

TO: CITY MANAGER **DATE:** 1999 04 21

FROM: DIRECTOR ENGINEERING **FILE:** 40-07-01

SUBJECT: FLOOD PROTECTION CONTINGENCY PLAN FOR FRASER FORESHORE

PURPOSE: To seek Council approval of a flood contingency plan for the Fraser foreshore area in anticipation of higher than normal spring runoff in Fraser River

RECOMMENDATION:

1. THAT Council approve the proposed flood protection contingency plan outlined in Section D in the report.
2. THAT staff be authorized to bring forward a Capital Reserves Expenditure Bylaw in the amount of \$250,000 to cover the dyking work required.
3. THAT staff be authorized to hold a public information meeting on 1999 May 12 from 4 pm to 8 pm to provide information to businesses and landowners in the area on the flood response plan and the latest river runoff forecasts.
4. THAT a copy of this report be forwarded to the Parks & Recreation Commission for information.

REPORT

A. BACKGROUND

Many major streams in B.C. are subject to high flow from seasonal snow melt. Peak runoff is governed primarily by the snow pack volume and the weather conditions during the melt period. Based on weather and snow pack information gathered by the provincial government, there is a strong indication that flooding along major rivers could occur across southern B.C. in May or June. The purpose of this report is to provide Council with an overview of the spring flooding potential in the low lying land in the Big Bend area and the proposed contingency plan to address the flood risk issue.

B. 1999 FRASER RIVER SPRING RUNOFF FORECASTS

According to information released by the provincial government, the accumulation of snow pack has continued in the lower Fraser region for the month of March. However, the accumulation has been at a relatively slow rate during March and as a result, the snow water equivalent has fallen from 79% above normal in February to 64% above normal in March. Notwithstanding the reduction in the accumulation rate, 1999 is still close to a record snow pack and similar to that reported in 1972, a high runoff year.

Historically, the 1894 flood is the largest on record and is considered the 200 year flood. The 1948 flood is the second largest flood on record and river level recorded at Mission is approximately 0.3m below the 1894 flood. The 1999 forecasted runoff volume for Fraser River at Mission is approximately 93,200,000,000 m³ which is 95% of the 1948 flood volume. All these numbers suggest that the 1999 runoff will be higher than normal but most likely will not be as severe as the 1948 and 1894 (200 year) floods. While the forecast is based on total volume of runoff, the peak discharge rate which typically occurs in June is entirely dependent on the weather conditions.

C. BURNABY DYKING PROGRAM

The area in Burnaby that is most susceptible to the threat of high runoff in the Fraser River is the low lying land in the Big Bend. Burnaby has a long standing bylaw that requires development sites within the flood plain to comply with flood proofing principles which call for minimum building elevation to 200 year return period plus 0.6m freeboard. A 200 year return period is defined as an event that occurs once in every 200 years, statistically speaking. The required 200 year flood proofing elevation in Big Bend ranges from 3.4m at Boundary Road to 4.0m at Fenwick Street.

Recent development within Big Bend such as the Glenlyon Industrial Park has been developed in accordance with the flood plain management guidelines. In the long term, the flood proofing requirement for development will reduce the need for dykes along the Fraser river foreshore. In the interim, the dykes along the river provide the means of flood protection to the low lying areas that have not been upgraded or redeveloped to the flood proofing level.

Figure 1 attached shows the location of the existing dykes along the river foreshore. The dykes were constructed to the 200 year plus freeboard level, however there are several gaps in the system that were not completed due to conflict with rail crossings, private access requirement and geotechnical issues. Ground survey was conducted recently to confirm the low points and the emergency action that may be required in anticipation of the above normal water level. Based on the survey result, there are 5 sections that require improvement to match the 200 year level. Details of the proposed plan are outlined in Section D in this report.

D. PROPOSED FLOOD PROTECTION CONTINGENCY PLAN

1. DYKING PROGRAM

In order to ensure a continuous protection is provided to the low lying area in the Big Bend flood plain against extreme runoff event, it is recommended that emergency extension of the existing dykes employing temporary or permanent means be carried out. The permanent dyking work proposed below in Sections A, B and C is identified in the master dyking plan for the Big Bend Area and the plan was scheduled for final completion in the next few years. Given the projected high water levels for the 1999 freshet it is recommended that the dyking plan be advanced for immediate construction. Details and priorities of the extension work are outlined as follows:

Section A - Byrne Road to Bryne Creek

Extend the existing dyke through the park area. The conceptual plan for this section was presented to the Parks Commission and FREMP before and the final plan is now ready for construction. The estimated cost of the work is approximately \$170,000, and it is recommended that the work be undertaken now for completion before the end of May.

