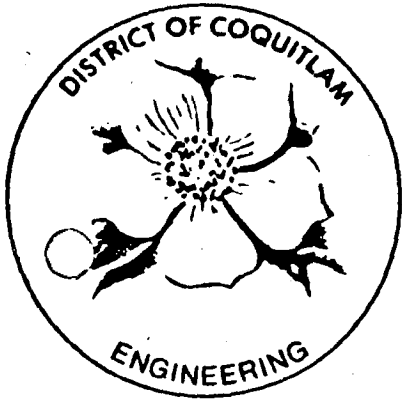
V, SELECTION PROCESS

1. The Ministry shall review the submitted detailed proposals and select the preferred Consultant.
2. If there were significant differences in the proposals, the Ministry would interview those Consultant's as necessary to determine if the Terms of Reference were complete, accurate, and fully understood and to determine the level of effort proposed.
3. It is understood that the Ministry is not necessarily bound by this selection process and the above is only intended to be a guide to assist the Ministry in the selection of a Consultant. It is also understood that any or all proposals may be rejected.
4. A decision on the successful proponent is expected no later than December 9, 1982. The successful proponent will be required to execute an Agreement as per the attached Form of Agreement.



(Topographic Map)
to be inserted

Map 5



DISTRICT OF COQUITLAM

1111 BRUNETTE AVENUE, COQUITLAM, B.C. PHONE 526-3611

V3K 1E9

1983 03 29

MAYOR J.L. TONN

File: 8-2921

Ministry of Lands, Parks
and Housing
#510, 2755 Lougheed Highway
Port Coquitlam, B. C.
V3M 5Y9

ATTENTION: MR. D. ZADAK, P. ENG.

Dear Sirs:

SUBJECT: WESTWOOD PLATEAU DRAINAGE STUDY MEETING
as Ker Priestman's office in Victoria, B. C.
March 24, 1983

Thank you very much for affording us the opportunity to meet your consultant for the Westwood Plateau Drainage Study. It is only by effective teamwork and communications amongst the various players that a high-quality report will be completed.

The purpose of this letter is to clarify the points which we feel are crucial for the successful completion of this project. These are:

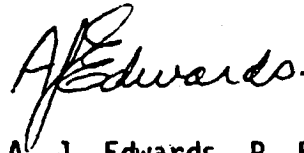
1. The installation of four stream gauges placed at the following locations:
 - a. the Hoy Creek diversion dam;
 - b. at the junction of Aberdeen Avenue and Hoy Creek;
 - c. the south boundary of the Westwood Plateau area at Scott Creek; and
 - d. the B. C. Hydro substation at Scott Creek.
2. The location of a rain gauge at the B. C. Hydro substation.
3. That the work progress in accordance with the attached schedule.
4. That the work be carried out in accordance with the attached Terms of Reference, as modified at our meeting.
5. That the final submission show flexible pathways for both minor and major storm routing to allow for variations in road, lane and lot layout.
6. That the leave strips' extremities, prepared by the geotechnical, biological and drainage input, show the proposed rear lot lines along watercourses within the development.

1983 03 29

I have attached a copy of our green strip study done by Aplin and Martin for the section of Hoy Creek in the Town Centre area, which should give you an indication of quality of the analysis which we would expect.

Finally, we would appreciate it if you could have Ker Priestman contact Fisheries and Water Management personnel prior to installing the stream gauges to confirm the stream gauge locations and the proposed method of installation.

