

REGIONAL DISTRICT OF NANAIMO
COMMITTEE OF THE WHOLE
TUESDAY, JANUARY 14, 2014
(Immediately following the Special Board Meeting)
(RDN Board Chambers)

A G E N D A

PAGES

CALL TO ORDER

DELEGATIONS

4 **Gail Adrienne, Nanaimo and Area Land Trust**, re 2014 Funding.

MINUTES

5-12 Minutes of the Regular Committee of the Whole meeting held Tuesday, November 12, 2013.

BUSINESS ARISING FROM THE MINUTES

COMMUNICATIONS/CORRESPONDENCE

13-14 **Bruce Jolliffe, Chair, Vancouver Island Regional Library Board of Trustees**, re Community Library Branch – Cedar Rural Village Centre.

15-33 **Coralee Oakes, Minister of Community, Sport, and Cultural Development**, re Local Government Elections Reform Stakeholder Consultation.

34 **Heather Sarchuk, North Cedar Improvement District**, re Cost Sharing for Constructing a 400,000 Imperial Gallon Reservoir.

35 **Amanda Weeks, City of Parksville**, re 2014 Council Appointment to the District 69 Recreation Commission.

36 **Amanda Weeks, City of Parksville**, re 2014 Council Voting Representative – Arrowsmith Water Service Management Board.

37 **Amanda Weeks, City of Parksville**, re 2014 Council Voting Representative – Englishman River Water Service Management Board.

CHIEF ADMINISTRATIVE OFFICER

38-52 2014 Service Area Work Plan Projects.

CORPORATE SERVICES

ADMINISTRATIVE SERVICES

53-59 Bylaw No. 1694, 2014 – A Bylaw to Secure Long Term Debt for the City of Nanaimo Water Treatment Plant.

FINANCIAL SERVICES

60-64 Bylaw No. 1693, 2014 – A Bylaw to authorize preparation of 2014 Parcel Tax Rolls.

65-67 Bylaw No. 1467.01, 2014 – A Bylaw to amend the requisition limit for the Electoral Area 'A' Recreation and Culture Service.

68-70 Bylaw No. 798.08, 2014 – A Bylaw to amend the requisition limit for the Electoral Area 'A' Community Parks Service.

71-79 Report on Actuarial Services for Unfunded Liabilities.

80-81 Feasibility Study Reserve Accounts Update.

82-190 2014 Proposed Budget External Requests for Funding.

RECREATION AND PARKS SERVICES

PARKS SERVICES

191-195 Development Funding for the E&N Regional Rail Trail.

STRATEGIC AND COMMUNITY DEVELOPMENT

LONG RANGE PLANNING

196-252 Regional Growth Strategy Targets and Indicators Project.

REGIONAL AND COMMUNITY UTILITIES

WASTEWATER SERVICES

253-948 Liquid Waste Management Plan Amendment – *Staff to provide presentation to introduce report.*

COMMISSIONS, ADVISORY & SELECT COMMITTEES

Regional Parks and Trails Select Committee

949-951 Minutes of the Regional Parks and Trails Select Committee meeting held Tuesday, December 3, 2013 (for information).

952-1027 **Benson Creek Falls Management Plan 2014-2024.**

That the 2014-2024 Benson Creek Falls Management Plan be approved.

1028-1096 **RDN Parks and Trails Guidelines.**

That the Parks and Trails Guidelines Report be approved and adopted as a guide for parks and trail development and operations.

ADDENDUM

BUSINESS ARISING FROM DELEGATIONS OR COMMUNICATIONS

NEW BUSINESS

IN CAMERA

That pursuant to Sections 90 (1) (c) and (e) of the Community Charter the Board proceed to an In Camera meeting for discussions related to labour relations and land acquisition.

ADJOURNMENT

Re: 2014 Funding

From: Gail Adrienne [mailto:gail@nalt.bc.ca]
Sent: Friday, November 15, 2013 3:04 PM
Subject: Fw: 2014 Funding

Could you please add NALT to the Agenda as a delegation to the Committee of the Whole meeting of the RDN Board on January 14th, 2014, at 7:00pm.

Thank you

Gail Adrienne
Executive Director
Nanaimo & Area Land Trust
www.nalt.bc.ca
250-714-1990

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE REGULAR COMMITTEE OF THE WHOLE MEETING
OF THE REGIONAL DISTRICT OF NANAIMO HELD ON
TUESDAY, NOVEMBER 12, 2013 AT 7:31 PM IN THE
RDN BOARD CHAMBERS

In Attendance:

Director J. Stanhope	Chairperson
Director D. Brennan	Deputy Chairperson
Director A. McPherson	Electoral Area A
Director H. Houle	Electoral Area B
Director M. Young	Electoral Area C
Director G. Holme	Electoral Area E
Director J. Fell	Electoral Area F
Director B. Veenhof	Electoral Area H
Director B. Dempsey	District of Lantzville
Director J. Ruttan	City of Nanaimo
Director G. Anderson	City of Nanaimo
Director B. Bestwick	City of Nanaimo
Director T. Greves	City of Nanaimo
Director D. Johnstone	City of Nanaimo
Director J. Kipp	City of Nanaimo
Alternate	
Director C. Burger	City of Parksville
Director D. Willie	Town of Qualicum Beach

Regrets:

Director M. Lefebvre	City of Parksville
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Also in Attendance:

P. Thorkelsson	Chief Administrative Officer
J. Harrison	Director of Corporate Services
W. Idema	Director of Finance
T. Osborne	Gen. Mgr. Recreation & Parks
D. Trudeau	Gen. Mgr. Transportation & Solid Waste
G. Garbutt	Gen. Mgr. Strategic & Community Development
M. Donnelly	Mgr. Water & Utility Services
J. Hill	Mgr. Administrative Services
C. Golding	Recording Secretary

CALL TO ORDER

The Chairperson called the meeting to order and welcomed Alternate Director Chris Burger to the meeting.

DELEGATIONS

Nick Acciavatti and Harvey Twidale, Dashwood Volunteer Fire Department, re Fire Department Budget.

Nick Acciavatti provided a visual presentation and overview on increases to the Dashwood Volunteer Fire Department 2014 training budget and duty officer program.

Wendy Pratt, Nanaimo Community Hospice, re Request for Financial Support.

Wendy Pratt provided a visual presentation and requested further financial support of \$25,000 to help Nanaimo Community Hospice reach its goal of being mortgage free by the end of 2015.

COMMITTEE OF THE WHOLE MINUTES

MOVED Director Holme, SECONDED Director Brennan, that the minutes of the Committee of the Whole meeting held October 8, 2013, be adopted.

CARRIED

BUSINESS ARISING FROM THE MINUTES

COMMUNICATION/CORRESPONDENCE

Coralee Oakes, Minister of Community Sport and Cultural Development, re Funding request for a restructure study.

MOVED Director Johnstone, SECONDED Director Houle, that the correspondence received from Coralee Oakes, Minister of Community Sport and Cultural Development, regarding the funding request for a restructure study, be received.

CARRIED

Douglas White, Snuneymuxw First Nation, re RDN Liquid Waste Management Plan Amendment.

MOVED Director Johnstone, SECONDED Director Houle, that the correspondence received from Douglas White, Snuneymuxw First Nation, regarding Regional District of Nanaimo Liquid Waste Management Plan Amendment, be received.

CARRIED

Blain Sepos, Parksville Qualicum Beach Tourism Association, re Tax amounts collected by accommodation providers.

MOVED Director Johnstone, SECONDED Director Houle, that the correspondence received from Blain Sepos, Parksville Qualicum Beach Tourism Association, regarding tax amounts collected by accommodation providers, be received.

CARRIED

Claude Dauphin, Federation of Canadian Municipalities, re Achievements in the Partners for Climate Protection Program.

MOVED Director Johnstone, SECONDED Director Houle, that the correspondence received from Claude Dauphin, Federation of Canadian Municipalities, regarding achievements in the Partners for Climate Protection Program, be received.

CARRIED

BC Food Systems Network, re Core Review of the Agricultural Land Reserve and Agricultural Land Commission.

MOVED Director Johnstone, SECONDED Director Houle, that the correspondence received from BC Food Systems Network, regarding the Core Review of the Agricultural Land Reserve and Agricultural Land Commission, be received.

CARRIED

Tamie Nohr, District of Lantzville, re Trail Establishment along E&N Rail Corridor.

MOVED Director Johnstone, SECONDED Director Houle, that the correspondence received from Tamie Nohr, District of Lantzville, regarding trail establishment along E&N Rail Corridor, be received.

CARRIED

CORPORATE SERVICES

ADMINISTRATIVE SERVICES

Mail Ballot Voting.

MOVED Director Brennan, SECONDED Director Ruttan, that the Board direct staff to prepare a new Election Bylaw for consideration by the Board, to include mail ballot voting and to permit elector registration in conjunction with mail ballot voting for the 2014 Regional District of Nanaimo local government elections.

CARRIED

2014 AVICC Resolutions Notice and Call for Nominations.

MOVED Director Holme, SECONDED Director Ruttan, that the Board receive the 2014 AVICC Resolutions Notice and identify topics for which the Board wishes staff to draft resolutions.

CARRIED

MOVED Director Holme, SECONDED Director Ruttan, that the Board direct staff to present the resolutions to the Board for consideration of adoption and submission to the AVICC Annual General Meeting.

CARRIED

FINANCIAL SERVICES

Bylaw No. 1691 – Cedar Sewer Service Reserve Fund Establishment Bylaw.

MOVED Director McPherson, SECONDED Director Young, that "Cedar Sewer Service Reserve Fund Establishment Bylaw No. 1691, 2013" be introduced and read three times.

CARRIED

MOVED Director McPherson, SECONDED Director Young, that "Cedar Sewer Service Reserve Fund Establishment Bylaw No. 1691, 2013" be adopted.

CARRIED

2014-2018 Financial Plan, Implications of Limiting Tax Increases to Inflation.

MOVED Director Veenhof, SECONDED Director Kipp, that staff be directed to limit the 2014 - 2018 budget increases to the Canada Consumer Price Index excepting major capital, and further that staff be directed to develop a plan that brings tax requisitions for major capital in line with the Canada Consumer Price Index.

DEFEATED

MOVED Director Brennan, SECONDED Director Dempsey, that the report be received for information, and that staff be directed to proceed with preparation of the 2014 Budget following the process and practices as established in the Regional District of Nanaimo.

CARRIED

MOVED Director Brennan, SECONDED Director Dempsey, that staff be directed to continue to use the Consumer Price Index as a guide in relation to tax requisition increases for existing service levels.

CARRIED

REGIONAL AND COMMUNITY UTILITIES

WATER & UTILITY

Bylaws No. 889.66 and 1124.11 - Inclusion of 962 Surfside Drive into Sewer Service Areas, Electoral Area `G'.

MOVED Director Holme, SECONDED Director Fell, that "Regional District of Nanaimo Northern Community Sewer Local Service Boundary Amendment Bylaw No. 889.66 2013", be introduced and read three times.

CARRIED

MOVED Director Holme, SECONDED Director Fell, that the "Surfside Sewer Local Service Boundary Amendment Bylaw No. 1124.11, 2013", be introduced and read three times.

CARRIED

Nanoose Bay Peninsula Water Service Area and Nanoose Bay Bulk Water Development Cost Charge Process.