Section B - Women's Correctional Facility Entrance to CN Rail

The correctional facility is built to the flood proof elevation but the ground adjacent to the facility is slightly below the 200 year level. In order to ensure access to the facility is not impeded by high water, it is recommended that a dyke be constructed in front of the site linking the railway embankment to the existing access road fill. The estimated cost of the work is approximately \$60,000. Staff have initiated discussion with the facility officials about the proposed dyke. It is recommended that the work be constructed now in advance of the peak runoff.

Section C - Wheaton Street (Incinerator) to CN Rail

The GVRD incinerator is built above the 200 year level but the Thorne Street access to the incinerator is lower than the flood proof elevation. In order to ensure access to the facility is not affected by high water, it is recommended that a dyke be constructed along an existing gravel path from the entrance to the incinerator to the CN rail. The CN rail at the tie-in point is slightly below the 200 year level and can be raised with temporary sandbags if and when warranted. The estimated cost of the permanent work is approximately \$20,000. The permanent dyke can be constructed immediately while the temporary sandbagging along the rail can be implemented when needed.

Sections D & E - Schenker Warehouse and Spur Rail Crossing

Sections D and E identify the need for temporary sandbagging at the south end of the Schenker warehouse, the spur rail crossing, and Willard Street/Spur Road area at the eastern end of the site. The emergency work will best be carried out when more precise information on the flood level is known as the temporary work will require closure of the access and crossing.

Other Areas

In addition to the above sections, localized low spots along the river front will be raised using temporary sandbags prior to high water level. The recent ground survey information will be used to mark these low spots where temporary sandbagging may be required.

2. PUBLIC COMMUNICATION PROGRAM

As part of the flood contingency plan, it would be desirable to hold a public meeting to provide information to businesses and land owners in the affected area on the response plan, action and latest runoff forecasts. Subject to approval of Council, a drop-in public information meeting can be scheduled for Wednesday, May 12 from 4 pm to 8 pm to allow the public to review the plan and discuss elements of the plan with staff. It is anticipated that the meeting will be held at a location (yet to be determined) in the Big Bend Area for the convenience of local residents and businesses. Staff will arrange for public notification of the meeting time and location. In addition, staff can include general flood watch information and contact phone numbers on the City web page for general information purposes.

3. FUNDING

The total estimated cost of the permanent dyke construction work for sections A, B and C is approximately \$250,000. The recommended expenditure of \$250,000 at this time is not included in the 1999 component of the 1999 - 2003 Capital Program. However, funds are available within the capital reserves and it is recommended that a capital expenditure bylaw in the amount of \$250,000 be brought down to finance the permanent work involved. Appearing elsewhere on the agenda are the first three readings of the capital expenditure bylaw for Council's approval. The 1999 capital program will be adjusted to ensure the total approved expenditure level will not be exceeded. In order to facilitate the construction work, it is recommended that the required funds be financed through the stabilization account in the interim. Once the capital expenditure bylaw is approved, the stabilization account will be reimbursed accordingly.

The total estimated cost of emergency work that may be required is unknown at this time and is contingent upon the actual level of the river. The temporary sandbagging work described in this report would cost about \$150,000 which is not covered in the current year's budget. We will provide a further report to Council to keep Council informed of the progress and the cost of the emergency plan when more information is available on the flood forecasts.

The provincial government recently has identified a flood protection assistance program for all communities in B.C. for financial assistance on permanent flood protection work. Staff have responded by sending in an application to the province based on the dyking program outlined above.