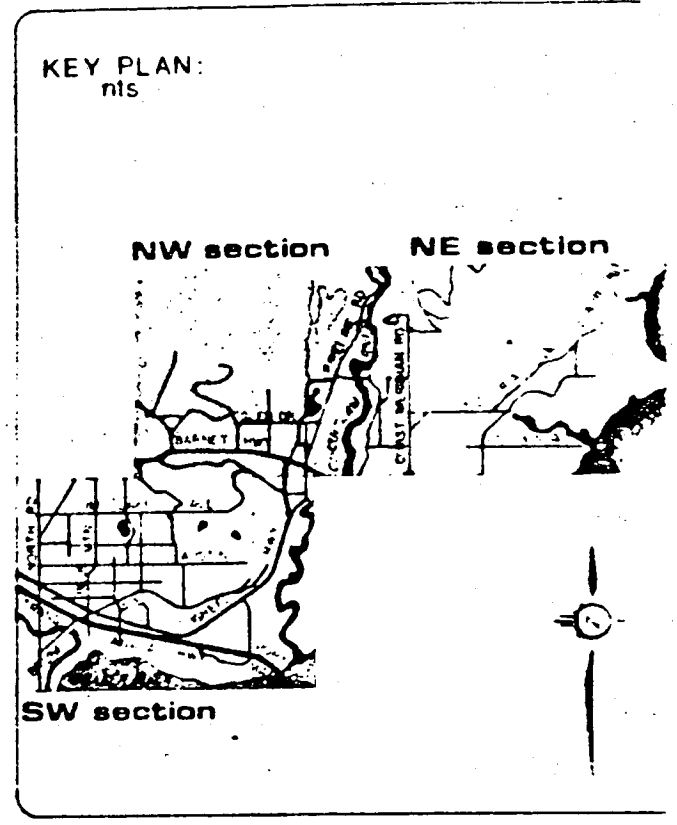
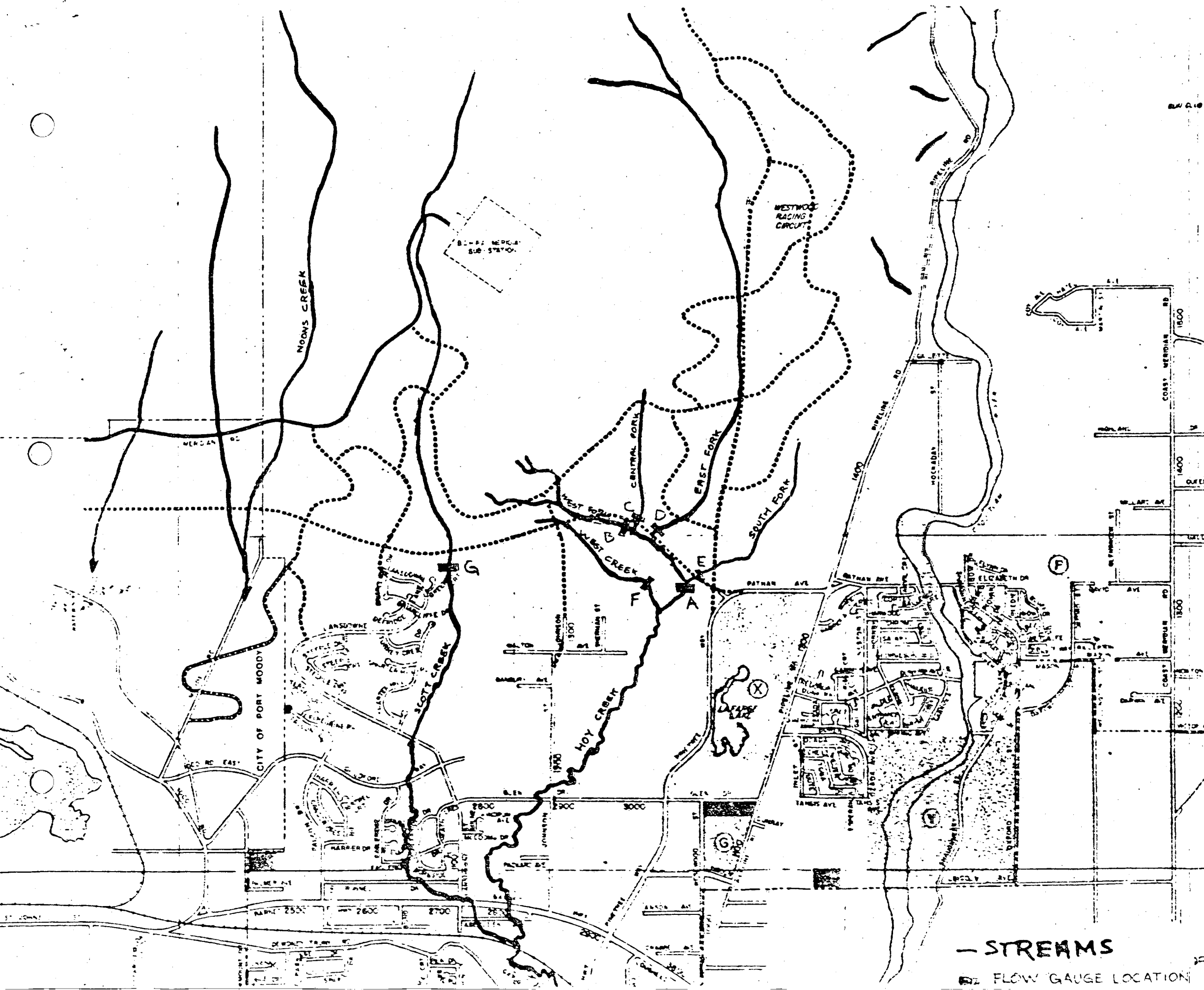
Yours truly,



A. J. Edwards, P. Eng.
Assistant Municipal Engineer

AJE: 1s

cc: N. W. Nyberg
D. A. Kersey



capital works plan

TITLE:

WESTWOOD PLATEAU

PROPOSED COLLECTOR ALIGNMENT AND FLOW GAUGE LOCATIONS "A" TO "G" INCLUSIVE

engineering department

district of COQUITLAM



— STREAMS
 ○ FLOW GAUGE LOCATION

SCHEDULE "A"

1. TERMS OF REFERENCE

1. Review of reports and existing data.
2. Field reconnaissance.
3. Establishment of stream gauges. (Train Coquitlam personnel in the operation and maintenance of the gauges.)
4. Analyze hydrometeorological data and develop suitable streamflow routing and storm sewer design models. All computer programmes to be implemented on Coquitlam's computer system and personnel trained in their use.
5. Investigate related geotechnical and environmental constraints.
6. Establish drainage design concepts and criteria.
7. Calculate design flows and hydrographs; prepare comprehensive drainage mapping and size facilities.
8. Prepare summary reports.
9. The District of Coquitlam essentially requires a flexible drainage planning document which will ensure the orderly and environmentally acceptable development of the Westwood Plateau. Plan and profile drawings are only required along the David-Pathan Connector at this time.
10. At present, subdivision plans have not been fixed, but they will eventually be developed in conformity with the Storm Drainage Plan.
11. The proposed stream gauging locations were chosen by fisheries agencies and have not yet been confirmed. Four stream gauge locations shall be mutually agreed upon.
12. The consultant will train Coquitlam personnel to take over the flow monitoring of the programme, after the project conclusion.

2. METHOD OF APPROACH

The method of approach outlined is designed to produce a programme which will comply fully with the Terms of Reference.