MOVED Director Holme, SECONDED Director Houle, that the Board receive the report for information.

CARRIED

MOVED Director Holme, SECONDED Director Houle, that the Board direct staff to develop a combined Development Cost Charge bylaw for both the Nanoose Bay Peninsula Water Service Area and the Nanoose Bay Bulk Water service.

CARRIED

MOVED Director Holme, SECONDED Director Houle, that the Board approve the development of a Development Cost Charge program and the development of a Development Cost Charge bylaw based on the Development Cost Charges Best Practices Guide.

CARRIED

STRATEGIC AND COMMUNITY DEVELOPMENT

BUILDING, BYLAW, AND EMERGENCY PLANNING

1554 Hill Ave - Electoral Area "A" — Unsightly Premises.

Mr. Schultz spoke to the condition of his property and agreed to restore the property to a reasonable standard within the timeframe set by the Regional District of Nanaimo.

MOVED Director McPherson, SECONDED Director Holme, that the Board, pursuant to Regional District of Nanaimo Unsightly Premises Regulatory Bylaw No. 1073, 1996, directs the owners of Lot A (DDE34422), Block 13, Section 9, Range 7, Plan 2055, Cranberry District, Plan 2055, (1554 Hill Ave) to remove the accumulation of derelict vehicles, RV's and motorcycles, tires, scrap wood, plastic, glass, tarps and machinery from the property within thirty (30) days, or the work will be undertaken by the Regional District of Nanaimo or it's agents at the Owners' cost.

CARRIED

Canadian Red Cross Society - Agreement for Disaster Recovery Services.

MOVED Director Anderson, SECONDED Director Fell, that the Board approve the agreement between the Regional District of Nanaimo and the Canadian Red Cross Society for the provision of disaster support and recovery services for a term commencing December 1, 2013, and ending December 31, 2018.

CARRIED

LONG RANGE PLANNING

Nanaimo Airport Planning Process.

MOVED Director McPherson , SECONDED Director Young, that the Terms of Reference for the Nanaimo Airport Planning Process Advisory Committee be approved.

CARRIED

MOVED Director McPherson, SECONDED Director Young, that the Regional District of Nanaimo proceed with Phase 2 of the Nanaimo Airport planning process.

CARRIED

Proposed Agricultural Area Plan 2014 - 2016 Action Plan.

MOVED Director Johnstone, SECONDED Director Fell, that the Board receive and endorse the proposed Agricultural Area Plan 2014-2016 Action Plan as attached.

CARRIED

TRANSPORTATION AND SOLID WASTE

SOLID WASTE

Solid Waste Management Regulation Bylaw No. 1531.05 – 2014 Tipping Fees.

MOVED Director Holme, SECONDED Director Brennan, that "Regional District of Nanaimo Solid Waste Management Regulation Amendment Bylaw No. 1531.05, 2013", be introduced and read three times.

CARRIED

MOVED Director Holme, SECONDED Director Brennan, that "Regional District of Nanaimo Solid Waste Management Regulation Amendment Bylaw No. 1531.05, 2013", be adopted.

CARRIED

COMMISSIONS, ADVISORY & SELECT COMMITTEES

Electoral Area 'A' Parks, Recreation, and Culture Commission.

MOVED Director McPherson, SECONDED Director Brennan, that the minutes of the Electoral Area 'A' Parks, Recreation and Culture Commission meeting held Wednesday, September 11, 2013, be received for information.

CARRIED

Agricultural Advisory Committee.

MOVED Director Johnstone, SECONDED Director Fell, that the minutes of the Agricultural Advisory Committee meeting held Friday, September 27, 2013, be received for information.

CARRIED

Grants-in-Aid Advisory Committee.

MOVED Director Young, SECONDED Director Anderson, that the minutes of the Grants-in-Aid meeting held Monday, October 21, 2013, be received for information.

CARRIED

MOVED Director Young, SECONDED Director Houle, that the Gabriola Arts Council be awarded \$2,000.00 to be used for materials for the ART ARC workshops for teens and ART ARC Jr. workshops for children.

CARRIED

MOVED Director Young, SECONDED Director Houle, that the Gabriola Players Theatre Society be awarded \$2,304.75 to be used for the purchase of a portable stage.

CARRIED

MOVED Director Young, SECONDED Director Houle, that the Oceanside Building Learning Together Society be awarded \$1,000.00 for the purchase of books for the Books for Babes Program.

CARRIED

MOVED Director Young, SECONDED Director Houle, that the Oceanside Minor Lacrosse Association be awarded \$3,400.00 for arena costs and keepsake t-shirts for the 2014 Tyke Tournament.

CARRIED

MOVED Director Young, SECONDED Director Houle, that the remaining District 69 funds in the amount of \$5,336.00 be carried forward to the 2014 Grants-in-Aid budget.

CARRIED

Electoral Area 'E' Parks and Open Space Advisory Committee.

MOVED Director Holme, SECONDED Director Ruttan, that the minutes of the Electoral Area 'E' Parks and Open Space Advisory Committee meeting held Monday, October 28, 2013, be received for information.

CARRIED

District 69 Community Justice Select Committee.

MOVED Director Willie, SECONDED Director Holme, that the minutes of the District 69 Community Justice Select Committee meeting held Monday, November 4, 2013, be received for information.

CARRIED

MOVED Director Willie, SECONDED Director Holme, that the 2014 requisition for funding to support the Oceanside Victim Services and Restorative Justice Programs be approved at \$77,500.

CARRIED

MOVED Director Willie, SECONDED Director Holme, that a 2014 grant in the amount of \$3,232 for the Citizens on Patrol Society, District 69, be approved.

CARRIED

Funding Request for Crime Prevention Programs in Oceanside.

MOVED Director Holme, SECONDED Director Fell, that the report on the Additional Funding Request for Crime Prevention Programs in Oceanside be received for information and be forwarded to the 2014-2018 Financial Plan discussion for consideration with other funding requirements of the Regional District of Nanaimo.

CARRIED

BUSINESS ARISING FROM DELEGATIONS OR COMMUNICATIONS

Coralee Oakes, Minister of Community Sport and Cultural Development, re Funding request for a restructure study.

MOVED Director Brennan, SECONDED Director Fell, that Director McPherson and Director Fell meet with staff to discuss the funding request for a restructure study and derive a plan of action from those discussions.

CARRIED

NEW BUSINESS

Removing Electoral Area 'B' from the Regional Growth Management Service.

MOVED Director Houle, SECONDED Director Veenhof, that the Board direct staff to prepare a report on options to remove Electoral Area 'B' from the Regional Growth Management Service.

CARRIED

IN CAMERA

MOVED Director Holme, SECONDED Director Brennan, that pursuant to Sections 90 (1)(e) and (i), and 90 (2)(c) of the Community Charter the Board proceed to an In Camera meeting for discussions related to acquisition of land and improvements, advice subject to solicitor-client privilege, and an Ombudsperson investigation.

CARRIED

TIME: 10:00 PM

The meeting was reconvened at 10:22 PM.

BUSINESS ARISING FROM DELEGATIONS OR COMMUNICATIONS

Blain Sepos, Parksville Qualicum Beach Tourism Association, re Tax Amounts Collected by Accommodation Providers.

MOVED Director Willie, SECONDED Director Holme, that the Regional District of Nanaimo Board supports Parksville Qualicum Beach Tourism Association's (formerly the Oceanside Tourism Association) renewal of the 2% Municipal Regional District Tax in Electoral Areas E, F, G & H; and further that the Regional District of Nanaimo Board supports Municipal Regional District Tax amounts collected by accommodation providers in Electoral Areas E, F, G & H to be provided directly to Parksville Qualicum Beach Tourism Association by the Province.

CARRIED

ADJOURNMENT

Moved Director Holme, SECONDED Director Anderson, that this meeting terminate.

CARRIED

TIME: 10:25 PM

CHAIRPERSON

CORPORATE OFFICER



Vancouver Island Regional Library

Administration
Box 3333 | 711 Poplar Street
Nanaimo, BC Canada V9S 5L8
t: 250.758.4697 f: 250.758.2482
e: info@virl.bc.ca w: www.virl.bc.ca

December 10, 2013

Mr. Joe Stanhope
Chair, Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC V9T 6N2

RDN CAO'S OFFICE			
CAO	<input checked="" type="checkbox"/>	GM R&P	
GMS&CD		GM T&SW	
GM R&CU		DF	
DEC 17 2013			
DCS		BOARD	<input checked="" type="checkbox"/>
CHAIR	<input checked="" type="checkbox"/>		

Dear Joe Stanhope,

Re: Community Library Branch - Cedar Rural Village Centre

On behalf of the Vancouver Island Regional Library (VIRL) Board of Trustees, we would like to thank you for your letter of August 29, 2013 communicating a request for a Community Library in the Cedar Rural Village Centre.

The consideration was made an agenda item at the most recent VIRL Board of Trustees Meeting, held on November 23rd, 2013.

In view of a number of factors that included financial sustainability, current facilities deferred maintenance requirements (outlined in the attached Facilities Master Plan and Facilities Policy), and preference given towards ownership of land versus leasing models, the Board passed the following motion:

As the Board's current financial situation will not support or sustain the addition of a 39th branch at this time, a branch in the Rural Village of Cedar will not be considered until existing priorities are more fully dealt with.

The community of Cedar shares priority for receiving library services from permanent service locations in Ladysmith or any of the three branches (soon to be four) in the Nanaimo area. The Board of Trustees is committed to developing a financially sustainable solution to serving all our communities within our strategic and financial plans.

Strong Libraries ■ Strong Communities

Bella Coola Bowser Campbell River Chemainus Comox Cortes Island Courtenay Cowichan Cowichan Lake Cumberland Gabriola Island Gold River Hornby Island Ladysmith Masset Nanaimo Harbourfront Nanaimo Wellington Parksville Port Alberni Port Alice Port Clements Port Hardy Port McNair 13 Port Renfrew Quadra Island Qualicum Beach Queen Charlotte Sandspit Sayward Sidney/North Saanich Sointula Sooke South Cowichan Tahsis Tofino Ucluelet Union Bay Woss

Your appreciation of our facilities process and priorities is valued. Thank you for your continued support.

Regards,



Bruce Jolliffe, Chair
Vancouver Island Regional Library Board of Trustees

Cc: Vancouver Island Regional Library Board of Trustees
Rosemary Bonanno, Executive Director
Adrian Maas, Director of Finance
Harold Kamikawaji, Director of Human Resources



RDN CAO'S OFFICE			
CAO	<input checked="" type="checkbox"/>	GM R&P	
GMS&CD		GM T&SW	
GM R&CU		DF	
DEC 17 2013			
DCS	<input checked="" type="checkbox"/>	BOARD	<input checked="" type="checkbox"/>
CHAIR	<input checked="" type="checkbox"/>		
J. Hill			

December 12, 2013

Ref: 154580

Mr. Joe Stanhope
and Members of the Board
Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC V9T 6N2

Dear Chair Stanhope and Board Members:

I am writing today to invite your local government's input on the second phase of local government elections reform.

I wrote to all local governments on August 27, 2013 to announce the release of a White Paper on Local Government Elections Reform. As noted in the White Paper, I have initiated targeted stakeholder engagement on expense limits in November 2013. The intent is to develop and introduce expense limits legislation in time for the next local elections *after* 2014. Given the diversity of views on the topic and the complex policy issues, I want to start discussions on expense limits early and be in a position to introduce expense limits with plenty of lead-time before the next elections after 2014.

