

CITY OF BURNABY

ENVIRONMENT AND WASTE MANAGEMENT COMMITTEE

HIS WORSHIP, THE MAYOR
AND COUNCILLORS

RE: BRUNETTE BASIN WATERSHED PLAN

RECOMMENDATIONS:

1. **THAT** Council adopt the vision, objectives and guiding principles outlined in the draft Brunette Watershed Plan.
2. **THAT** Council authorize staff to establish a watershed coordinating committee as outlined in section 8.0 in this report for the purpose of coordinating and facilitating watershed related projects and partnerships.
3. **THAT** Council authorize initiation of the short term action programs (items 1 to 13 in Table 2) in collaboration with other watershed stakeholders where appropriate and that the medium to long term action programs be given priority in future work planning and budget discussion.
4. **THAT** Council authorize staff to hold a public meeting on Thursday, 2000 May 25 from 6:30 pm to 9:00 pm to invite public input on the draft plan.
5. **THAT** the watershed plan be included as an integral unit in City land use planning, park development and engineering processes.

REPORT

The Environment and Waste Management Committee, at its meeting held on 2000 March 14, received and adopted the *attached* report outlining elements in the draft Brunette Basin watershed plan including watershed vision and goal, guiding principles of the management plan, strategic options of the plan, proposed action plan and implementation strategy. The Committee advised that the proposed management plan balances environmental protection, public safety, finance and community growth in the watershed.

: COPY - CITY MANAGER
- DIRECTOR ENGINEERING
- DIRECTOR FINANCE
- DIR. PLNG. & BLDG.
- DIR. PARKS, REC. & CULT. SERV.

Respectfully submitted,

Councillor D. Johnston
Chair

Councillor C. Redman
Member

Councillor B. Der
Member

TO: CHAIRPERSON & MEMBERS
ENVIRONMENT & WASTE
MANAGEMENT COMMITTEE

DATE: 2000 02 06

FROM: DIRECTOR ENGINEERING

FILE: 40-05-06

SUBJECT: BRUNETTE BASIN WATERSHED PLAN

PURPOSE: To seek approval of the Committee and Council of the draft watershed plan prepared for the Brunette Basin

RECOMMENDATION:

1. **THAT** the Committee recommend to Council that:
 - a) the vision, objectives and guiding principles outlined in the draft Brunette Basin Watershed Plan be adopted;
 - b) staff be authorized to establish a watershed coordinating committee as outlined in section 8.0 in this report for the purpose of coordinating and facilitating watershed related projects and partnerships;
 - c) the short term action programs (items 1 to 13 in Table 2) be initiated in collaboration with other watershed stakeholders where appropriate and the medium to long term action programs be given priority in future work planning and budget discussion;
 - d) staff be authorized to hold a public meeting on Thursday, May 25, 2000 from 6:30 pm to 9:00 pm to invite public input on the draft plan;
 - e) the watershed plan be included as an integral unit in City land use planning, park development and engineering processes.

EXECUTIVE SUMMARY

Over 140 years ago, the Brunette Basin of 73 square kilometer provided hunting and fishing grounds for the Squamish and Kwantlen Indians. Today, the basin has transformed into a major urban center as home to the Brentwood, Lougheed and Metrotown centers as well as advanced education centers for SFU and BCIT.

With the change in land use also came the change in the natural environment and the stream systems. Although there are over 200 km of open streams remain in the basin and 20% of the land area being kept as parks, water bodies or green space through Council adopted policies, there is a need to ensure the watershed is protected and an effective watershed management plan is in place to balance environmental protection, public safety, finance and community growth in the watershed.

To meet the goal of watershed protection, staff were directed by Council to work with the public and stakeholder agencies in the watershed to develop a management plan for the Brunette Basin. Hence, the Brunette Basin Task Group was formed and given the mandate to develop the plan. The planning process is now complete and a draft report has been produced for review and comment.