2.1 Meeting and Review of Existing Drainage Systems

Ker, Priestman & Associates Ltd., the consultant, would meet with the District of Coquitlam engineers and Ministry of Lands, Parks and Housing personnel to determine drainage needs for the proposed developments. The existing natural and man-made drainage systems would be reviewed in detail and particular attention would also be paid to any sites where flooding was known to occur. Sites which are downstream of the Study Area would also be investigated for potential flooding problems.

Meetings would also be held with officials of the appropriate provincial and federal agencies including Fish and Wildlife Branch, Water Management Branch, Waste Management Branch, and the Ministry of Fisheries and Oceans, in order to determine their respective requirements and constraints.

2.2 Stream and Rainfall Data Collection

For the study, the consultant would immediately establish and monitor the five automatic gauges referred to in the letter dated January 18, 1983, the location to be mutually agreed upon. Field reconnaissance and discussions with municipal and fisheries officials shall determine the locations. A significant hydrometeorological data base already exists for this portion of the lower mainland and it should be utilized for the Study Area.

2.3 Hydrology Analyses

As required by the request for proposals, average flows and seasonal flow variations would be determined for the major watercourses in the Study Area. As well, peak flows for various return periods up to 200 years would be estimated for key locations. ~~Where~~ Hydrographs ~~are~~ required for the design of hydraulic structures ~~these~~ ~~will~~ ~~also be provided.~~

The consultant would utilize the computerized hydrograph and streamflow routing model known as HYMO for the hydrologic analyses of the main watercourses. HYMO is a computerized version of the unit hydrograph method developed by the U.S. Soil Conservation Service (SCS), together with a stream and reservoir routing capability. An alternative computer model would be HEC-1 of a simplified version of HYMO, written by KPA - the consultant has successfully used its own simplified version of HYMO in the development of a master Drainage Plan for the District of North Cowichan. This version was developed and executed on the consultant's in-house computer system. HEC-1 uses an instantaneous unit hydrograph approach and was written by the U.S. Corps of Engineers for streamflow modelling. A version of HEC-1 was used for the District of Surrey drainage study.

We would utilize the computerized storm sewer analysis method known as ILLUDAS for the preliminary design of storm sewers. ILLUDAS also has the capability to provide preliminary estimates for stormwater detention volumes, should this be necessary. ILLUDAS provided an analysis of the existing systems and the design of new systems in drainage studies performed by the consultant for the City of Victoria and the District of Saanich.

The hydrologic models would be calibrated through historical streamflow analysis and with our past experience in the use of the models. Where possible, any data collected in this study would also be utilized.

2.4 Drainage Plans

In the development of drainage plans for the Study Area the preservation of watercourses and aquatic habitat would have priority. Concepts which would be evaluated in order to achieve this goal would include stormwater storage (detention) and other source controls, establishment of the dual drainage concept (major and minor system routing), methods to control erosion and sedimentation such as

outfall energy dissipators, and establishment of watercourse buffer zones. Traditional storm sewerage methods would also be considered in areas without sensitive aquatic or wildlife habitat.

○ As requested, overall Drainage Plans would be prepared on a topographic base at a scale of 1:4000 and showing:

- sub-catchments and flow directions ✓
- watercourse preservation zones (leave strips)?
- existing and proposed drainage systems including dimensions of all major facilities.
- design flows ✓
- proposed land use designations and road alignments ?
- floodplain limits for various return periods, where these are appropriate. ✓

Where development plans are known, a plan and profile of the proposed drainage system will also be shown (i.e. David-Pathan Connector). This work would be at a scale of 1:500 horizontal and 1:50 vertical.

Each alternative considered would be evaluated on the basis of a range of design conditions (average annual flow to 200 year return period).

○ 5 Geotechnical Considerations

Mr. ~~Al Dahlman, P. Eng.~~ of Hardy Associates Ltd., will act as a geotechnical sub-consultant on matters relating to slope and bank stability and erosion potential.

Areas which are determined to be unsuitable for development by the geotechnical engineer will be shown on the Drainage Plans. The Escarpment and Gravel Study by Thurber Consultants Ltd. would also be assessed by Hardy Associates Ltd.

2.6 Water Quality

Dr. Ken Hall of Westwater Research at U.B.C. has studied pollutant loadings to watercourses in the lower mainland area by monitoring water quality of the Brunette River in Burnaby, and of the Fraser River Estuary. He will assist in estimating pollutant loadings which could arise at the Westwood Plateau development.

2.7 Biological Constraints

○ In order to assess the provincial and federal fisheries positions on the major watercourses of the area, Mr. Ted Burns and Mr. Robert Fall will act as subconsultant biologists. (Both Mr. Burns and Mr. Fall have extensive experience in vegetation, wildlife and aquatic life and have both worked in the lower mainland area. The consultant has worked before with Mr. Burns on the North Cowichan master Drainage Plan and in that study he produced a comprehensive report on the aquatic resources of the District.) Mr. Burns has noted that there is some excellent field data available in an existing report entitled, Lower Mainland Cutthroat Investigation. This data should reduce the amount of field work required.

2.8 Economic Evaluation

Each technically feasible drainage alternative would be initially evaluated on the basis of the geotechnical, water quality and biological constraints described in the preceding sections, but the final selection would only be made after the costs had been evaluated. The economic evaluation would include capital, operations and maintenance costs. Hence each component of the final Drainage Plan will have a sound technical, environmental and economic basis.

1. PROJECT TEAM

Project Manager - Mr. A.J. Stevens, P.Eng., manager,
Water Resources Division of
Ker, Priestman & Associates Ltd.