Expense limits would ultimately be added into the proposed *Local Elections Campaign Financing Act*. This two-phase approach allows campaign participants to first become familiar with a new, separate Act with new rules around transparency, accountability and enforcement before adding expense limits into local elections.

Information gathered through talking to key stakeholders, such as local governments, will help inform the development of expense limits. I will be having regular discussions with the Union of British Columbia Municipalities' Executive as we move forward. However, I also wanted each local government to have an opportunity to share perspectives on expense limits, and issues related to expense limits. I would appreciate your thoughts on questions and issues around campaigning for office. For example,

- In your community, do you think the cost of campaigning is a deterrent to people considering running for office?
- What are the most significant cost pressures in local campaigns?
- Are campaign finance issues different in small communities than in large communities, and if so, in what ways?

.../2

Ministry of Community, Sport
and Cultural Development

Office of the Minister

Mailing Address:
PO Box 9056 Stn Prov Govt
Victoria BC V8W 9E2

Phone: 250 387-2283
Fax: 250 387-4312

Location:
Room 124
Parliament Buildings
Victoria BC V8V 1X4

www.gov.bc.ca/cscd

Mr. Joe Stanhope
and Members of the Board
Page 2

I am also interested in your views on approaches to setting expense limits in local elections. The Local Government Elections Task Force recommended expense limits for candidates and third party advertisers in all communities. The Task Force suggested that expense limits need to take community population into account in order to work in British Columbia's diverse communities, and that elector organizations should not get a separate, additional limit. The Task Force did not specify what they felt expense limits should be.

Enclosed for your reference is a short discussion paper. The paper includes some background on expense limits issues, including some information on local campaign spending in British Columbia and information on other provinces' approaches. This paper can also be found at www.localgovelectionreform.gov.bc.ca. Comments from the public are also invited until January 31, 2014.

Please note that it is optional to provide feedback on expense limits issues. As a former council member, I understand that councils and boards have busy agendas and it may be difficult to find time to discuss this issue. However, I do appreciate hearing from your community.

Please provide your thoughts by January 31, 2014. Submit your feedback electronically to: Localgovelectionreform@gov.bc.ca, or in writing to:

Local Government Elections Reform
Ministry of Community, Sport and Cultural Development
PO BOX 9847 STN PROV GOVT
Victoria BC V8W 9T2

I will also take this opportunity to remind you that the White Paper on Local Elections Reform released in September 2013 provided a draft version of the proposed new *Local Elections Campaign Financing Act*, intended for introduction in the Legislature in Spring 2014. If passed, the Act would make a significant number of changes, principally related to enhanced transparency, compliance and enforcement, for the November 2014 local elections.

Thank you in advance for your assistance.

Sincerely,



Coralee Oakes
Minister

Enclosure

pc: Director Rhona Martin, President, Union of British Columbia Municipalities

November | 2013

Expense Limits in Local Elections Discussion Paper



Ministry of
Community, Sport and
Cultural Development

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EXECUTIVE SUMMARY

The Local Government Elections Task Force, a partnership between the Province and the Union of BC Municipalities, was created to recommend changes to local elections rules. One of the 31 recommendations in the Task Force's May 2010 final report was that the Province establishes expense limits for candidates, elector organizations and third party advertisers in local elections.

The Government of British Columbia intends to introduce expense limits in time for the next local elections after November 2014.

As noted in the White Paper on Local Government Elections Reform, government initiated targeted stakeholder engagement on expense limits issues in November 2013. Government will use information gathered through this process to inform the development of expense limits. While it may seem early to be talking about expense limits issues, it is important to be prepared to introduce legislation early enough that campaign participants are ready for expense limits and the new rules.

This discussion paper outlines the policy building blocks for expense limits and some of the complex policy issues involved in the legislative framework for expense limits. It also provides discussion questions. The appendices contain information on trends in local campaign spending in B.C., and on other provinces' approaches to expense limits for local elections.

How do I give my feedback?

Please provide your written comments by January 31, 2014.

Website: www.localgovelectionreform.gov.bc.ca

Email: localgovelectionreform@gov.bc.ca

Mail: Local Government Elections Reform
Ministry of Community, Sport and Cultural Development
PO BOX 9847 STN PROV GOVT
Victoria BC V8W 9T2

INTRODUCTION

Why expense limits in local elections?

The Local Government Elections Task Force, a partnership between the Province and the Union of BC Municipalities, was created to recommend changes to local elections legislation. One of the 31 recommendations in the Task Force's May 2010 [final report](#) was that the Province establishes expense limits for candidates, elector organizations* and third party advertisers in local elections.

In reviewing written submissions and listening to the dialogue on elections issues, the Task Force heard a great deal of support for establishing expense limits in local elections. The Task Force believed that expense limits could increase accessibility and fairness by levelling the playing field among candidates; encouraging candidate participation; and reducing the need for large contributions to fund expensive campaigns.

The provincial government accepted the Task Force's recommendations and committed to implementing them – including expense limits.

What is happening with expense limits?

Timing: The Province released a [White Paper on Local Government Elections Reform](#) in September 2013. The White Paper provided a draft version of the proposed new *Local Elections Campaign Financing Act*, to be introduced in the Legislature in Spring 2014. If passed, the Act would put into place the majority of the Local Government Elections Task Force's recommendations in time for the November 2014 local elections. These changes are focused on improved accountability, transparency, compliance and enforcement. The draft Act applies to local government and board of education elections.

For more detail on the changes proposed for 2014, please see www.localgovelectionreform.gov.bc.ca

The draft *Local Elections Campaign Financing Act* represents Phase I of campaign finance reform in BC local elections. Phase II involves introducing expense limits legislation in time for the next local elections *after* 2014. The phased approach will allow campaign participants, local elections administrators and others to adapt to the changes before adding spending limits to the local elections system. The phased approach also allows more time for discussion of expense limits issues before any decisions are made.

Stakeholder engagement: As noted in the White Paper, government initiated targeted stakeholder engagement on expense limits issues in November 2013. Government will use information gathered through this process to inform the development of expense limits. The intent is to introduce legislation for expense limits *after* the November 2014 local elections. While it may seem early to be talking about expense limits issues, it is important to be prepared to introduce legislation early enough that campaign participants are ready for expense limits and the new rules to make the limits work.

* Elector organizations are groups that promote candidates in local elections. They are sometimes referred to as municipal 'political parties.' Elector organizations endorse candidates. The organization's endorsement appears on the ballot next to candidates' names. Elector organizations regulated under the legislation – e.g. currently they must have at least 50 members that are electors in the municipality and have existed for at least 60 days, and they must file campaign finance disclosure statements. See the ministry's [guide](#) for more information.

BACKGROUND ON EXPENSE LIMITS FOR B.C. LOCAL ELECTIONS

What are the guiding concepts on expense limits?

In accepting the Task Force's recommendation to establish expense limits, the provincial government has been taking the Task Force guidance for developing expense limits as a starting point. The Task Force laid out some objectives or outcomes it thought should shape expense limits. The Task Force recommended that expense limits:

- be high enough to allow reasonable campaigns, but not so high as to allow a few participants to dominate,
- need to work in different sized communities (i.e. a formula-based approach would make sense, but a straight per resident formula would not be effective), and
- have a neutral effect on candidates' decisions to run independently or to create/join elector organizations.

The Task Force recognized that campaign spending was quite low in the majority of BC's communities. However, for fairness reasons the Task Force felt it was important to have expense limits in all communities. The Task Force suggested that expense limits be set in a way that reflects population size in order to make the limits effective and fair in all BC communities (ranging in population from about 180 people to more than 600,000 people).

The Task Force also emphasized that expense limits should not "punish" or "reward" candidates that are endorsed by elector organizations. The Task Force saw that while the majority of BC communities do not have elector organizations, where elector organizations do exist, they are a fairly prominent part of elections in the community. The Task Force did not want expense limits to provide an incentive to create more elector organizations (or splinter existing ones) simply for the sake of obtaining higher "spending room." It would also be unfair to independent candidates (who are not endorsed by elector organizations) if elector organizations got additional limits beyond what candidates get.

The Task Force assumed that the Province would establish expense limits. In some other provinces, local governments have the power to, by by-law, set their own campaign finance rules. The Task Force also recommended that Elections BC enforce campaign finance rules in local elections, so that means Elections BC would enforce expense limits.

The following are some of the key policy concept coming out of the Task Force's guidance:

- expense limits need to work for all communities
- candidates and third party advertisers would be subject to expense limits
- elector organizations would not get expense limits over and above candidates' limits
- expense limits would be sensitive to population size
- expense limits would also apply in board of education elections
- the Province would set expense limits
- Elections BC would enforce the limits as part of its role in enforcing campaign finance rules

How can I add to the expense limits discussion?

The purpose of stakeholder engagement on expense limits is to explore how best to set expense limits that work for all communities. The Province will need to decide on the approach to setting expense limits numbers, and on the related “framework” rules.

You are invited to share your thoughts on expense limits issues. Below are some questions the Province would like to explore. Feel free to answer as many of the questions as you wish, and to give feedback on issues you would like to raise that are not covered by the questions below.

For additional background, please see Appendix 1 (Facts on Campaign Spending in B.C.) and Appendix 2 (Expense Limits in Local Elections in Other Provinces).

Discussion questions

Questions about campaigning

- In your community, do you think the cost of campaigning is a deterrent to people considering running for office?
- What are the most significant cost pressures in local campaigns?
- Are campaign finance issues different in small communities than in large communities, and if so, in what ways?
- Are campaign finance issues different for board of education elections than for local government elections?
- Do you think social media will impact (raise or lower) campaign spending? Why or why not?

Questions about the policy “starting point” for expense limits

The Task Force provided some policy guidance on expense limits, suggesting that limits

- be high enough to allow reasonable campaigns, but not so high as to allow a few participants to dominate,
 - need to work in different sized communities (i.e. a formula-based approach would make sense, but a straight per resident formula would not be effective), and
 - should have a neutral effect on candidates’ decisions to run independently or to create/join elector organizations.
- Do you think that these objectives are a reasonable starting point for expense limits? Is there anything you would change about these objectives, or anything important missing?
 - Page 2 shows the key policy concepts coming out of the Task Force’s guidance. Would you change any of these?

Questions about possible expense limits models

- In the two other provinces where the provincial government sets expense limits for local elections, the limit is established by a formula with a “base” amount and additional amounts for each elector. For example, in Ontario, the limit for a mayoral candidate is \$7,500, plus 85 cents per elector and \$5,000 plus 85 cents per elector for council candidates. The same formula for all

communities results in different *limits* in each community depending on population.

- Does the concept of a base amount, plus additional “per resident” amounts, seem like a reasonable approach in BC?
- Or are there other, simpler models to consider? For example, would “tiered” limits (the same limit for all communities under 5,000 or so people, a higher limit for all communities of 5,000 to 10,000 people, and so on) be a better approach?
- If a model were established that resulted in different limits in each community (such as a base plus per resident model), would you support the Province making things simple for candidates and local governments by calculating the limit in each community and providing notice of the limits?
- Are there other, additional factors beyond population that should be taken into account when setting expense limits?
- How should board of education candidate limits be set? Should they be connected to the limits for council candidates (i.e. the same as a council candidate’s limit)? If so, what happens when the boundaries of school districts do not line up with municipal boundaries?
- Would it make sense for third party advertisers’ limits to be connected to the limits for candidates in the community where the third party is conducting advertising?