The purpose of this staff report is to present the key elements contained in the draft watershed plan report which are outlined as follows:

- Watershed vision and goal
- Guiding principles of the management plan
- Strategic options of the plan
- Proposed action plan
- Implementation strategy

Subject to Council approval of the report, the draft plan would be presented to the public at a workshop scheduled for 2000, May 25. The workshop would provide a further opportunity for the public to comment on the plan direction and recommendations. Once the public process is complete, the draft report will be finalized for the implementation phase. Provincial and Federal agencies staff have been participating in the planning process and have supported the recommendations presented in the draft report. Other watershed municipal representatives will be forwarding similar staff report to their Council seeking approval of same. GVRD staff will also submit a staff report to the Sewerage and Drainage Committee at its April meeting for consideration by the Committee.

The recommendations and proposed actions presented in the Brunette Basin plan and in this staff report reflect the commitments and priorities of the public and watershed stakeholder agencies to protect the natural environment in the watershed through better management practices. The proposed plan could be used beyond the Brunette Basin as the model for other urban watersheds in the region. The planning process has been a valuable learning experience for all members and has led to a greater understanding of the delicate balance of the watershed management options.

1.0 BACKGROUND

In 1999 October, Council approved a staff report on the *Still Creek - Brunette River Issues and Proposed Actions*. The report outlined the water quality problems and environmental concerns related to the Still Creek/Brunette River corridor. Arising from Council discussion of the report, staff were authorized to initiate a process with the GVRD to address the watershed issues in the broader context of watershed management plan for the Brunette Basin.

The Brunette Basin is a 73 square kilometre urban center located in the Greater Vancouver area (Figure 1). The basin includes drainage areas in five municipalities: Vancouver, Burnaby, Port Moody, Coquitlam and New Westminster. It contains major economic centers, transportation corridors and a population of 176,000 people.

2.0 BRUNETTE BASIN TASK GROUP

In order to develop a watershed management plan that crosses multi-jurisdictional boundaries, the Brunette Basin Task Group was formed under the GVRD's Liquid Waste Management Plan with representation from all three levels of government and the public.

The multi-stakeholder approach provided an opportunity for a broad consensus based and expert evaluation process. The task group consisted of members from the following organizations:

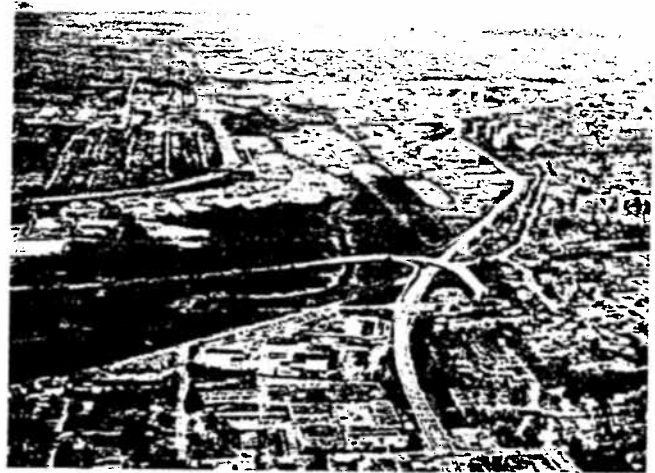
- City of Burnaby
- City of Coquitlam
- City of New Westminster
- City of Vancouver
- Greater Vancouver Regional District
- Department of Fisheries & Oceans
- Ministry of Environment, Lands and Parks
- UBC Institute for Resources and Environment
- BCIT Fish and Wildlife
- Sapperton Fish and Game Club

3.0 WATERSHED PROFILE

Brunette Watershed Facts

Total area:	73 square km
Area breakdown:	75% Burnaby 14% Vancouver 8% Coquitlam 2% New West. 1% Port Moody
Streams:	over 200 km Still Creek Beecher Creek Quichon Creek Eagle Creek Beaver Creek Silver Creek Stoney Creek Brunette River
Major Centres:	Brentwood Lougheed Metrotown SFU BCIT

Many of the streams in the watershed provide a home to plants, animals and fish as well as conveying drainage and offering recreation opportunity. Although the basin is highly urbanized, over 20% of the basin exist as parks, water bodies, wetlands or green space.