Project Engineer - Mr. B.F.I. Kenning, P.Eng., Senior
Engineer, Water Resources Division of
Ker, Priestman & Associates Ltd.

Field Technician

Computer Technician

Drafting & Clerical

WORK SCHEDULE

The proposed work schedule is in accordance with Figure 1.

Figure 1 illustrates a Work Schedule showing report completions coinciding with the Terms of Reference and the Method of Approach described in Section 2. Figure 3 illustrates an Abbreviated Work Schedule, to match the Alternative Method of Approach described in Section 4. Note that in the latter schedule the draft final report would be submitted by the end of June, 1983, while still essentially covering the same work tasks.

Handwritten notes:
Need to check
with the client
on the
schedule
? out.

ENGINEERING COSTS

Staff time spent on this project would be invoiced on the basis of the time actually expended multiplied by the applicable hourly billing rates. The complete rate schedule is listed and the group rates given cover salary, staff benefits, general overhead and profit.

Only those parties identified as sub-consultants on the Organization Chart would have billing rates different than those in Schedule C. The charges for these professional services are based on the time charges and expenses incurred by the sub-consultants, and would be passed along to the Client at cost.

We propose to perform the storm drainage study for the fixed fees as shown in Schedule C. It is understood that suitable topographic mapping exists for the layout of the Drainage Maps at a scale of 1:4000. The fixed fee also includes the cost of producing the required number of copies of the report. There is no allowance for coloured figures.

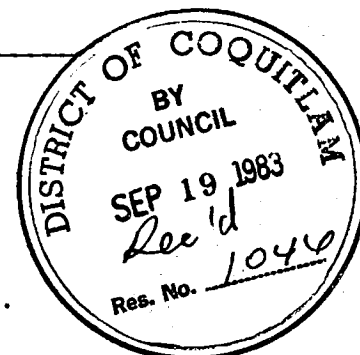
FIGURE 2
 WORK SCHEDULE - ALTERNATIVE 1

WESTWOOD PLATEAU - STORM DRAINAGE STUDY AND REPORT

ITEM	MONTH, 1983											
	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
Review of Reports and Existing Data												
Field Reconnaissance												
Establish Stream Gauges and Perform Monitoring		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Establish Design Concepts and Criteria												
Prepare Conceptual Drainage Maps												
Analyze Data and Calibrate Hydrologic Models												
Receive Subconsultant Reports/Information						*						
Review Design Concepts and Criteria												
Calculate Design Flows and Hydrographs												
Prepare Final Drainage Maps and Size Facilities												
Establish Computer Programs on Coquitlam Computer												
Preparation of Reports				PRELIMINARY *						DRAFT *		FINAL *

MINUTES OF A MEETING OF THE DRAINAGE COMMITTEE HELD AT 1200h IN THE WEST COMMITTEE ROOM, MUNICIPAL HALL ON THURSDAY, SEPTEMBER 15, 1983.

ATTENDING: Ald. G. Levi, Chairman
Ald. L. Garrison
N. Nyberg
D. A. Kersey



The Chairman called the meeting to order at 1210h.

Item 503-1 - Ditch Elimination Program

1. The Municipal Engineer reported that the Drainage Committee's instructions of July 14 to hasten the start of construction for the first phase of the ditch enclosure program had been acted upon. A consultant had been appointed, and a timetable had been prepared to commence work in the Ranch Park area in early November. The amount of work to be accomplished by December will depend on the contract prices obtained in the public tender.
2. The requirements of the Municipal Act have resulted in two bylaws being required to raise the necessary \$348,500 of funds: one to withdraw the existing interest proceeds from the Coquitlam Drainage Reserve in the amount of \$255,068; and one to withdraw \$100,000 from the Municipal Land Sales Reserve to provide "interim financing" to year end. Both bylaws were recommended for onward transmittal to the Committee.

Moved by Ald. Garrison
Seconded by Ald. Levi

That Council take Bylaw No. 1384 (1983) to third reading on Monday 1983 09 19 to appropriate \$255,068 of interest proceeds from the Coquitlam Capital Drainage Reserve Fund, to carry out the work described as Ditch Elimination Program, Phase One: Ranch Park Area as outlined in the 1983 Capital Budget Account 532343-005 and Account 532343-006.

CARRIED

Moved by Ald. Garrison
Seconded by Ald. Levi

That Council take Bylaw No. 1385 (1983) to third reading on Monday 1983 09 19 to appropriate \$100,000 of Land Sale Reserve Funds to the 1983 Ditch Elimination Program.

CARRIED

Item 503-1 cont'd

3. Errata: In paragraph 2.04, page 2, of Engineering Report 05 02 83/05, the following changes are required to correct a misprint:

Capital: November 30: should read	\$4,211,670
Capital: December 31: should read	\$4,068,575

Item 503-2 Town Centre Drainage Project

1. The Municipal Engineer reported that a draft agreement to institute a section 286 agreement with the Ministry of Lands, Parks & Housing could not be researched until November under the present staff workload. In view of the early success of the Ditch Elimination Project, permission was sought to 'fast-track' the Town Centre Drainage program as well.

Moved by Ald. Garrison
Seconded by Ald. Levi

- A. That Council authorize the Municipal Engineer to 'fast-track' project 532342-015 Town Centre Drainage by expediting the consultant selection procedures and increasing the consultant assignments to include:
- a) a hydrological study (upset cost \$30,000);
 - b) a cost analysis (upset cost \$15,000); and
 - c) an engineering design for phase 1 (upset cost \$30,000)
- and
- B. that the project budget for pre-engineering remain at the existing level of \$75,000.