What other factors must be considered in developing expense limits?

Establishing expense limits requires some basic policy decisions – who limits apply to, how much the limits are and how they are set. In addition to considering those basic policy decisions, government will also need to address a host of related “framework” issues. For expense limits to be effective, there will need to be rules in the legislation that set out in detail how expense limits are managed and enforced.

For example, following the Task Force guidance, elector organizations would not have a separate expense limit over and above expense limits for candidates. Framework rules would be needed to manage the relationship between candidates and the elector organizations that endorse them. Questions such as who can incur expenses (the elector organization, the candidate, or both) raise further questions, such as who is responsible if there is over-spending?

Some complex policy issues stem from the need to make sure that expense limits can’t be circumvented. For example, policies will be needed for candidates that share advertising (or other campaign expenses, like candidate meet-and-greets). The legislation would still allow candidates to work together informally as a “slate” (i.e. outside of an elector organization), but rules to prevent collaborating for the purposes of working around expense limits would be needed. For example, it would be unfair for a candidate with left over “spending room” to pay for advertising promoting another candidate who has already reached his or her expense limit. Rules about how to attribute shared expenses fairly amongst candidates would be needed.

In designing expense limits for local elections, there are constitutional issues to consider. For example, a number of Canadian court cases have upheld the general principle that regulating third party advertising during elections is an acceptable limitation on freedom of speech. However, rules for third parties must strike a reasonable balance between regulation and not unduly impairing freedom of speech. Other legal factors (such as protection of privacy) will have to be considered.

These policy issues are flagged in this paper to provide a preview of the types of policy decisions government will need to make, over and above deciding what the actual limits amounts in each community should be. It is not as simple as just adding the limits numbers or formula into a piece of legislation.

Next steps – what happens with the feedback from stakeholders?

In addition to seeking feedback on this paper, the Minister of Community, Sport and Cultural Development will also be speaking to the Union of BC Municipalities and its area associations between November 2013 and late January 2014. Views of the B.C. School Trustees Association will also be sought, as will views of other campaign participants, such as elector organizations. In Spring 2014, a summary of information received will be published. The Province will consider the results of this targeted stakeholder engagement when developing expense limits and related “framework” rules.

Next steps - how would expense limits be implemented?

The White Paper on Local Government Elections Reform (issued September 2013) details a proposed new Act for local elections campaign finance - the draft *Local Government Campaign Financing Act*. If passed by the Legislature in Spring 2014, the Act would bring into force a number of major changes in place in time for the November 2014 local elections. Those changes are focused on improved transparency, improved campaign finance disclosure and a role for Elections BC in enforcement of campaign finance rules in local government elections.

The *Local Government Campaign Financing Act* is Phase I of local elections campaign finance reform.

For Phase II, the government intends to develop local elections campaign expense limits in time for the next local elections *after* November 2014.

Introducing expense limits requires legislation. The *Local Government Campaign Financing Act* would be amended to establish expense limits and related policy rules. Like all legislation, expense limits amendments would be tabled for the Legislature’s consideration.

How do I give my feedback?

Please provide your written comments by January 31, 2014.

Website: www.localgovelectionreform.gov.bc.ca

Email: localgovelectionreform@gov.bc.ca

Mail: Local Government Elections Reform
Ministry of Community, Sport and Cultural Development
PO BOX 9847 STN PROV GOVT
Victoria BC V8W 9T2

Appendix 1: Facts on Campaign Spending in B.C.

Considering the context

In addition to considering the Task Force’s policy guidance on expense limits, it is important to consider campaign spending trends in BC.

There are over 1,660 elected positions in over 250 government bodies filled during local elections. Typically, around 3,000 candidates run for these offices. Comparing campaign spending across communities and over multiple years is currently difficult because there is no central place to find all campaign finance disclosure statements for municipal, electoral area director (regional district electoral area) and board of education candidates.¹

Other factors add complexity:

- Support from campaign organizers* might have led to some candidates’ spending being lower than it would otherwise have been. The precise amount of support received from campaign organizers cannot accurately be factored into candidate spending figures.
- Not all spending disclosed in campaign finance disclosure statements was done during the campaign period. For example, a portion of the costs for “paid campaign work” in some elector organizations’ disclosure forms was probably for having paid staff in the years in between elections. Maintaining an organization in between elections is certainly relevant to the campaign; however, actual spending during campaign time may be lower than it appears from disclosure statements.
- “Average” spending may not present a full picture of what it typically costs to campaign in a community. For example, one or two “outlier” candidates who spend much more than their competitors affect calculations of average spending for that community. Similarly, it is reasonable to guess that candidates who spent nothing and got almost no votes probably didn’t actually campaign; such candidates would skew the average downwards.
- Campaign finance disclosure statements may not disclose spending fully and accurately.

These caveats aside, looking at a sample of municipal election spending reveals some general trends.

Trends in municipal campaign spending

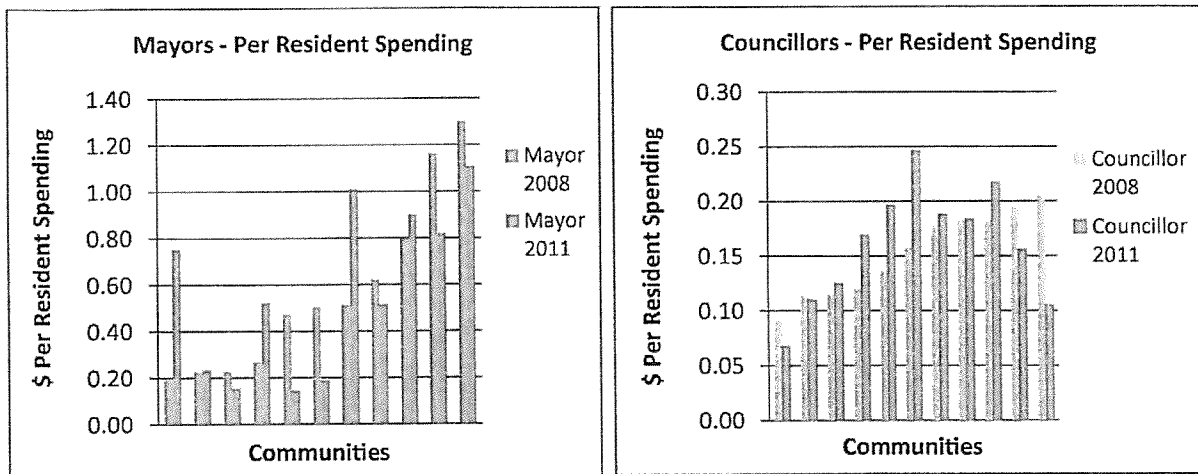
Overall, spending is fairly low. To gauge how much was spent by people who ran competitive campaigns, a sample of spending by “contenders” was taken. Only the top two-thirds of candidates closest to winning a seat were classified as contenders. Including people who may have spent nothing, and also got almost no votes (indicating that they possibly did not campaign at all) would lead to a less realistic estimate of what it costs to be competitive.

¹ The draft *Local Elections Campaign Financing Act* would make all campaign finance disclosure statements available through Elections BC.

* Campaign organizers are individuals or groups that promote or oppose candidates or points of view during elections. A campaign organizer must identify itself to the local chief election officer once it raises contributions, or incurs expenses, valued at \$500 or more. Campaign organizers must also file campaign finance disclosure statements. Unlike elector organizations, campaign organizers do not necessarily have a relationship with candidates they support or oppose. See the ministry’s [guide](#) for more information. The proposed *Local Elections Campaign Financing Act* would discontinue the concept of campaign organizers, instead regulating “third party advertisers.”

In this sample of spending in communities of various sizes by almost 500 contenders for mayor and council seats, only 8% of candidates spent more than \$50,000. 31% spent less than \$2,000.

Spending is not that predictable. Overall, spending seems to be driven mostly by the political dynamics in a particular community in a particular election. "Hot races" can mean more spending in a community in compared to elections in other years. Conversely, if fewer candidates run in an election, or if electors are less interested in the candidates or issues, spending might go down. Spending does not necessarily go up by a predictable amount each election. The following charts provide an illustration of 2008 vs. 2011 election spending in a random sample of 11 communities of various sizes. The charts demonstrate some of the potential variability in per resident spending from one election to the next.



Spending is not only variable from one election to the next, but it is also quite variable between communities of similar size. For example, the following table shows what candidates spent per resident spending differences in two sample communities in two different size groupings in 2011.

Sample of Candidate \$ Per Resident Spending in Two Community Sizes

Communities 4,000 to 5,500 people:

Community	Mayor	Council
A	\$5.56	\$1.11
B	\$0.21	\$0.63

Communities 75,000 to 80,000 people:

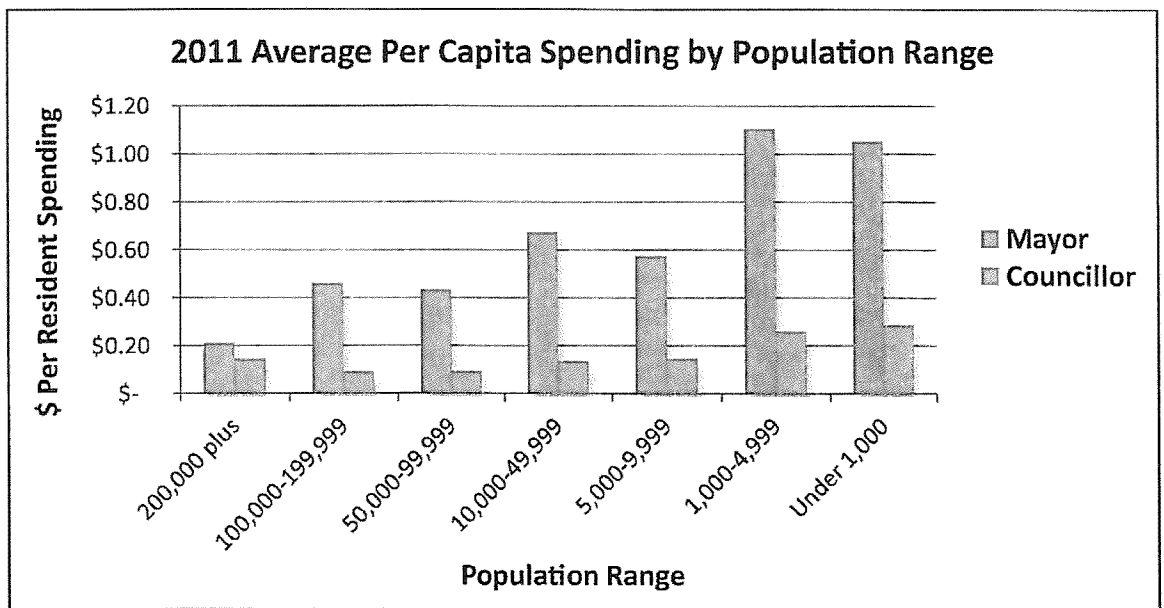
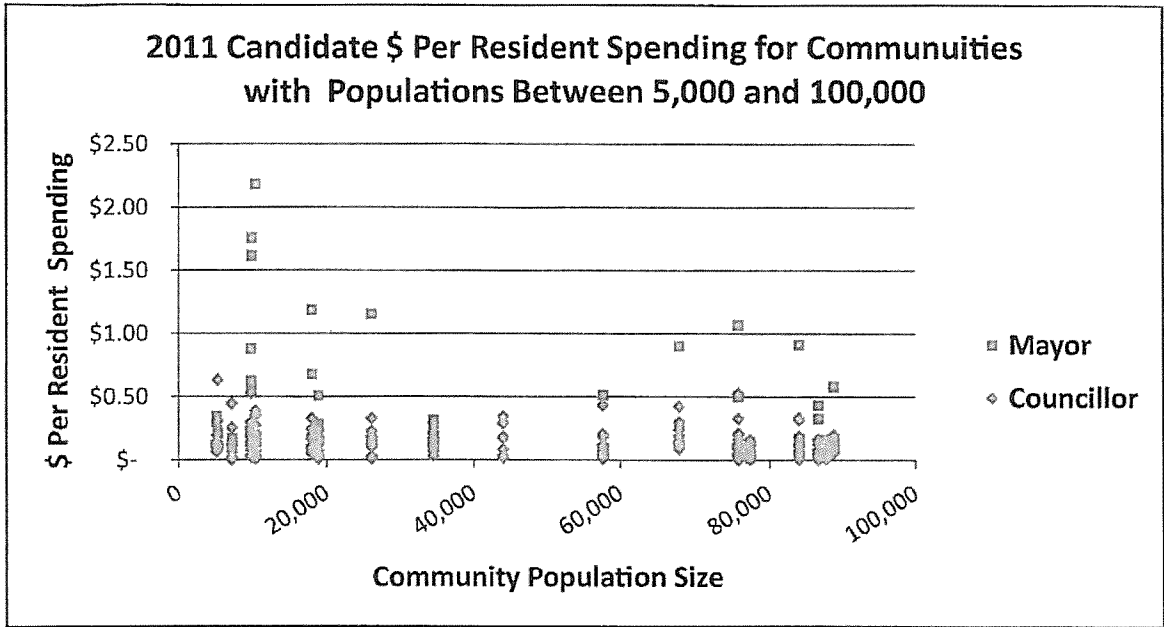
Community	Mayor	Council
C	\$0.79	\$0.12
D	\$0.08	\$0.07