Brunette Basin - Central Valley Area
(Still Creek and Kensington Overpass in the foreground)



Stoney Creek - One of the most productive streams in the Brunette Basin

The hydrology of the basin is typical of an urbanized watershed with high impervious area ranging from 33% in Stoney Creek to 68% in Upper Still Creek (Vancouver portion). The reduced surface permeability through development has created problems such as flashy high flows during rainy season, low base flows in the dry summer months, bank erosion and sedimentation in the streams.

The Brunette Basin has been the subject of water quality, flood protection and wildlife studies in the past. These studies have concluded that pollutant loading is evident in the Upper Still Creek while the tributaries (Beecher, Eagle, Stoney, etc.) and the Brunette River are still in a fairly natural state with significant habitat value and ecological resources. The basin has over 200 km of streams, and is home to over 200 species of birds and 23 species of mammals. Although the salmon populations completely disappeared from the Brunette River during the 60's - 70's period, fish passage and habitat improvements made in the last two decades by community groups, the City and the Regional District have helped to bring small numbers of spawning salmons back to the basin.

According to GVRD's population data, the basin reached a population of approximately 176,000 in 1996, a growth of 23% between 1986 and 1996. Population projection by the GVRD also indicated that the basin population will grow to about 290,000 people in 2021. Although the basin still contains 20% green or open space which will remain constant in the near future, the increase of human activities and land use densification to accommodate the population growth can have a negative impact on individual streams or cumulatively on the entire watershed's health.

4.0 WHY A WATERSHED PLAN

In a complex urban area such as the Brunette Basin, activities engaged by residents, businesses, environmental stewardship groups, municipalities, and the regional, provincial and federal governments all impact the watershed. In order to provide a balanced solution to meet the environmental, growth and flood risk management challenges, a watershed plan is widely recognized as the basic building block of an integrated solution.

A watershed plan combines a wide range of management options and strategies with differing expectations and goals that include flood management and preservation of the environmental quality of streams. For the Brunette Basin, the overall goal and objectives of the watershed plan are:

OVERALL GOAL:

“ **Protect or enhance the integrity of the aquatic and terrestrial ecosystems and the human populations they support in a manner that accommodates growth and development.**”

PLAN OBJECTIVES:

- Environmental:** protect or enhance aquatic habitat, terrestrial habitat and biodiversity
- Social:** enhance recreational opportunities and minimize health and safety impacts related to flooding and poor water quality
- Financial:** minimize the cost of carrying out the plan and minimize property damage due to flooding
- Learning:** increase the understanding of natural systems and impact of the plan on these systems and human health

Based on the goal and objectives developed for the watershed plan, guiding principles were established and used as the framework for the program planning and evaluation process. The guiding principles are focussed in three key areas which are directly linked to the hydrology and stream health in the watershed. The guiding principles are:

1. *Impervious Area Management*

- The increase of impervious area should be minimized and stakeholder agencies should strive for long-term reduction of existing impervious area through Best Management Practices (BMPs).

2. *Stream Corridor Protection*

- Stakeholder agencies should protect existing stream habitat and riparian areas and establish an effective buffer over the long-term.
- Development within the watershed should employ stormwater Best Management Practices (BMPs) to reduce post development runoff, and to maintain and augment baseflows.

- New in-stream structures should be designed to accommodate fish passage.
- The stream corridors should be protected and managed with a balanced approach to stormwater conveyance, protection of life and property from flooding, aquatic and terrestrial habitat protection and recreational use.
- The watershed strategies developed under the plan must be cost effective, affordable and reliable.