CARRIED

Item 503-3 Or Creek Diversion Issue

1. The Municipal Engineer reported that no information had been received regarding the proposed fish hatchery water diversion on Or Creek. The Committee directed that a letter be sent to the Port Coquitlam Hunting and Fishing Club to enquire the status of the salmon enhancement program carried out under their auspices.

Item 503-4 Consultant Selection Briefing

1. The Drainage Committee was briefed on the method used to select engineering consultants for District engineering projects. Project Section supervisor Al Kersey explained how invitations for proposals were sent out, how proposals were compared as to technical merit and likely effectiveness, and how the group selection procedure was

*APP'D B:
CO R35 #1047/83*

Minutes of the Drainage Committee Meeting
September 15, 1983

Item 503-4 cont'd

intended to ensure fairness. The Chairman asked that a copy of the selection procedure document be attached to the minutes for the information of Council.

ADJOURNMENT

There being no further business, the Chairman called for a motion of adjournment.

Ald. G. Levi, Chairman



Secretary: N. W. Nyberg

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: J. L. Tonn
Municipal Manager

DEPARTMENT: Administration

DATE: 1983 09 13

FROM: N. W. Nyberg
Municipal Engineer

DEPARTMENT: Engineering

YOUR FILE:

SUBJECT: DITCH ELIMINATION PROJECT: STATUS REPORT 83-4

OUR FILE: 05 02 83/05

FOR DRAINAGE COMMITTEE

Reference: A. Engineering report 05 02 83/05 d 1983 07 14
B. Bylaw 1294, 1982 District of Coquitlam Municipal Lands Reserve Bylaw.

1.00 BACKGROUND

1.01 On July 14, 1983 the Committee authorized the following resolution for presentation to Council:

"That Council authorize the Municipal Engineer to 'fast-track' project 532343-005 Ranch Park Ditch Elimination by expediting the consultant selection procedures and increasing the consultant's assignment to include pre-design and project development phases; and

That the engineering budget for the project (A/c. 532343-006) be increased from \$25,000 to \$40,000."

1.02 On Wednesday, September 7, we met with a representative of R.Binnie and Associates, project engineers, to review the 'expedited' program schedule. For comparison purposes, the original schedule of January 1983 is compared with Revision 1 (July 1983) and Revision 2 (expedited version).

TABLE 1.1 - COMPARISON OF BENCHMARK DATES: DITCH ELIMINATION PROJECT

Task Description	Original	Revision I	Revision II (expedited)
Complete request for proposal	1983 08 30	1983 11 07	1983 08 12
Consultant Evaluation and Selection	1983 09 20	1983 11 30	1983 08 29
Review Contract	1983 10 20	1983 12 30	1983 09 21
Documents:			
Tenders available			1983 10 03
Tenders close			1983 10 14
Tender and Bid Evaluation	1983 11 15	1984 01 22	1983 10 17
Contract Award	1983 12 01	1984 02 01	1983 10 17
Start of Work	1984 01 02	1984 02 21	1983 10 31
Construction Acceptance Phase One	1984 06 01	1984 06 01	1983 04 01

1983 09 13

Re: Ditch Elimination Project: Status Report 83-4

2.00 DISCUSSION

2.01 In order to attain the expedited target dates, a series of events must take place:

- Scope of Work for project (cost and schedule presented to District Drainage Committee) 1983 09 15
- Bylaw introduced and taken to three readings (Reserve Fund Appropriation Bylaw) 1983 09 19
- Bylaw sent to Ministry of Municipal Affairs 1983 09 20
- Bylaw receives Ministerial assent, given fourth reading and adoption 1983 10 17
- Contract awarded to successful bidder 1983 10 17

2.02 The preliminary scope of work is attached as Appendix A. Design checks will be required to confirm the flow capacity of some existing pipes in the system, so all the proposed components may not be possible to install in the initial 1983 contract. However, for planning purposes, we should anticipate the following expenditure for the balance of the year:

Engineering design:	\$15,000
Engineering (internal) & Inspection	20,000
Construction	285,000
Contingency	<u>28,500</u>
	<u>\$348,500</u>

2.03 Budget authority for the project was given in the Capital Budget under Account 532343-005 Ditch Elimination Program: \$405,000

2.04 The source of funds is Drainage Reserve Fund Bylaw 1297 which started January 17, 1983 with a balance of \$4,000,000. We require a cash flow totalling \$348,500 commencing October 30 and estimated to finish December 31. To withdraw this sum from the Drainage Reserve Fund before year end will, of course, affect the interest proceeds. As a result, about \$100,000 will be needed from Land Sale Reserve. Assume 1983 interest at 9.5% declining to 9.0% at December 31, 1983.

	<u>Capital</u>	<u>Interest</u>	<u>Total</u>
January 17, 1983	4,000,000	0	4,000,000
October 31, 1983	4,000,000	287 d @ 9.5 = 298,795	4,298,795
November 30, 1983	3,912,875	30 d @ 9.0 = 31,155	4,155,700
December 31, 1983	3,738,625	31 d @ 9.0 = 31,100	4,012,550
		<u>\$361,050</u>	

4 211 670
4 000 000

1983 09 14

Re: Ditch Elimination Project: Status Report 83-4

- 2.05 Bylaw 1297, 1982 establishes a Coquitlam Capital Drainage Works Reserve Fund, and stipulates that each withdrawal from the fund must occur via bylaw, adopted by two thirds of the Council, and receiving thereafter ministerial approval. Paragraph 2.04 indicates that interest proceeds are expected to provide the full amount of the anticipated expenditure of \$348,500 without using any of the principal portion of the said reserve fund.
- 2.06 Depending on various design investigations, and depending on the bid prices submitted, the full area of the Ranch Park drainage sector may not be enclosed in the initial project. As indicated in the annual budget, an expenditure of perhaps \$450,000 (rather than the \$348,500 now planned) is required to execute the work. With falling interest rates, Council may wish to increase the principal amount in the reserve fund to generate more available revenue.