These examples suggest that

- spending in smaller communities can be high relative to the community’s population, and
- spending in a community can be high relative to other similarly-sized communities.

Some candidates spend a lot more than their competitors. In communities of any size, some candidates are spending “outliers” compared to their competitors.

Mayoral candidates spend more than council candidates. Council candidates compete for one of several seats. The mayor’s race is “winner take all” and may be more easily influenced by high spending in a tight race. In a sample of 492 disclosure statements from communities of all sizes in the 2011 election, mayoral candidates spent an average of almost 4 times more per resident than what council candidates spent (\$0.64 per resident and \$0.17 per resident respectively).



In addition to showing that mayoral candidates spend more than council candidates, the previous chart shows that per resident spending may be higher in small communities. Relatively higher per resident spending in smaller communities probably indicates that there is a certain base cost involved in campaigning, and possible economies of scale in larger communities.

Spending in Vancouver is uniquely high and appears to increase each election. In 2008, spending by all elector organizations that had at least one endorsed candidate elected, plus the spending disclosed by their endorsed candidates (whether elected or not), totalled about \$4.5 million. In 2011, the total was about \$5.3 million. Total spending in Vancouver is far higher than spending in any other community in BC.

Vancouver elections are unique in several ways. Vancouver is the most populous city, with almost 178,000 more people than the next largest city. Vancouver sees a consistently large number of candidates for all offices each year. It also has an elected parks board. No independent candidates were elected in 2008 or 2011. Vancouver also has longstanding tradition of elector organizations, with an apparent trend towards more formal operation (e.g. paid staff).

Other observations:

In municipal elections, elected candidates almost always spent money to campaign; generally, they spent more money than those who were not elected. There are exceptions – candidates far outspending their competitors yet failing to obtain a seat, or candidates spending nothing and still obtaining a seat. It is difficult to say whether spending money “leads” to getting elected, though, because some low-spending unsuccessful candidates may not have put much effort into free and/or low-cost methods of campaigning.

Electoral area director candidates (in regional districts) tend to spend less than council candidates. Board of Education candidates also generally spend less than council candidates.

So what do these trends mean for setting limits?

Campaign spending trends (as well as more detailed spending data) will be considered in developing an approach for setting expense limits. For example, since mayoral candidates spend more than council candidates, a higher limit for mayoral candidates would make sense. Limits should also take into account the basic campaign cost evident even in the smallest town.

Appendix 2: Expense Limits in Local Elections in Other Provinces

Which provinces have expense limits in local elections?

- Ontario – all local governments
- Quebec – local governments with populations over 5,000
- Manitoba – all local governments
- Saskatchewan - some local governments
- Newfoundland & Labrador – some local governments (St. John’s)

Who sets the limits?

There are three basic approaches to setting expense limits:

- The province **adopts provincial legislation** setting the limits (Ontario, Quebec)
- The province **requires** municipalities to adopt a bylaw with campaign expense limits; the municipality chooses the limits (Manitoba requires all local governments to adopt a bylaw)
- The province **allows** municipalities to adopt a bylaw with campaign expense limits; the municipality chooses the limits (Saskatchewan, Newfoundland & Labrador)

What do the limits have in common?

Generally, the limits are sensitive to population. In provinces that set the limit, there is a formula involving a base amount plus a per elector amount. In most examples where the municipality sets the limits, the limit takes into account the number of electors.

In all cases where the limits are sensitive to population, municipalities are responsible for determining the number of electors in the jurisdiction/wards (usually through their municipally-maintained voters’ lists), calculating the limits and informing candidates of their limits.

Where formulas are used, they generally have a provision for inflation tied to the Consumer Price Index.

Except for in Quebec, enforcing the limits is a local responsibility.

Caveats when looking at limits

It is difficult to compare limits because different provinces have very different rules as to how an election expense is defined, which election expenses actually count against the expense limit, and how long the period is in which spending is capped.

It can also be difficult to compare limits across jurisdictions because some cities are divided into wards. Under a ward system, council candidates compete to represent a geographically defined part of the city; usually the mayor is elected “at large” by voters across the city. Typically a candidate would not need very high limits if they are campaigning in only a small area. Toronto, Montreal and Winnipeg have wards. Currently only one BC local government uses a ward system.

In some provinces, local governments maintain a list of electors. Maintaining a voters list is not mandatory in BC. Many local governments do same-day registration.

Ontario

Provincial legislation sets the limits. Limits set by the *Municipal Election Act* apply to all local governments. The formula is the same for Toronto and for all other local governments.

Formula

Mayor - \$7,500 + 85 cents per elector

Council candidate - \$5,000 + 85 cents per elector

School board trustee candidate - \$5,000 + 85 cents per elector

Examples – 2010 elections

Toronto (2.5 million people*)

Mayor - \$1.3 million (elected at large)

Council candidates in Ward 7 - \$27,464 (Ward 7 just one example; Toronto has 44 wards)

Mississauga (668,550 people*)

Mayor - \$319,664

Council candidates - \$27,000 to \$39,000, depending on ward populations

School trustees - \$23,000 to \$45,000

Timmins (42,997 people*)

Mayor - \$35,549

Council candidates - \$7,000 to \$19,000 depending on ward populations

Other notes on expense limits in Ontario

There is no regulation of third parties and no spending limits for third parties.

The 2010 local elections were the first with spending limits in place.

City administrators calculate the limits based on the estimated number of electors on the municipally-maintained voters' list and notify candidates of their limits.

Candidates' financial statements must be audited by an independent auditor before they can be filed. Enforcement of campaign finance rules is essentially a local matter.

* 2006 census population provided for sense of scale. Not all residents counted in the census would be qualified electors.

Quebec

Provincial legislation sets the limits. The limit formula is the same for all local governments.

Formula

Mayor – base of \$3,780, plus 30 cents per elector up to 20,000 electors; 51 cents for each elector from 20,000 to 100,000 and 38 cents per elector for each elector over 100,000 electors

Council candidate – base of \$1,890, plus \$0.30 per person

Municipalities under 5,000 people are generally exempt from campaign finance rules, except for limits on how much an individual can contribute and a requirement to disclose names of contributors.

Other notes on expense limits in Quebec

Quebec amended the provincial legislation to reduce the spending limits by about 30 per cent of the previous limits. The 2013 elections were held under the new, lower limits.

Third party advertising is extremely tightly regulated. It is essentially prohibited for third parties to support candidates in ways that involve expenditure of funds (advertising, rallies, etc.). A group of electors (individual citizens) may apply for “private intervener” status during an election, but may only spend up to \$300 and may only disseminate a non-partisan message on a matter of public policy (e.g. private intervener groups are forbidden to promote/oppose candidates.

Municipalities appear to be responsible for maintaining a list of electors.

Elections Quebec enforces the campaign finance rules, including expense limits.

Quebec has 1,103 municipalities. Expense limits apply in municipalities over 5,000 people. There are 185 municipalities with a population of 5,000 or more. Those 185 municipalities cover 88% of Quebec’s total population.

There are just over 900 municipalities with fewer than 5,000 people. Municipalities under 5,000 people have no spending limit, and no rules regarding expenses.

Manitoba

Provincial legislation **requires** municipalities to adopt a bylaw with campaign expense limits (and other campaign finance rules, such as contribution limits); the municipality chooses the limits.

Example – formula in City of Winnipeg Bylaw (population about 633,450)

Mayor - 35 cents per elector in the city (adjusted using consumer price index) – mayor limit in 2010 about \$150,000

Council candidate - 90 cents per elector in the ward (adjusted using consumer price index)

Example - City of Brandon Bylaw (population about 46,000; flat rate limit/no formula)

Mayor - \$16,000

Council candidate - \$4,000

Other notes on expense limits in Manitoba

Third party advertising is not specifically regulated or subject to expense limits. However, in the City of Winnipeg, expenses incurred by any individual, corporation, organization or trade union “acting on behalf of” a registered candidate count against the candidate’s expense limit.

Winnipeg has had spending limits since 1990. Enforcement is essentially a local matter.

Saskatchewan

The Province **allows** municipalities to adopt a bylaw with campaign expense limits; the municipality chooses the limits

Example - City of Regina bylaw. Set limit (no formula specified in bylaw, though probable that a formula involving population was used to arrive at the limit)

Mayor - \$62,635

Council candidate - \$10,439

Newfoundland & Labrador

The Province **allows** municipalities to adopt a bylaw with campaign expense limits; the municipality chooses the limits. Candidates do not actually have to file an accounting of their expenses; they instead declare that they did not exceed the limits.

Example - City of St. John’s bylaw.

Mayor and councillor candidates - \$10,000 base amount, plus \$1 per voter listed on the voters list in the ward or at-large area. Works out to around \$80,000 for mayors and \$25,000 for councillors.