3. *Plan Integration*

- The strategic options should be integrated with land use planning, operations and maintenance, development programs, and other agency programs.
- Stormwater management and stream enhancement activities within the watershed should be coordinated to provide continued and effective partnership and participation among all levels of government, regulatory agencies, businesses and the local community.

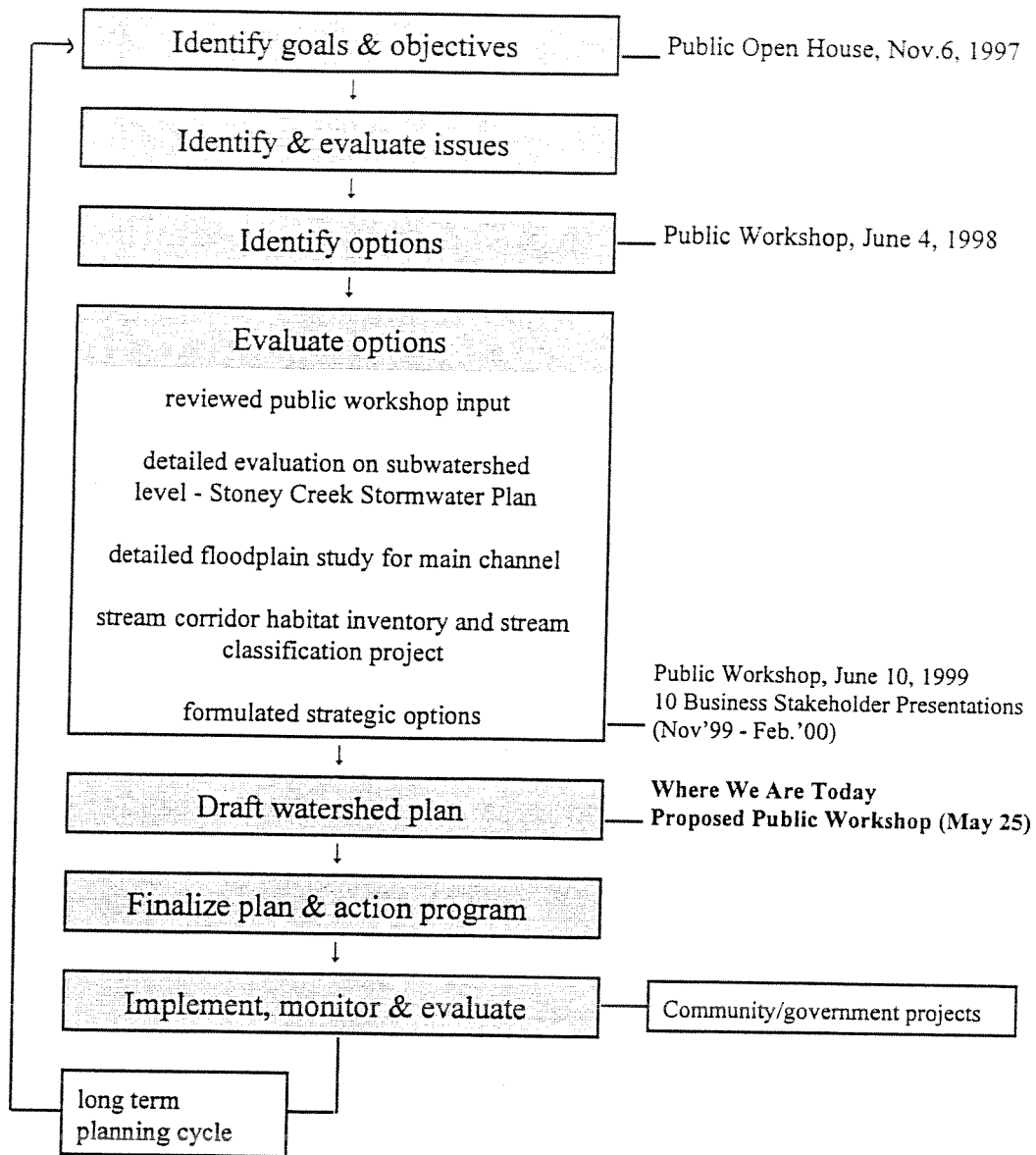
The goal, objectives and guiding principles discussed above were developed by the Task Group and used to guide the plan development in a multi-stakeholder, consensus based process.