3.00 CONCLUSIONS

- 3.01 The 'fast-track' approach to the Ditch Elimination project has advanced the planned start date from February 21, 1984 to November 1983.
- 3.02 A reduced lead time and falling interest rates have reduced the scope of the project from about \$450,000 of work to about \$348,500 of expenditure.
- 3.03 There is an element of uncertainty as to the exact dimensions and lengths of ditch to be enclosed, since design work will proceed during the tender and construction phases. Preliminary assessment has established the likely extent of the project as outlined in Appendix A.

4.00 RECOMMENDATIONS

- 4.01 That Council take Bylaw No. 1384 (1983) to third reading on Monday 1983 09 19 to appropriate \$255,068 of interest proceeds from the Coquitlam Capital Drainage Reserve Fund, to carry out the work described as Ditch Elimination Program, Phase One: Ranch Park Area as outlined in the 1983 Capital Budget Account 532343-005 and Account 532343-006.
- 4.02 That Council Take By-law No. 1385 (1983) to third reading on Monday 1983 09 19 to appropriate \$100,000 of Land Sale Reserve Funds to the 1983 Ditch Elimination Program.



Neil Nyberg, P. Eng.
Municipal Engineer

NWN/mw
Attach.

Appendix A: Proposed Program
B: Proposed Bylaw 1384, 1983

DISTRICT OF COQUITLAM
1983 DITCH ELIMINATION PROGRAM
(CONSTRUCTION DURING 1983)

<u>Pro. No.</u>	<u>Street</u>	<u>From</u>	<u>To</u>	<u>Approx. Length (m)</u>	<u>Preliminary Construction Cost Estimate \$</u>	<u>Accumulated Construction Cost Est. \$</u>
<u>REVISED PART A</u>						
1	Starlight	South End	Spuraway	100	8,790	8,790
2	Starlight	B.C. Hydro R.O.W.	Daybreak	285	27,060	35,850
5	The Dell	South End	Spuraway	80	7,480	43,330
6	Wagonwheel	Starlight	Spuraway	380	34,880	78,210
8	The Lazy 'A'	Southwest Corner East	Daybreak	390	37,050	115,260
9	The Lazy 'A'	Southwest Corner North	Daybreak	140	11,960	127,220
10	Daybreak	Saddle St. East	The Lazy 'A'	75	15,670	142,890
18	Spuraway	Starlight	The Dell	285	28,010	170,900
19	Pasture Circle	Starlight	B.C. Hydro R.O.W.	180	21,780	192,680
<u>REVISED PART B</u>						
13	Easement	South of Ranch Park Way	Lougheed Hwy.	190	47,800	240,480
11	Saddle Ave.	Daybreak	Ranch Pk.Way	170	19,460	259,940
12	Ranch Park	Starlight	Saddle Ave.	140	25,350	285,290
7	The Lazy 'A'	Daybreak	Ranch Pk.Way	280	30,570	315,860

Projects Nos. 12 and 7 should be considered as optional, depending on revised cost estimates.

DITCH ELIMINATION PROGRAM

SCHEDULE FOR 1983 CONSTRUCTION

- Mon., Sept. 12 Binnie to submit "Scope of Work" and "Schedule for 1983 Construction".
- Tues., Sept. 20 Binnie to submit marked up copy of:
Instructions to Tenderers (excluding quantities).
Tender Form.
Contract Agreement.
For revision by Coquitlam on Word Processor.
- Tues., Sept. 27 Coquitlam to make revision in above documents and print 30 copies, together with:

General Conditions
Special Provisions regarding contract insurance and bond specifications.
Design Standard Drawings.
- Wed., Sept. 28 All design drawings submitted by Binnie for review.
2:00 p.m. deadline for advertisement to be placed in the Journal of Commerce on Mon., October 3rd.
- Thurs., Sept. 29 Binnie to complete draft of Detailed Specifications for review with Coquitlam, including Schedule of Quantities and Engineer's Estimate.
- Fri., Sept. 30 Design review completed by Coquitlam.
- Sat. Oct. 1 Project advertised in "The Columbian".
- Mon., Oct. 3 8:30 a.m. - collated copies of Tender Documents delivered to Coquitlam for binding.

p.m. - DOCUMENTS AVAILABLE FOR CONTRACTORS.
Project advertised in Journal of Commerce.
- Fri., Oct. 14 TENDERS CLOSE.
- Mon., Oct. 17 a.m. - Tender analysis and recommendation completed by Binnie.
p.m. - RECOMMENDATION TAKEN TO COUNCIL MEETING BY MUNICIPAL ENGINEER FOR AWARD.
- Tues., Oct. 18 Contractor notified in writing of award.

... 2.

Schedule for 1983 Construction (cont'd)

- Wed., Oct. 19 Contractor receives notice of award.
Allow 10 calendar days for executing contract,
obtaining bonds and insurance, and submitting
schedule.
- Mon., Oct. 31 TARGET START OF CONSTRUCTION.
- Wed., Dec. 21 TARGET COMPLETION OF CONSTRUCTION.
This allows approximately 37 working days with
no allowance for bad weather and would result in
construction work being completed before
Christmas.

