

TO: CITY MANAGER

DATE: 1999 03 02

FROM: DIRECTOR ENGINEERING

FILE: 40-05-07

SUBJECT: STONEY CREEK - SEDIMENTATION CONCERN

PURPOSE: To provide Council with information related to the sedimentation problem in Stoney Creek and the actions that are being taken to protect the stream and its fish habitat

RECOMMENDATION:

1. THAT Council receive this report for information
2. THAT a copy of this report be forwarded to:

GVS&DD, Operations and Maintenance Division
4330 Kingsway, Burnaby

Stoney Creek Environment Committee
Attention: Ms. Jennifer Atchison

REPORT

1.0 BACKGROUND

At the Council Meeting of 1999 January 25, staff were requested to prepare a report on the sedimentation issue in Stoney Creek including steps that are being taken to mitigate the adverse effect of sedimentation on the fish habitat in the stream.

This report provides an overview of the sedimentation issue in Stoney Creek, recent stream protection work initiated by the Regional District and Burnaby, and programs that are planned for 1999 to provide better control on the sedimentation issue and protection to the fish habitat in Stoney Creek.

2.0 ISSUES AND CONCERNS ON SEDIMENTATION

Erosion is a natural process that exists in all streams. In most cases, stream erosion is a product of fast flowing water and intense rainfall events. Sedimentation takes place when stream materials eroded from a high energy section of the stream are transported and deposited in the low energy sections. In an urbanized watershed, the conversion of tree covered and grassed lands to impervious areas coupled with construction activities induces higher flow rates and further compounds the stream erosion and sedimentation problem. The conventional approach to correct the stream erosion and sedimentation problem is to reinforce the channel or stream banks with durable materials to withstand the force of the fast flowing water and to construct sediment collection basins. These engineered solutions are still regarded as effective alternatives in mitigating the stream erosion issue. In the context of an integrated storm water management strategy, understanding the relationship between watershed impervious area, diversity and health of the ecosystem and drainage conveyance is fundamental to developing an effective storm water management plan that addresses the erosion, sedimentation, natural environment and growth issues. The implementation of an integrated storm water management plan helps to mitigate the erosion and sedimentation problem in the streams and hence reduces our reliance on the hard engineering corrective measures that would be required otherwise.

Erosion and sedimentation is a concern in Stoney Creek due to its steep grades and fast flowing runoff. The erosion process has impacted negatively on the rich fish resources the creek carries. Over the years, the City of Burnaby, the GVRD and local environmental groups have worked together to develop plans and to implement programs with the view to protect drainage conveyance and the environment within the stream corridor.

3.0 STONEY CREEK - CURRENT STATUS

Stoney Creek is a tributary to the Brunette River. It is one of the best streams in the Brunette watershed that supports a diverse ecosystem. The creek's headwater extends into the City of Port Moody. It traverses through Coquitlam and Burnaby and joins the Brunette River to the south of Government Road. The main stem of Stoney Creek serves an important inter-municipal drainage function and is maintained by the GVS&DD as part of the Still Creek/Brunette River system. The remaining tributaries, 1, 2 and 3 as shown in Figure 1 are maintained by the City.

The lower reaches of Stoney Creek through Burnaby include rich and diverse riparian wetlands and support many aquatic components that are vital to a healthy stream ecosystem. The presence of coho and steelhead as well as cutthroat trout in the creek has made Stoney Creek a significant stream in the watershed.

Over the years, both the City and the GVS&DD have implemented programs within the watershed based on storm water management principles to preserve the stream corridor and its ecosystem. Actions and programs carried out by the District and the City in the past two years to mitigate siltation in Stoney Creek included:

GVS&DD (Main Stem - Stoney Creek):

- Provided bank protection and conducted riparian planting below Lougheed Highway.
- Constructed rock weir at North Road to control runoff and bank protection and riparian planting below Stoney Creek Place.
- Ongoing trash removal at the Lougheed Highway culvert debris screen.
- Conducted geotechnical assessment and bank stabilization work in the upper section of the creek in Coquitlam.