5.0 WATERSHED PLAN DEVELOPMENT PROCESS

While the Task Group is the main driving force behind the planning process, stakeholder involvement and public consultation also became an important and integral component that helped to build and support the plan.

The major steps of the entire planning process is outlined in Figure 2. Activities that were developed during each step are documented in the appendices to the Watershed Plan Report. During the course of the study, opportunities were created to encourage public and environmental stewardship groups participation. Three open houses were conducted and a business stakeholder communication program was initiated which resulted in approximately 10 presentations by the Task Group to various business organizations within the watershed.

Figure 2: Brunette Watershed Planning Process



As indicated in Figure 2, remaining activities for the planning process include a further public workshop on May 25 to invite comment and feedback from the public pertaining to the proposed plan and the initiation of the implementation and long term monitoring plan.

6.0 STRATEGIC OPTIONS OF THE WATERSHED PLAN

Through the planning process, the Task Group had identified multiple management options that are compatible with the objectives of the watershed plan. Options obtained from the public and business workshops were combined with those advanced by the Task Group. The resulting management options are detailed in Table 4-3 and 4-4 in the draft watershed plan report which cover a wide range of topics including:

- Education Program
- Public Participation and Stewardship
- Improper Discharge Elimination
- Construction Run-Off Control
- Municipal Operations and Planning
- Integration with Land Use, Environment and Flood Management
- Funding

Within the various management options, many projects and ideas were identified for possible implementation in the watershed. However, some projects may be more difficult to achieve than others due to financial, technological or environmental constraints. In order to develop an action plan that is manageable and practical at the watershed scale, the options and projects were distilled and grouped into three categories:

- A. Policies, Principles and Bylaws
- B. Education and Stewardship Programs
- C. Improvement Program

The strategic options for each of the three categories are presented in Table 1. These options also became the foundation of the watershed plan upon which the watershed action plan was developed.

Table 1 Proposed Strategic Options for the Watershed Plan

A. POLICIES, PRINCIPLES AND BYLAWS	
1	Develop floodplain management strategy and associated bylaws.
2*	Delineate existing riparian, wetland and flood storage areas and establish policy to protect from development, construction impacts, locating of new utilities or facilities, etc.
3	Develop watercourse protection and sediment and erosion control bylaw
4	Establish, mark and enforce suitable right-of-way/easements for maintenance
5	Consider property acquisition of riparian, wetland and flood storage areas where local planning process provides opportunity
6*	Integrate stormwater management and Best Management Practices guide with land use planning tools - policy statements in Official Community Plans and zoning and subdivision bylaws; establish effective impervious area reduction guidelines or bylaw
7	Develop subwatershed stormwater management plans
8	Improve fish passage and enhance/revegetate as part of facility repair or upgrades
9	Consider day lighting where local planning process provides opportunity
B. EDUCATION AND STEWARDSHIP PROGRAMS	
1	Municipal and district staff training
2	Contractor/developers program
3*	General public program on watershed program
4*	School curriculum program
5	Local stream restoration activities/festivals (cleanups, planting, invasive species control, etc.)
6	Signage/kiosks as part of Greenways
7	Riparian landowner contact program
8	Recognition/awards program in business and resident categories

Table 1 Proposed Strategic Options for the Watershed Plan (continued...)