The design of the balance of the project will be completed by
December 31, 1983, for construction during 1984.

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: J. L. Tonn
Municipal Manager DEPARTMENT: Administration DATE: 1983 09 13

FROM: N. W. Nyberg
Municipal Engineer DEPARTMENT: Engineering YOUR FILE:

SUBJECT: TOWN CENTRE DRAINAGE PROJECT: STATUS REPORT 83.3 OUR FILE: 05 02 83/15

FOR DRAINAGE COMMITTEE

Reference: A. Our engineering report 83-02 d 1983 07 08

1.00 BACKGROUND

- 1.01 This report RECOMMENDS calling for proposals and awarding three consulting assignments to expedite negotiations for the TOWN CENTRE DRAINAGE PROJECT financing package with the Ministry of Lands, Parks and Housing.
- 1.02 The Committee will recall that negotiations on a possible Section 286 Agreement were postponed from the original target date of September to November 1983, owing to a lack of staff time to prepare the necessary engineering documentation, and the opportunity to refine the physical design using more complete and reliable hydrological data available from the Ministry of Lands, Parks and Housing.
- 1.03 To properly exploit the new data, and to assemble the necessary background information to commence negotiations even by November will be difficult owing to the current workload, and the onset of the budget preparation period. A significant improvement in completion time could be achieved by using three consultants to evaluate and report on different aspects of the job, simultaneously.
- 1.04 A total consulting budget of \$75,000 was approved by Council for 1983. The hydrological study estimate was reduced to \$30,000 in July, but the addition of a cost forecast and an engineering pre-design will raise the TOTAL COST back to the original level of \$75,000 provided in account 532342-014 Pre-Engineering: Town Centre.
- 1.05 A comparison of the task target dates as originally established and as later modified, is shown in Table 1.1.

2.00 DISCUSSION

- 2.01 Revision 2, which provides a draft agreement in December rather than in November, is predicated on making three consultant assignments before September 30:

2.01 cont'd

- A. A hydrological analysis of the flow regime of Hoy Creek to establish the quantity of storm discharge which is permissible to collect and discharge to the natural watercourse without exceeding the pre-development flows; and to devise a silt interception and collection system suitable for the character and volume of the drainage flows and the receiving waters; including detailed presentations and negotiations with environmental agencies; design validation:
Estimated Cost: \$20,000 to \$30,000

- B. A complete cost breakdown and construction sequence for every component of the collection system; sensitivity analyses for various development sequences (faster or slower); gross and net cash flows required to support the program; cash flows deriving from a range of development scenarios...per lot levies required to support a 286 Agreement, and risk and development impact consideration:
Estimated Cost: \$10,000 to \$15,000

- C. Engineering design of phase one (1984-85 construction) including identification of land requirements, easements, pipeline depths, alignments, metering and recording systems, oil and silt interception, major flow path development:
Cost: \$25,000 to \$30,000

2.02 Hydrological Study and Pre-design Validation is necessary to ensure that appropriate collection and environmental protection systems will function reliably and effectively at minimum cost. The volumes in Hoy Creek depend on the upstream flows from the Westwood Plateau; on the action of the Hoy Creek Diversion to Lefarge Lake; and on the volume of surface runoff resulting from prevailing storms over the Town Centre area. These influences interact in a complex way, and require computer simulation to investigate the range of possibilities and to select the optimum design values for the components of the system.

2.03 Cost Breakdown of Components and Acreage Assessment is required to establish a cost framework for the proposed 286 Agreement. Once the cost of components is established, and the rate, sequence or phase of construction is determined, then the approximate cost of an acreage assessment can be calculated. To properly balance the rising cost of construction against the potentially wide range of development scenarios requires the technique of sensitivity analysis. By preparing the range of options in advance, we can prepare our negotiating team with a powerful tool to measure the effect of suggested changes and alterations to the plan. Council

2.03 cont'd

may particularly appreciate the opportunity to review unit costs assessed against developable land, compared to our current development cost charge system. At the same time, it should be possible to address possible inequities in the current development cost charge system.

2.04 Engineering Pre-design of Phase One. With the completion of BOSA BROTHERS development and the PINETREE MALL, there is a severe shortage of land in the TOWN CENTRE which is pre-serviced for drainage. In consequence, potential developers must provide costly onsite detention...or more costly offsite storm sewage transmission pipes. Council's 1982 decision to pay for 'oversized' drainage facilities in the Town Centre makes the situation more equitable for the developer, but it is still possible that lack of preserviced land will retard the rate of growth in the area. We think that construction of drainage works in the 1984-85 period will eliminate some development obstacles while establishing a more appropriate development climate. Engineering design should be undertaken well in advance of start of work to ensure timely and helpful services to developers and the optimum choice of contract tender and award.

2.05 It is clear that we need a 'crash' program to achieve the target dates recommended under "Revision 2" in Table 1.1. The Committee's instruction to expedite ("fast-track") the 1983 Ditch Elimination Program, has been successful to the extent that the potential start of construction has been advanced twelve weeks. A similar approach, compressing the time to select and instruct consultants is, in my opinion, warranted in the Town Centre Drainage Project. A further argument is the fact that most engineering firms are presently under utilized, and could give their full attention to an assignment of the nature considered.

3.00 CONCLUSIONS

3.01 Current workload has caused the expected date of availability of a draft MLPH agreement to slip much further beyond the target date established in July. As we enter the fall budget period, staff will be extremely busy and probably unable to progress with the job until mid-October.