City of Burnaby (Tributaries and Watershed Wide):

- Required sediment control plan in connection with the new secondary school construction project. Elements of the plan included two on-site sediment ponds utilizing chemical flocculation, wheel wash for construction truck traffic, intercepting trenches and swales around the site perimeter, protection of exposed banks and ongoing environmental monitoring and runoff sampling program during construction.
- Required a storm water control plan for the new school to reduce the impact of post-development flow on the creek and to enhance water quality through detention and biofiltration.
- Conducted ongoing inspection of the new school site for compliance with environmental requirement including sediment control.
- Reviewed a stream enhancement plan with the School District for tributary 1 and the main Stoney Creek to improve fish habitat and to reduce stream erosion.
- Ongoing site inspection of tributaries to Stoney Creek to remove debris and materials that would impede proper stream flows.
- Completed an integrated storm water management plan for the Stoney Creek watershed with participation from the GVRD, Stoney Creek Environment Committee, SFU, City of Coquitlam, City of Port Moody, UBC/Westwater and BCIT.

- Completed the transfer of approximately 780 acres of land from SFU to the City to form part of the Burnaby Mountain conservation area to preserve and protect the natural environment and streams within the area.

In addition to the above works, local community groups such as Stoney Creek Environment Committee and Sapperton Fish and Game Club have participated in many community events and stream stewardship projects to help preserve Stoney Creek.

4.0 1999 PROGRAM

As part of the ongoing commitment of the City and the GVRD to address storm water runoff issues in the Stoney Creek watershed, the following programs are planned to be implemented in 1999:

GVS&DD:

- Conduct an engineering study to investigate alternatives to improve the Lougheed Highway culverts grillage operation to minimize blockage and inlet erosion problems.
- Investigate bioengineering opportunities in Stoney Creek in partnership with the Stoney Creek Environment Committee.
- Continue with the stream flow monitoring program to provide data for water quality and hydrologic assessments.

City of Burnaby:

- Replace an existing footbridge near the sports field to improve channel hydraulic and minimize localized erosion problem.
- Conduct riparian planting and bank protection work on tributary 2 from the tennis courts to the confluence with Stoney Creek.
- Present a report to Council in 1999 April that will outline the details of an integrated storm water management approach for the Stoney Creek watershed within the framework of the Brunette watershed management planning process. The issue of erosion and sedimentation control will be addressed as part of the "big picture" approach.
- Liaise with the School Board to ensure adequate storm water management measures are provided on the new school site to mitigate downstream impact.

- Liaise with the Rapid Transit project office to establish requirements for the environmental protection and monitoring plan in connection with the proposed Skytrain crossing of Stoney Creek.
- Continue to partner with community groups and the GVS&DD to identify opportunities for fish habitat protection and enhancement work within the watershed.