C. IMPROVEMENT PROGRAMS	
1	Sewer rehabilitation program - inflow/infiltration and cross-connection elimination
2*	Flood management strategy
3	Spill response program - review and clarify
4	Bank erosion control and revegetation strategy - bank stabilization and enhancement, bioengineering considered before rip rapping, etc.
5	Fish passage improvements
6	Greenways and recreational corridors incorporating streams
7	Baseflow augmentation; infiltration basins
8	Riffle weirs
9	Culvert upgrades or bridge replacement
10	Wetland, wet or dry detention pond, biofiltration pond
11	Stream complexing and off-channel habitat; reduce channelization
12	Dredging Burnaby Lake

The strategic options listed in Table 1 were the focus of discussion at the last public workshop. Workshop participants were asked to indicate the top five options they felt should receive priority. The top five options selected through the public consultation process are highlighted and marked with an asterisk in Table 1.

7.0 PROPOSED ACTION PLAN

During the watershed plan development process, several projects were identified that would help the Task Group to test the practicality of some of the guiding principles and to learn about state-of-the-art storm water management planning at a sub-watershed level. Arising from the deliberation of the Task Group, the following projects were advanced and completed as part of the watershed planning program.

- Stoney Creek Integrated Storm Water Management Plan
- Stream Inventory Using Global Positioning System (GPS) Technology
- Watershed Stream Classification Map
- Stream Corridor Evaluation System
- Still Creek Flood Reduction Alternatives

With the experience gained through the planning process and the pilot projects, the Task Group had developed a multi-stakeholder action program that reflects the vision, goal and guiding principles of the watershed plan. A complete listing of the programs included in the action plan is provided in Table 4-7 in the watershed plan report. Some of the key components that are related to Burnaby are summarized in Table 2. A proposed timetable for the implementation of the programs is included. Some of the initiatives would benefit areas beyond the Brunette watershed boundary and could be used as model for other watershed municipalities.

The Brunette watershed program is a dynamic plan and it is expected that as more experience is gained in watershed protection work, refinement will be made to the action program to improve the effectiveness of the plan.

Table 2: Proposed Watershed Action Plan

PROPOSED ACTION		Suggested Timeline (Years)
1	Develop city wide sediment control bylaw for construction and development activities	5
2	Develop flood management strategy and standards for runoff management for new development	5
3	Initiate assessment of stream corridors property ownership and develop acquisition strategy	5
4	Integrate watershed management strategy with land use planning	5
5	Complete sewer inspection and cross connections assessment in high problem areas	5
6	Investigate bioengineering opportunities and benefits in Stoney Creek	5
7	Improve emergency response and spill prevention program in consultation with senior agencies	5
8	Initiate Deer Lake tributaries biofiltration program	5
9	Improve and expand the Streams Learning Unit for elementary schools	5
10	Initiate local enhancement work in Deer Lake tributaries #16 and 17	5
11	Provide ongoing staff and public training programs on watershed protection	5
12	Commence implementation of Stoney Creek Storm Water Management Program	5
13	Develop public recognition program for watershed protection work	5
14	Investigate the feasibility of a large scale sediment control pond in Still Creek corridor, upstream of Burnaby Lake	5-10
15	Develop storm water management plans for sub-watersheds (Eagle Creek, Beecher Creel, Silver Creek, etc.)	10
16	Complete Westridge combined sewer separation program	10-15
17	Complete Burnaby Lake rejuvenation project	10-15
18	Improve fish passage in Beecher and Eagle Creeks	15

8.0 IMPLEMENTATION STRATEGY

In the past few years, Council has endorsed the principles of alternative storm water management practices and storm water management plans for the Stoney Creek, Byrne Creek and Hollis Creek watersheds. While the Brunette Basin planning process was underway, many initiatives and programs related to urban storm water management were developed and implemented through other Council adopted plans. Re-allocation of staff resources was also made in order to meet the changing needs in the environmental protection and storm water management field.

With the existence of many storm water management tools at different scales and in different watersheds, the Brunette Basin watershed plan provides an opportunity to consolidate the policies and processes in place and to apply the more streamlined process uniformly to all watersheds in Burnaby. Based on the work of the Brunette Basin Task Group and the input from the public workshops, it is recommended that the following implementation strategy be approved by the Committee and Council:

Strategy #1

That the vision, objectives and guiding principles for the watershed be adopted by all stakeholder agencies.