E. CONCLUSION

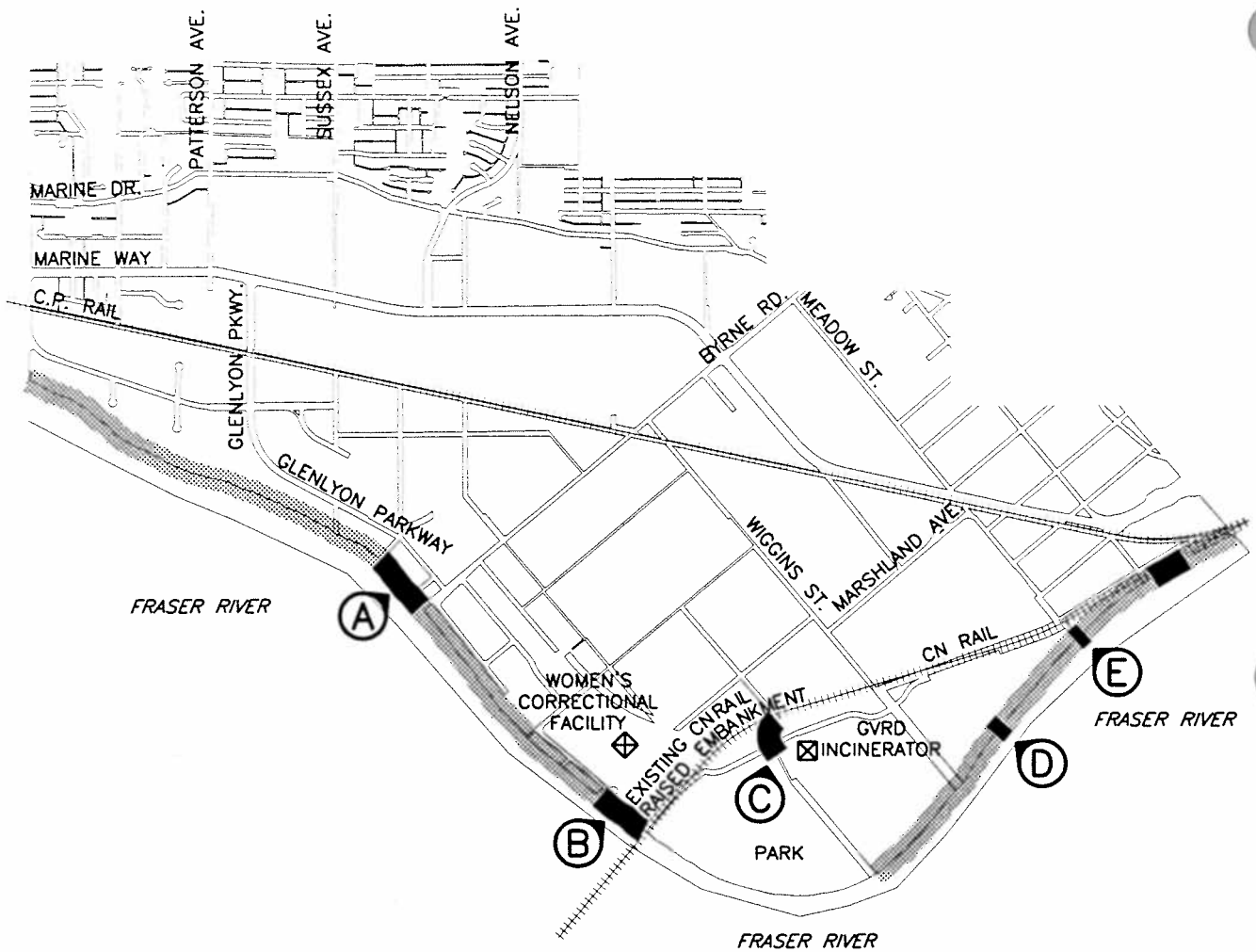
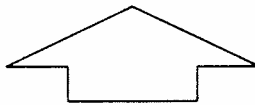
The spring runoff forecast prepared by the provincial government indicated that the total projected 1999 snow melt runoff volume in the Fraser River at Mission is about 21% above normal level. There is still a great degree of uncertainty on whether this will result in flood flows. The weather conditions in the next month will dictate what peak flows may be expected in the Fraser River.

In anticipation of extreme runoff condition this spring, a flood protection contingency plan has been developed to enhance our abilities to protect the flood plain area in Big Bend. The proposed permanent dyking work outlined in this report is identified in the master dyking plan for the Big Bend Area and the plan was scheduled for final completion in the next few years. In view of the flood risk potential associated with the 1999 spring runoff, it is recommended that the contingency plan as outlined in Section D in this report be approved. The proposed emergency dyking program can be initiated immediately and be ready prior to high water.


DIRECTOR ENGINEERING

LSC:jh
Attach.

cc: Director Finance
Director Parks, Recreation & C.S.
Director Planning & Building
Deputy City Manager - Corporate Services
Emergency Planning Coordinator



 EXISTING DYKES

 EXISTING GAPS REQUIRING TEMPORARY OR PERMANENT PROTECTION FOR EXTREME EVENT

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FIGURE 1

NO.	DATE	REVISION
BIG BEND FLOOD PROTECTION CONTINGENCY PLAN		
DRAWN BY: HLOUIE	SCALE: N.T.S.	A 503
APPR'V'D BY: CDL	DATE: 99-04-19	