3.02 The 'fast-track' approach appears to have saved almost twelve weeks of lead time from the Ditch Elimination Program. By selecting consultants without the formal proposal call, and proceeding expeditiously, we may be able to achieve a pre-design check (Assignment One) by November 30. This would likely allow us a draft agreement by early January with sufficient time to plan initial construction in summer 1984.

3.03 Three separate consulting assignments emerge from the requirements:

The Hydrological Report ... by October 30
The Financial Analysis ... by November 28; and
The First Phase Design ... by January 1984.

3.04 There is a high probability that all three assignments can be accommodated within the program engineering budget of \$75,000 as approved in account 532342-014 of the 1983 budget.

4.00 RECOMMENDATIONS

4.01 That Council authorize the Municipal Engineer to 'fast-track' project 532342-015 Town Centre Drainage by expediting the consultant selection procedures and increasing the consultants assignments to include:

- A. a hydrological study (upset cost \$30,000)
- B. a cost analysis (upset cost \$15,000)
- C. an engineering design for phase 1 (upset cost \$30,000).

4.02 That the project budget for pre-engineering remain at the existing level of \$75,000.



N. W. Nyberg, P. Eng.
Municipal Engineer

NWN/mw
Attach.

TABLE 1.1

COMPARISON OF SIGNIFICANT TASKS AND TARGET DATES: TOWN CENTRE DRAINAGE

<u>Activity Description</u>	<u>Original Plan</u>	<u>Revised Plan July 1983</u>	<u>Revision 2 Sept. 1983</u>
Pre-Design Concept plan check by consultants	Mar.21,1983	Aug.12,1983	Oct.30,1983
Presentation of Pre-Design to Environmental Agencies	Mar.31,1983	Aug.19,1983	Nov.18,1983
Financial Forecast: Construction	June 15,1983	Aug.12,1983	Nov.28,1983
Public Information Program Design complete	June 15,1983	Aug.12,1983	Nov.28,1983
Draft of 286 Agreement to Manager	Aug.25,1983	Sept.16,1983	Nov.28,1983
Penultimate draft of 286 Agreement to Committee	Aug.25,1983	Nov.18,1983	Dec.7,1983
Final draft of 286 Agreement to Council	Aug.30,1983	Nov.28,1983	Dec.19,1983
Draft Agreement to MLPH	Sept.2,1983	Nov.30,1983	Jan.6,1984

CONSULTANT SELECTION PROCEDURE

CONSULTANT SELECTION PROCEDURE

Engineering Consultants are employed by the District of Coquitlam to provide a full range of professional services. To obtain the best services, it is necessary to invite proposals from qualified firms, to assess those proposals with special emphasis on the nature of the job, and to short list and select that particular firm which is felt to be most qualified for the assignment. Following the selection, the exact scope of duties is specified and the upset cost of the services is established. The agreement is documented with a purchase order and a covering letter explaining how possible changes in scope of work or compensation are to be authorized (i.e. by signed purchase order only!).

Requests for Proposals are sent to firms on the eligibility list. Firms are placed on the list at their request or initiative. All firms on the list need not be considered for every job ... only for those for which they are qualified.

The initial classification of proposals, leading to the 'short list', is provided by the Project Section. Assessment criteria are used in a two phase process: the criteria to be used are selected; and specific weights are attached to each criterion. Proposals are evaluated and ranked in numerical order by score. The assessment criteria include:

- A. Corporate Experience: To what extent has this firm performed work of a similar nature, scope and complexity to that proposed in our assignment. Are they familiar with the technology?
- B. Project Team Do the individuals nominated by the firm possess the necessary blend of skills and experience to ensure success? Will the nominees actually work on the job...or will they be shared among several or many other projects? Will we get to use their talents...?
- C. Technical/Specialized Knowledge Some jobs are easier when the consultant has a working knowledge of site conditions, District practices, utility policy, or a host of other factors which may bear on the job. Which firm has the most appropriate knowledge...? Which firm has secured the appropriate sub-consultants? Is a particular technical approach discussed?

- D. Project Organization/ Objectives Does the proposal document show a sound understanding of the scope of work; of the accuracy expected; of the cost control necessary? Is the project organized to ensure appropriate input and progress reporting? Does the consultant really understand what we want?
- E. Cost Estimate Does the cost estimate match the scope of work and degree of investigation required for the job? Too high an estimate or too low an estimate may indicate lack of understanding of the work.
- F. Work Experience What is the firm's report card with the District; with other Municipalities and organizations? In short, have they been consistently "on-time, on budget"?
- G. Current Workload Does the current workload of the firm indicate that full attention might be diverted from our work? (This is particularly important in very small firms.) Will the assignment be vulnerable to sickness or employee turnover ...i.e. is there sufficient depth or backup?
- H. Conflict of Interest Is the firm willing to refrain from working with clients whose interests might conflict with the municipality's...while on the job?
- I. Location Where all other factors are equal, we may consider whether the firm has a Coquitlam business address:
- to patronize and encourage local commerce and industry;
 - to capitalize on convenient access and consultation; and
 - to minimize travel expense and mail delay.

The 'short list' is reviewed at the Division Manager level. Three firms are generally nominated for detailed review. Interviews or telephone contacts may be made to amplify points in the proposal. A single firm is nominated by the Division Manager (Deputy Engineer, Assistant Engineer, Chief Building Inspector) and confirmed by the Municipal Engineer.

Following selection and notification, the assignment documentation is completed by the Project Section.