Strategy #2

That a watershed coordinating committee be established on the basis of the Brunette Basin Task Group model.

The mandate of the Task Group will be fulfilled when the basin plan is finalized. With the lessons and experience gained through the Task Group planning process, the Task Group concluded that the discussion, coordination and working towards a common understanding on watershed issues have helped all stakeholder agencies to be more effective in meeting the challenges in the watershed. The multi-stakeholder involvement also led to better utilization of resources, buy in and commitment by senior agencies and the public to the plan. Therefore, a watershed coordinating committee would be desirable to carry on the role of coordination, facilitation, information exchange and plan monitoring as part of the implementation process.

Detailed terms of reference for the coordinating committee would be developed after the draft watershed plan and the recommendations are approved by Council. For preliminary planning purposes, the following broad objectives are envisioned for the proposed committee.

- coordinate and harmonize storm water management and stream enhancement projects within the watershed initiated by stakeholder agencies and local stewardship groups;
- provide opportunities for partnerships and participation, funding opportunities, and sharing of resources and expertise;
- facilitate the exchange of watershed information;
- develop and refine watershed management tools for further enhancement to the Brunette Basin plan; and
- monitor the basin plan implementation process and prepare biennial watershed program process report.

The general structure of the coordinating committee would build on the existing Task Group model with more emphasis on stewardship groups input and participation.

Strategy #3

That the short term action programs [items 1 through 13 in Table 2] be initiated and implemented in collaboration with other stakeholder agencies and municipalities where appropriate and the medium to long term action programs be given priority in future City work planning and budget discussion.

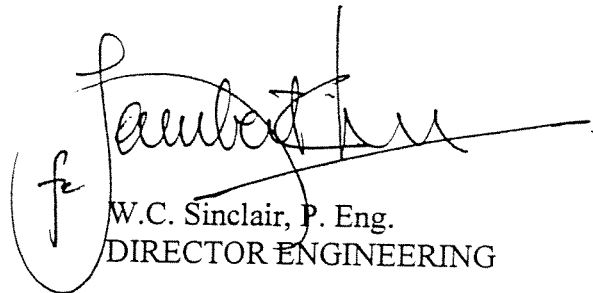
9. CONCLUSION

The Brunette Basin Task Group has 11 members drawn from a wide array of background and knowledge. The planning process for the Brunette Basin watershed plan has been a valuable learning experience for all members that led to a greater understanding of the complexity and delicate balance of watershed management options with respect to environmental protection, flood control, land use decision, financial constraints and public involvement/education. The process has also led all participating agencies and stewardship groups to sharing of a common goal for the watershed.

During the planning process, the Task Group had decided to spend a significant portion of project time on data gathering, option/strategies identification and consensus building, rather than on detailed cost benefit evaluation for each management option identified. The results of the comprehensive watershed scale approach have produced a management plan that clearly defines the common goal for the watershed and yet provides flexibility to all stakeholder municipalities, agencies and groups to develop the detailed implementation strategy and action plan that best suit their own requirements.

The plan presented in this report reflects the commitments and actions by the public and stakeholder agencies to the protection of the environment through better watershed management practices. Although the Brunette Basin includes five municipalities and contains multi-jurisdictional facilities, the proposed watershed plan will be used as a common map by all stakeholders in building an integrated watershed management program that will meet the goal of:

“ Protecting or enhancing the integrity of the aquatic and terrestrial ecosystems and the human populations they support in a manner that accommodates growth and development. ”



W.C. Sinclair, P. Eng.
DIRECTOR ENGINEERING

LSC:jh/jb

- cc: City Manager
- Director Planning & Building
- Director Finance
- Director Parks, Recreation & Cultural Services