North Cedar Improvement District

2100 Yellow Point Road, PO Box 210

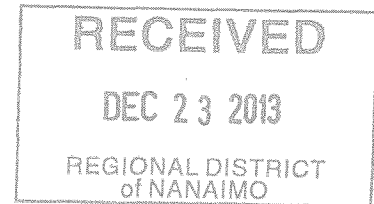
Cedar, BC V9X 1W1

Phone (250) 722-3711 • Fax (250) 722-3252 • Email: info@ncid.bc.ca

District File: RDN – New Reservoir

December 17, 2013

Board of Directors
Attention: Joe Stanhope, Board Chair
Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC V9T 6N2



Dear Sirs and Madams:

RE: Cost Sharing for Constructing a 400,000 Imperial Gallon Reservoir

The District is interested in following up on a recent discussion with Director McPherson that suggest that there may be “Community Works Funds” available to assist the North Cedar Improvement District (the District) and the general community with construction of a much needed water storage facility. It is understood that up to 50% of the anticipated \$900,000 CND total cost could be approved from this funding source.

A review of our finances indicates that while sufficient reserve funds are available to co-fund acquisition of land referred to in an earlier letter, the District may need to secure funding from the Municipal Finance Authority (MFA) through the auspices of the Regional District of Nanaimo. It is understood that the District would need to obtain landowner approval – by way of referendum – for any monies borrowed.

We look forward to entering into further discussions on moving the discussion forward.

Yours truly,

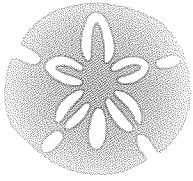
A handwritten signature in cursive script that reads "Heather Sarchuk".

Heather Sarchuk
Administrator

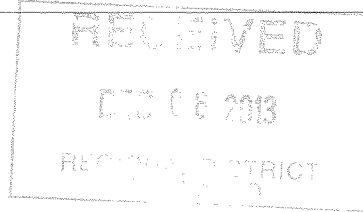
:hs

cc: Paul Thorkelsson, RDN – CAO
Tom Osborne, RDN – G.M. Parks & Recreation
Alec McPherson, RDN – Area A Director

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City of
Parksville



December 3, 2013

Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo BC V9T 6N2

Dear Sir/Madam:

**2014 Council Appointments to the District #69 Recreation Commission
File No: 0400-60**

At the regular meeting of Council held December 2, 2013, Councillor Peter Morrison was appointed Council voting representative to the District #69 Receptions Commission for the year 2014.

Councillor Peter Morrison
589 Hirst Avenue West
Parksville, BC V9P 1H8

250 240-4050 (cell)
E-mail: peter.morrison@shaw.ca

On behalf of Council and the City, we wish your Commission much success in 2014.

Sincerely,

AMANDA WEEKS
Deputy Corporate Officer

cc: Councillor Morrison



City of
Parksville

December 3, 2013

Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo BC V9T 6N2

Dear Sir/Madam:

**2014 Council Voting Representative
Arrowsmith Water Service Management Board
File No: 2240-AR**

At the regular meeting of Council held December 2, 2013, Councillor Marc Lefebvre was appointed Council voting representative to the Arrowsmith Water Service Management Board for the year 2014. Mayor Chris Burger was appointed as Council's alternate representative.

Councillor Marc Lefebvre
11 - 450 Bay Avenue
Parksville, BC V9P 2K2

250 248-2292 (home)
E-mail: janetmarc@shaw.ca

Mayor Chris Burger
1549 Galvin Place
Dashwood, BC V9K 2V3

250 954-4661 (office)
250 240-8255 (cell)
E-mail: cburger@parksville.ca

Sincerely,

AMANDA WEEKS
Deputy Corporate Officer

cc: Councillor Lefebvre
Mayor Burger
Mike Squire, AWS Program Manager



December 3, 2013

Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo BC V9T 6N2

Dear Sir/Madam:

**2014 Council Voting Representative
Englishman River Water Service Management Board
File No: 2240-AR**

At the regular meeting of Council held December 2, 2013, Mayor Chris Burger and Councillor Marc Lefebvre were appointed Council voting representatives to the Englishman River Water Service Management Board for the year 2014.

Mayor Chris Burger
1549 Galvin Place
Dashwood, BC V9K 2V3

250 954-4661 (office)
250 240-8255 (cell)
E-mail: cburger@parksville.ca

Councillor Marc Lefebvre
11 - 450 Bay Avenue
Parksville, BC V9P 2K2

250 248-2292 (home)
E-mail: janetmarc@shaw.ca

Sincerely,

AMANDA WEEKS
Deputy Corporate Officer

cc: Mayor Burger
Councillor Lefebvre
Mike Squire, AWS program Manager



RDN REPORT	
CAO APPROVAL <input checked="" type="checkbox"/>	
EAP	<input type="checkbox"/>
COW	<input checked="" type="checkbox"/>
JAN 06 2014	
RHD	<input type="checkbox"/>
BOARD	<input type="checkbox"/>

MEMORANDUM

TO: Paul Thorkelsson
Chief Administrative Officer

DATE: January 3, 2014

FROM: Linda Burgoyne
Administrative Coordinator

SUBJECT: 2014 Service Area Work Plan Projects

PURPOSE:

To provide the Board of Directors with the 2014 Service Area work plan projects.

BACKGROUND:

Annually the General Managers and Department Directors oversee the preparation of the list of service area projects for the upcoming year. These projects are developed based on the direction obtained through the Board’s Five Year Financial Plan, the Strategic Plan, long term program plans (such as the Transit Business Plan, Regional Growth Management Plan, Liquid Waste Management Plan and the Solid Waste Management Plan), anticipated departmental activities and specific Board direction that occurs throughout the year. The format of the list for the work plan projects indicates the name of the project, a brief synopsis of the action required, and the due date for project completion.

ALTERNATIVES:

This report is presented to the Board for information only.

FINANCIAL IMPLICATIONS:

Each of the individual work plan projects and activities is funded through the service area budgets that are established annually through the Board’s Five Year Financial Planning process.

STRATEGIC PLAN IMPLICATIONS:

These projects are developed based on the direction obtained through the Board’s Five Year Financial Plan, Strategic Plan, long term program plans, anticipated departmental activities and specific Board direction that occurs throughout the year.

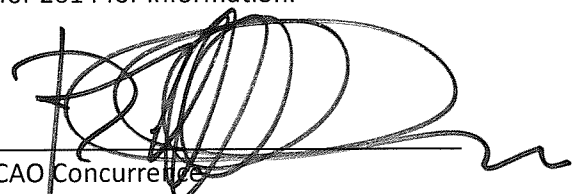
SUMMARY:

The list of service area projects is developed annually and presented to the Board for information.

RECOMMENDATION:

That the Board receive the list of service area work plan projects for 2014 for information.


Report Writer


CAO Concurrere

Information Services / GIS	action	due date
Boardroom / Committee Room A/V systems	Implementation of new Audio / Visual systems	Sept
Disaster recovery failover - Oceanside Place	Live data replication and relocation of failover / servers to Oceanside Place computer room	Oct
Business Continuity / Risk Assessment	Investigate options for out of area alternate processing site or corporate data records storage	Dec
SharePoint / Records Management	Records Management system framework development & departmental file systems migrations	Nov
Digital conversion of paper permit files	Integration / import into Cityview property system	Dec
Microfiche conversion and retrieval system	Development of SharePoint based retrieval system for Microfiche, RFP for scanning of microfiche, phased import of scanned fiche images	Dec
Cityview mobile devices for Inspectors	Field deployment of wireless devices for live Cityview integration for inspections	Oct
Geoware Server and Operating systems migration	New servers to be implemented and migration from Linux O/S to Windows Server O/S	Sept
Asset Management	Provide technical support / advice	Ongoing
Cityview mobile devices for Inspectors	Cityview / mapping interaction development	Oct
Ortho Photo	RFP, data collection, processing and web map publishing of District Ortho Photo	Dec
GPS data collection	GPS collection and map processing for Utilities water meters and valves, and Parks trails	July
ArcGIS Server 10.2 and web map	Implement 10.2 version upgrade from 10.0	Sept

FINANCE SERVICES:

Operational Efficiency and Services Review	All Finance Service areas to participate in the review, including Fire Services	May
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Financial Reporting	action	due date
Budgeting software	Implement capital module of new budget software program	Jan - Aug
Financial Plan	Complete consolidation of 2014 – 2018 financial plan and provide analysis to Board as required for approval	Mar
Financial statement consolidation/reporting tools	Complete assessment of Caseware reporting tool and implement as needed	Sept
Annual Report	Meet all statutory reporting deadlines for financial information	June
Public Sector Accounting Board standards	Complete inventory of RDN properties for new liability for contaminated sites accounting standard and implement new government transfers acct standard	Dec
Asset Management Strategy RFP	Complete RFP process with Committee and provide support to proponent as needed	June

Gas Tax Transfer Program and other grant programs	Provide analysis for grant requests, complete grant claims and provide annual reporting to UBCM as required	Ongoing
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Accounting Services	action	due date
Web based payroll time recording	Expand implementation of existing products currently in use so that all departments within the RDN have web based payroll time reporting	Oct
Electronic upload of Solid Waste scale transactions	Implement Geoware - Vadim interface	Oct
Electronic vendor payments	Implement electronic vendor payments	Apr
Digital storage of vendor invoices	Review options and costs and implement as needed	Dec
General Banking	Review service and arrange extension to current agreement if approved, or issue RFP	Feb

Finance - Other	action	due date
Departmental support	Provide financial analysis, ad hoc reporting and accounting support to departments as needed	Ongoing
Property and Liability Insurance	Commence review of options and RFP process for provision of insurance services	May
Nanaimo River Firehall	Review options with neighbourhood	Apr
Dashwood Fire Department – building project	Complete next stage of requirements, analysis and design	Sept
Bow Horn Bay Fire Department	Complete Crown Land Grant application for Spider Lake site	May
Nanoose and Coombs Hilliers Fire Departments	Work with departments to complete pumper truck RFP process	Sept
Central Island Emergency 911	Follow up with Board for approval of revised call answer levy strategy	Jan
Central Island Emergency 911 and North Island 911	Review impacts of revised RCMP funding agreements on RDN service and budgets	Dec
Fire Services General	<ul style="list-style-type: none"> • Complete draft Regulatory Bylaw • Review training standard recommendations and applicability to RDN services 	Mar Oct

RECREATION & PARKS SERVICES:

Operational Efficiency and Services Review	All departments within the Recreation and Parks Service Area will participate in the review	May
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All Parks Services	action	due date
Parks and Trails Guidelines	Completion of Parks and Trails Guidelines	Jan
Parks Operations Building	Secure site, building and yard for Parks Planning and Operations staff and equipment	June
Website Upgrades	Assess web pages and continue to create pages to provide timely information to residents	ongoing

Parks Maintenance	Continue with park and infrastructure inspections and maintenance programs	ongoing
Parks Services	Continue to respond to committees, RDN Board, industry, innovation and community direction in the area of parks services	ongoing
GIS and Mapping	Continue to work with GIS staff to map trails and facilities and update the RDN mapping system	ongoing
Donation Program	Complete the Parks Donation Policy	Nov
Invasive Plant Program	Continue to work with the Coastal Invasive Plant Committee to inventory and create invasive removal plans	ongoing
Gator Purchase	Work with Transit on purchase	June