5.0 CONCLUSIONS

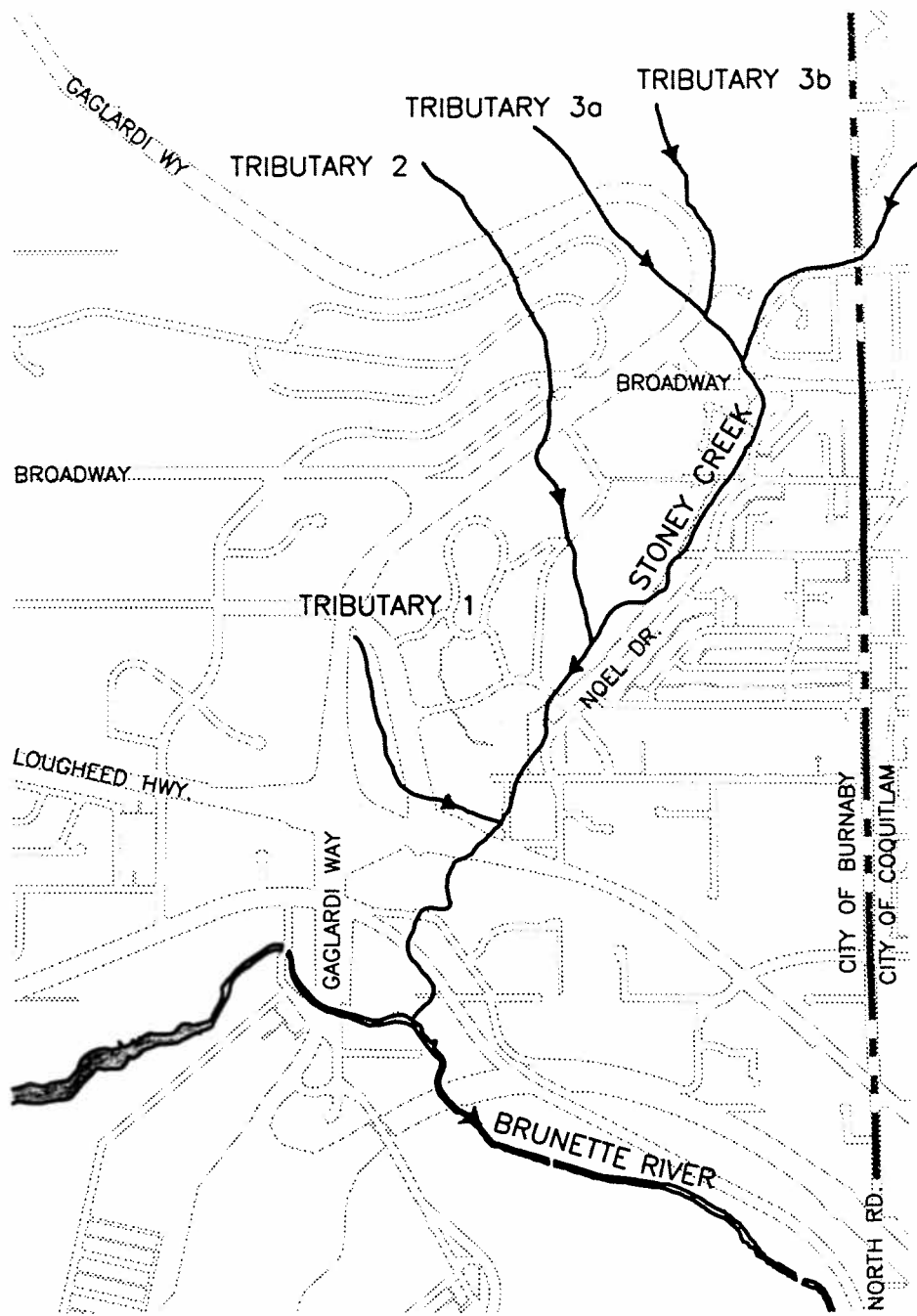
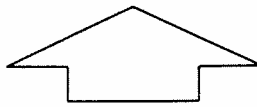
Erosion and sedimentation control is one of the key building blocks that provide the foundation for a healthy watershed. This report focuses on the sedimentation issue and a further report will be presented to Council in 1999 April that will outline a holistic and balanced approach in managing the storm water runoff while protecting the ecosystem including the fish habitat for the Stoney Creek watershed.

Stoney Creek is one of the best streams in the Brunette watershed supporting a diverse and healthy ecosystem. Guided under the vision of the Brunette watershed management plan, many initiatives have been taken and partnerships formed among the City, GVRD, SFU and local environmental groups to protect the Stoney Creek corridor and the habitat it supports. The implementation of the action program planned for 1999 and the adoption of an integrated storm water management plan for the Stoney Creek watershed would bring the City one step closer towards the goal of developing an effective urban runoff management plan and protecting the natural environment while accommodating growth and development.

W.C. [Signature]
DIRECTOR ENGINEERING

LSC:jh

cc: Director Planning & Building
Director Parks, Recreation & Cultural Services



NO.	DATE	REVISION



STONEY CREEK

DRAWN BY: HLOUIE SCALE: N.T.S.
 APPR'V'D BY: CDL DATE: 99-02-25

FIGURE 1