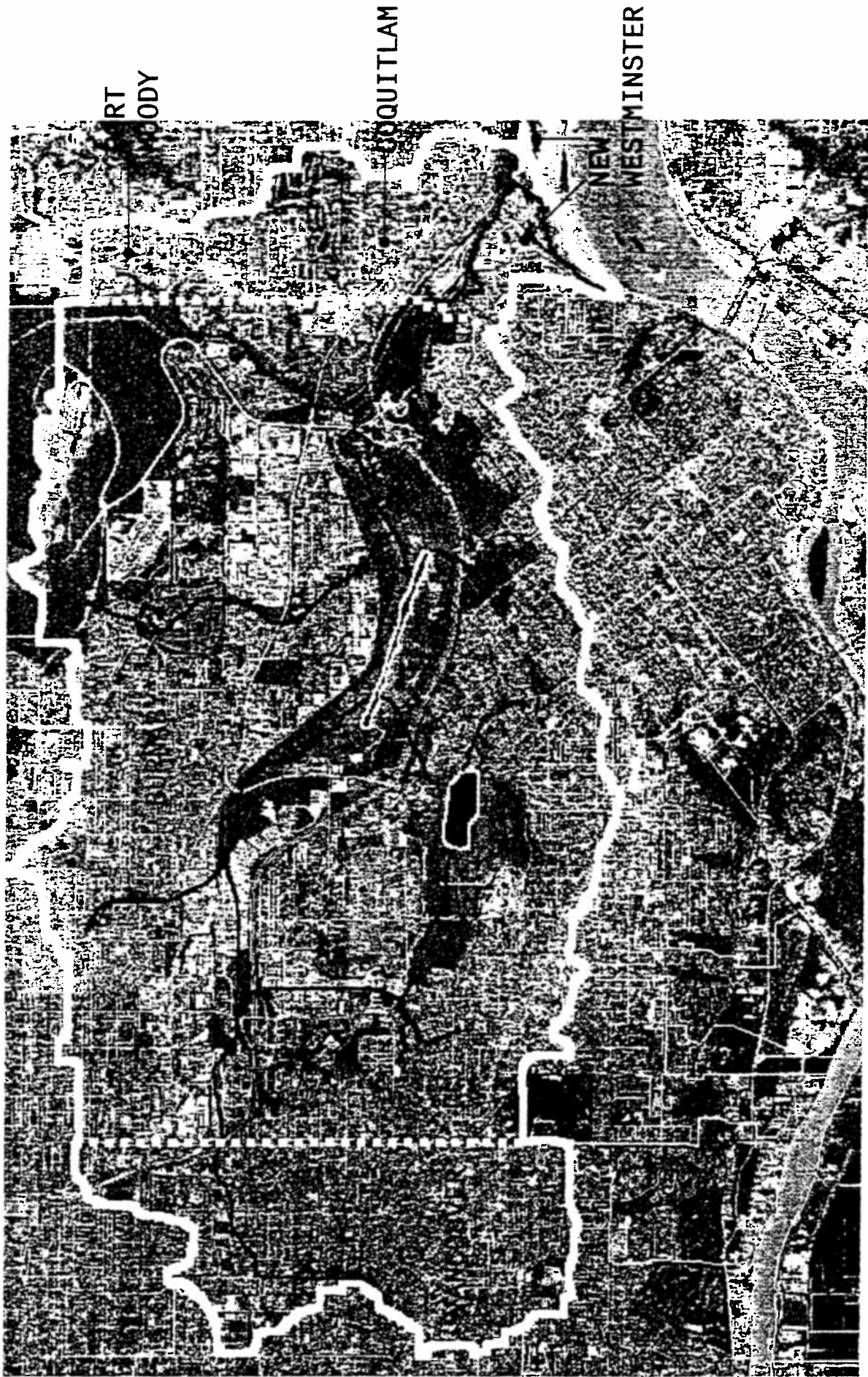


Figure 1 - Brunette Watershed