Community Parks & Trails Services	action	due date
Community Parks and Trails Strategy (Northern EAs)	Completion of strategy for EAs E, F, G and H	Jan
Community Parks and Trails Developer Information Package	Implement Community Parks and Trails Developer Information Package per Community Parks and Trails Strategy	Nov
Community Park Maintenance Plans	Development and implementation of maintenance plans and schedules	Dec
Community Park signage	Increase signage in developed parks	Dec
Contract Management	Renew and manage contracts for park's maintenance	ongoing
Cedar Skateboard and Bike Park (EA A)	<ul style="list-style-type: none"> • Completion of project • Organize the official opening 	Jan
Morden Colliery Trail Bridge (EA A)	Design and costing for tender of multiuse bridge over Nanaimo River	Sept
Beach access & undeveloped road Right-of-Ways (EA A)	Work with committee to create plan for development	May
Nelson Road boat launch (EA A)	Repairs to edge of ramp	July
Huxley Community Park Plan (EA B)	Completion of park development plan	Apr
North Road roadside path (EA B)	Design and costing for tender of multiuse path	July
Skateboard Park Site (EA B)	Locate site for future skateboard park	June
Mudge Island beach access development – Phase II (EA B)	Survey and develop sites as outlined in plan (see Board resolution)	Sept
Whalebone Community Park clean-up & reclaim entrances (EA B)	Develop a plan to survey and clear entrances, and clean and improve existing park sites. Carry out first phase.	Oct
Rollo McClay Community Park water reservoir upgrades (EA B)	Complete berm and seed	Apr
707 Community Park gate (EA B)	Create agreement with landowner and install gate	June
Honeysuckle Trail (EA B)	Work with GALTT & MOTI on trail permit & development	Oct
Extension Miners Community Park bridge and trail (EA C)	Complete design and install bridge and trail	July
Jingle Pot roadside path (EA C)	Design and Costing for Tender of multi-use path	July

EW/PV)	and/or expanded roadside	
Andres Dorrit community consultation (EA C EW/PV)	Complete the community survey; compile and assess results	Jan
Andres Dorrit Community Park Phase I – house studies, other studies or design work (EA C EW/PV)	Complete studies and designs as determined through the community consultation process	Nov
Blueback Community Park development (EA E)	Complete planning process and develop Phase I	Dec
Meadowood Way Community Park development (EA F)	Complete design, tender and install	July
Arrowsmith Community Trail (ACT) next phase (EA F)	Plan and develop next phase of trails	Nov
Errington Park upgrades (EA F)	Work with community to upgrade park for the 100 year anniversary	Nov
Errington Community Park (EA F) operator agreement	Complete the agreement with the Errington Hall Society	Apr
Land agreements ACT trails (EA F)	Complete agreements with private land owners	Feb
Malcolm Park signage plan (EA F)	Create a signage plan and install	Sept
Columbia Beach well capping (EA G)	Locate, map, and seal/cap three (estimated) water wells at Columbia Drive Community Park	Sept
Little Qualicum Hall upgrades (EA G)	Develop multiyear plan for hall repairs and proceed on priority items	Dec
Wembley Road roadside path (EA G)	Design and costing for tender of multi-use path and/or expanded roadside	Oct
Oceanside Cycling Coalition (EA G)	Attend meetings with local community groups for Active Transportation	ongoing
Henry Morgan Community Park Phase II (EA H)	Install swings and portapotty	July
Essary Trail development (EA H)	Work with volunteers to complete the trail	May
Agreement Lighthouse Community Park (EA H)	Complete agreement for park management with the Lions Club	Apr
Oakdowne Community Park signs (EA H)	Install signs as per plan	Mar
Shoreline Drive stairs (EA H)	Install new stairs	Apr
Water access planning (EA H)	Work with POSAC to prioritize & implement first phase	Sept

Regional Parks & Trails Services	action	due date
Brochure	Complete the design; print and distribute copies	Feb
Park Warden Program	Continue to work with volunteers	ongoing
Caretaker Agreements	Monitor and work with caretakers in Moorecroft and Coats Marsh Regional Parks	ongoing
Operator Agreements	Monitor and work with operators in Horne Lake and Descanso Bay Regional Parks	ongoing
Partnerships	Continue to liaise with partners on park maintenance, development and other issues at NRRP, MBRP, LQRERCA, ERRP, CMRP and MRP	ongoing

Regional Park signage	Install signs and kiosks as per budget plan	Sept
Goose control	Continue to monitor and review progress of the Guardians of the Estuary	Sept
Management Plan renewals	Create a plan and strategy to review and update plans	Oct
E&N Rail Trail (Coombs to Parksville to French Creek)	Design, including preliminary studies, survey and public consultation	Sept
E&N Rail Trail (Parksville to Coombs)	Tender and construction of trail	Summer 2015
E&N Rail Trail (Parksville to French Creek)	Tender and construction of trail	Summer 2016
Morden Colliery Regional Trail Lease	Work with Province to upgrade and renew the lease	Sept
Morden Colliery Regional Trail bridges	Repair and upgrade Thatcher Creek bridges	May
Lighthouse Country Regional Trail Staging Area	Completion of staging area at Lighthouse Community Park entrance	Sept
Lighthouse interpretive signs	Produce and install signs	Apr
Benson Creek Falls Mgmt. Plan	Complete management plan	Jan
Benson Creek Falls Regional Park	<ul style="list-style-type: none"> • Geotechnical study for placement of stairs to Ammonite Falls • Design & install stairs to Ammonite Falls • Design & install parking upgrades at Jamison Road 	May Dec Apr
Benson Creek Falls access	Work with woodlot manager and province on the trail selection and agreement	Nov
Benson Creek Falls licence	Work with province to explore early renewal	June
Descanso Regional Park upgrades	Campsite and road improvements	May
Englishman River Regional Park trail development	Trail upgrades and installation of directional signage	Oct
Horne Lake Boat Launch Upgrades	Repair and upgrade boat launch	Feb
Horne Lake generator	Replacement of generator	Apr
Horne Lake Regional Park facility upgrades	Upgrade and relocation of campsites per concept plan	Dec
Fairwinds Regional Parks Management Plan	Development of Management Plan (the due date is pending the PDA bylaw adoption)	pending
Little Qualicum River Estuary	Continue to work with partners on invasive plant removal and upgrades to the fish channel	ongoing
Moorecroft Regional Park - trail upgrades	Update and improve accessibility to sections of rail system	July
Moorecroft Regional Park - facility upgrades	Boat house roof replacement and Kennedy Hall upgrades	Sept
Moorecroft Regional Park - dog issues	Work with bylaw to create a strategy for dog management	May
Mount Benson covenant	Work with NALT to complete the covenant	Mar
Nanaimo River Regional Park - facility upgrades	Upgrade stairs to river	Nov
Nanaimo River Regional Park - invasive species	Removal of invasive species at park	Nov

Nanaimo River Regional Park / TLC	Monitor disposition of conservation lands by The Land Conservancy	ongoing
Morden Colliery Mine tipple	Conduct engineering report for the tipples restoration	pending

Recreation Services	action	due date
2007 Recreation Services Master Plan	Review and compare applicable recommendations that may have an impact on 2014	June
Fees and Charges	Complete annual revenue of fees and charges related to recreation services and create bylaw	May
Asset Management	Participate in RDN Asset Management working group	quarterly
Membership Pass Program	Expand existing Active Living Card to include options for corporations and organizations	Mar
Website	Review Recreation Services presence on RDN website	June
Safety	Staff re-familiarization on safety plan manuals and emergency preparedness	Oct
Sport Tourism	Aid in the implementation of the joint communities plan to promote sport tourism as per the 2011 Advanced Sport Tourism Workshop	ongoing

Ravensong Aquatic Centre	action	due date
Facility Maintenance - Capital	Implement and complete maintenance capital plans	Sept
Facility and Equipment Maintenance	Continue with facility and equipment preventative maintenance schedules and programs	quarterly
Aquatic Services	Continue to respond to D69 Commission, RDN Board, industry, innovation and community direction in the area of aquatic services	ongoing
Pool Audit	Lifesaving Society to review pool protocols/procedures	Nov
Mechanical Systems Optimization Review	Verification review of upgraded mechanical systems to ensure operating at optimal levels	Dec
Business Plan Metrics	<ul style="list-style-type: none"> Continue to focus on revenue generating opportunities, new programming and partnerships Monitor and adjust facility hours to maximize facility usage. Take full advantage of multiple booking usage Maintain and work to enhance marketing strategies to increase participation rates (e.g. MS Society, VIHA, schools, businesses, community events) 	ongoing
Recreation Facilities Sustainability Strategy	Continue to coordinate with Energy and Sustainability to develop and implement a comprehensive energy management strategy for RDN recreation facilities	quarterly

Oceanside Place	action	due date
Sport Tourism	<ul style="list-style-type: none"> Maintain and increase if possible sport tourism initiatives related dry and ice use. Continue to encourage and promote nine sport tourism related events of Oceanside Place Participate in VISTC bid for the 2015 or 2016 National Women's U18 Hockey Championship 	Ongoing Jan/TBA
Arena Services	Continue to respond to D69 Commission, RDN Board, industry, innovation and community direction in the area of arena services	ongoing
Business Plan Metrics	<ul style="list-style-type: none"> Continue to focus on cost reduction and revenue generating opportunities in programs and services Increase the number of dry floor activities & events during the shoulder season (increase the utilization of dry floor use to 20% or 1,264 hours of use) 	ongoing
Facility Maintenance - Capital	Implement and complete maintenance capital plans	Nov
Facility and Equipment Maintenance	Continue with facility and equipment preventative maintenance schedules and programs	quarterly
Facility Services	Continue to update and develop facility signage	Sept
Recreation Facilities Sustainability Strategy	Continue to coordinate energy and sustainability to develop and implement a comprehensive energy management strategy for RDN recreation facilities	quarterly

Recreation Program Services	action	due date
Facility Maintenance – Cedar Heritage Centre	Implement and complete capital maintenance projects as required and work with CSCES on management of building	ongoing
Contract Services	Continue to monitor and work with other recreation service providers currently under contract (CSCES, ACRA and GRS)	ongoing
Business Plan Metrics	<ul style="list-style-type: none"> Continue to respond to D69/EA 'A' Commissions, RDN Board, industry, innovation and community direction in the area of recreation services Ongoing assessment of program evaluation to ensure program offerings are relevant, accessible and needed within District 69 - match relevant program services to the needs and wants of the community (school enrollment, demographics, Recreation/RDN Master Plans) Promoting benefits of programs & events that align with Active Aging, Canadian Physical Activity, Sport 4 Life guidelines, RDN Employee Wellness Program 	ongoing

Youth Recreation Strategic Plan	Year 4 implementation of recommendations from 5 year Youth Strategic Plan (2011-2015) including: <ul style="list-style-type: none"> • Continue the delivery of developmental asset programming • Implementation of Youth Art program • Inventory & assessment of community and regional parks to improve youth outdoor playing facilities 	ongoing
Ballenas Track Resurfacing and Multiplex	Complete work with SD69 and report to D69 Commission and RDN Board on feasibilities	Mar
Field and Facility use and development	Complete meetings with Parksville, Qualicum Beach & SD69 on possible usage fees on sport fields /courts	Mar
Partnerships and Collaborations	Review and identify strategic partnerships	June

REGIONAL AND COMMUNITY UTILITIES:

Operational Efficiency and Services Review	All departments within the Community and Utilities Service Area will participate in the review	May
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Wastewater Services	action	due date
GNPCC Outfall	Outfall replacement for land section - construction project and detail design marine section	Dec
GNPCC Secondary Treatment	Secondary upgrade preliminary design	Nov
GNPCC Digester Cleaning	Empty contents Digester 2 , inspection & maintenance	June
Wastewater Facilities	Study to review resource recovery opportunities at RDN wastewater facilities	Dec
Departure Bay Pump Station	Pump and electrical upgrade - construction project	June
FCPCC Trickling Filter upgrades	Roof, piping & concrete repairs – construction project	Dec
FCPCC Decontamination Building	Construction project	Dec
Chase River Pump Station	Bypass return line - construction project	June
Sewer Use Bylaw No. 1225	Review and update source control bylaw	Aug
FCPCC Effluent Pumping Capacity	Increase flow capacity of outfall – construction project	Dec
GNPCC and FCPCC DCC Bylaw	DCC Bylaw review and update	Aug
Rural Village Sewer Servicing Project	Area H sewer servicing detailed design and Cedar Village servicing strategy	2015
Septic Smart Program	Provide operational advice/information to septic system owners via workshops, open houses and newsletters	ongoing
Liquid Waste Management Plan	Submit draft LWMP to Ministry of the Environment	Feb
Liquid Waste management Plan	Implement LWMP actions related to the various program commitments	ongoing

Water and Utility Services	action	due date
Water:		
NBPWSA DCC Bylaw	Finalize Development Cost Charge Bylaw	Mar
NBPWSA Capital Charge Bylaw	Finalize the Capital Charges Bylaw	Mar

NBPWSA Madrona PS Upgrade	Upgrade Logic Controller	Apr
NBPWSA Madrona #8 Well	Redevelopment	May
NBPWSA Beachcomber Reservoir	Reservoir Demolition	Apr
NBPWSA West Bay Pumphouse	Electrical/Controller Upgrades	Apr
NBPWSA Arbutus Park Pump Station Upgrade	Design and install pump station upgrades	Nov
NBPWSA Gary Oak PRV and water main upgrades	Design and install pressure reducing valve station and watermain upsizing along Spruce Lane	Nov
NBWSA Ashcraft Road Watermain Upgrade	Replace watermains, valves and associated works	Nov
NBPWSA Borrowing Bylaw	Establish Borrowing Bylaw for future Capital – Petition or Referendum for borrowing authority	Nov
San Pareil WSA Infrastructure Upgrade	Construct reservoir & pump station facilities	April
San Pareil WSA Treatment Review	Develop additional water treatment options	Nov
Whiskey Creek Treatment Review	Develop additional water treatment options	Nov
Englishman River WSA Back Up	Install power back-up generator	Mar
Westurne Water System Review	Complete review and petition	Nov
<i>Drinking Water/Watershed Protection:</i>		
Water Use Reporting Tool	Finalize regional pilot then introduce to partners	Mar
Volunteer well monitoring program	Establish volunteer wells in the region as per Water Balance data gap analysis	Mar
Watershed Water Balance Study	Address data gap recommendations	May
Rebate Programs	Continue rainwater cistern & rural water quality rebates	ongoing
Rural Water Quality Outreach Program	Program development and delivery	Sept
Team WaterSmart Program	Continue program delivery in region	ongoing
Integrated Watershed Management (IWM)	Develop IWM model and implementation plan	Nov
<i>Sanitary / Storm Sewer:</i>		
Sanitary sewer maintenance	Develop RFP for camera and flushing activities	Mar
Breakwater Pump Stn upgrades	Upgrade electrical controls	June
Surfside Pump Station upgrades	Replace duty pump	June
Hawthorne Rise Sanitary Sewer Main extension	Finalize engineering and tender the project	Apr
Stormwater Service Area Fairwinds	Develop service area and standards	Nov

STRATEGIC AND COMMUNITY DEVELOPMENT:

Operational Efficiency and Services Review	All departments within the Strategic and Community Development Service Area will participate in the review	May
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Building Inspection	action	due date
Document Storage/Archiving	<ul style="list-style-type: none"> Eliminate hand-written inspection reports through the use of mobile field devices Research and examine systems for digital storage and retrieval of historical records 	May June
Public Awareness	<ul style="list-style-type: none"> Maintain relationships with development community to improve knowledge of inspection services and requirements Continued operation of community offices in EAs 'B' and 'H' Educational material available to public at site offices, main office and on website 	ongoing
Compliance	<ul style="list-style-type: none"> Maintain focus on compliance by resolving infractions through pro-active enforcement and public awareness 	ongoing

Bylaw Enforcement	action	due date
Response time	Continue timely response to public complaints with focus on compliance versus legal action	ongoing
Public awareness	Increase public awareness of regulatory bylaws and online contact form through the development of printed material and website updates	ongoing
Inter-agency cooperation	Participation in inter-agency meetings with key organizations such as police, fire, ALC & municipalities to maintain working protocols and cooperation	ongoing

Emergency Planning	action	due date
Program Development	<ul style="list-style-type: none"> Centralize volunteer management & expand NEP program Focus on building volunteer base in EAs 'A' and 'C' 	ongoing
Emergency Operations Centre / Response	<ul style="list-style-type: none"> One table top exercise; amateur radio emergency communications drill; livestock evacuation training Increase focus on recruitment and retention of ESS and NEP volunteers; establish new NEP groups and provide related training 	Apr ongoing
Wildland Urban Interface fire hazard abatement	<ul style="list-style-type: none"> Provide outreach on FireSmart Communities – Risk Mitigation 	May-Oct
Carcass Disposal	Conduct next phase of livestock carcass disposal study	Sept
Recovery Plan	Continue development of the Recovery Plan to include the Canadian Red Cross Services	Sept

Cooperative agreements/ partnerships	<ul style="list-style-type: none"> • Complete agreement with Canadian Red Cross Society to secure Recovery Services • Consider continuation of Parksville/Qualicum Beach operating agreement to share Oceanside ESS and emergency communications 	Jan ongoing
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Long Range Planning	action	due date
Regional Growth Strategy implementation	<ul style="list-style-type: none"> • Produce Annual Report on RGS implementation • Initiate target setting for achieving RGS goals • Develop RGS monitoring and reporting program • Review RGS to ensure support for agriculture, affordable housing and renewable energy • Initiate RGS Master Implementation Agreement • Initiate development of Corporate Implementation Strategy • Education and awareness activities • Complete Commercial Land Supply & Demand Study • Coordinate Intergovernmental Advisory Committee meetings 	Feb Feb Dec Oct Sept Sept ongoing Nov As needed
Climate and Energy Action Plan	Provide assistance and advice	2014
Affordable Housing	<ul style="list-style-type: none"> • Implement community engagement program for secondary suites policy • Continue implementation of Housing Action Plan • Update web resource pages on affordable housing 	Feb ongoing ongoing
Capacity Building for Homelessness	<ul style="list-style-type: none"> • Staff involvement to allocate funds to homelessness projects 	ongoing
Nanaimo Airport Land Use Planning Process	<ul style="list-style-type: none"> • Provide support for Nanaimo Airport Land Use Planning Process • Continue Phase 2 of the Airport Planning Exercise • Continue Phase 3 – Master Development Plan and OCP / zoning amendments 	ongoing Feb 2015

Community Planning	action	due date
Cedar Main Street Plan	Implement Cedar Main Street Plan	
Electoral Area 'A' OCP Implementation	<ul style="list-style-type: none"> • Complete zoning bylaw amendments • Review of Yellowpoint Aquifer DPA 	Dec Mar
Agricultural Area Plan Implementation	Initiate implementation of Agricultural Area Plan	Jan
Official Community Plans	Initiate amendments to zoning and OCPs to address agriculture, affordable housing and renewable energy	Sept
Large Development Rezoning	Complete rezoning and PDA for Schooners Cove and Lakes District	TBD

Current Planning	action	due date
Board ALC Comment Policy review	Complete review of Board policy re comments to the ALC and provide options for Board consideration	Mar.
Housing Action Plan	Assist with implementation of secondary suites bylaw amendments and supporting policy	Apr
Delegation of Authority Bylaw review	Review of Bylaw No. 1166 in consideration of potential amendments to improve business efficiency	May
Rural Area Signage	Report on a proposed consultative process with the intent of identifying rural signage concerns and reducing any impediments to effective signage	May
Communication tower siting protocol	Review RDN's role in communication tower siting and provide options for Board consideration	June
Nanaimo Airport Land Use Planning Process	Assist Long Range Planning in the Airport planning process	July
Development Permit Area Exemption review	Assist in review of DPA exemptions in consideration of potential amendments to improve business efficiency	Aug
Regional Park zoning	Complete zoning bylaw amendments for Reg. Parks	Sept
Climate Change adaptation	Review RDN bylaws and policies with consideration to climate change adaptation	Sept
Zoning Bylaw No. 500 review	Review Bylaw No. 500 for housekeeping amendments and consistency with Board Strategic Plan	Oct
Communication	Review and update website and other sources of business information to ensure accurate, accessible and understandable information	Nov
Lakes District & Schooner Cove Plan implementation	Actions to support subdivision development within the LD & SC pending adoption of the ZA bylaws and PDA; <ul style="list-style-type: none"> • Establish processes for review of development applications under PDA • Assist in establishment of an RDN stormwater service area 	TBD
Sustainable Communities	Assist in review of RDN bylaws and policies to better accommodate renewable energy initiatives	ongoing
Area Agriculture Plan Implementation	Support the AAC in implementation of the Agricultural Area Plan	ongoing

Energy and Sustainability	action	due date
Communication	• Maintain outreach to staff on energy use, emissions and climate change	ongoing
	• Continue public seminars on green buildings, renewable energy systems, emission reductions, and other sustainability topics	Sept/Oct
	• Distribute one regional newsletter focused on energy and sustainability topics	June/July
	• Continue development of Green Building Guidebook series	Nov

	<ul style="list-style-type: none"> • Coordinate a community symposium on Climate Science 	Apr
Energy Management and Climate Action	<ul style="list-style-type: none"> • Provide interdepartmental support, and coordinate investment in corporate energy efficiency initiatives through the Corporate Climate Action Fund 	ongoing
	<ul style="list-style-type: none"> • Revise and update the RDN Strategic Energy Management Plan 	Aug
	<ul style="list-style-type: none"> • Develop and implement regional emission reduction projects 	Dec
	<ul style="list-style-type: none"> • Assist with the development of renewable energy projects within the region 	ongoing
	<ul style="list-style-type: none"> • Assess vulnerability of RDN communities & infrastructure to predicted impacts of climate change 	Sept
Sustainable Communities	<ul style="list-style-type: none"> • Review RDN bylaws and regulations and revise to better accommodate residential and utility scale renewable energy systems and green building practices 	ongoing
	<ul style="list-style-type: none"> • Continue Green Building Incentive Program for Electoral Area and Lantzville 	ongoing
	<ul style="list-style-type: none"> • Develop pilot integrated community identity and wayfinding signage program for Electoral Area 'E' 	May-July
	<ul style="list-style-type: none"> • Continue administration of the Northern Communities Economic Development Service 	ongoing
Monitoring and Reporting	<ul style="list-style-type: none"> • Monitor and report on corporate energy use and emissions 	quarterly
	<ul style="list-style-type: none"> • Continue support for interdepartmental reporting relating to Board Strategic Priorities, as well as other reporting requirements as requested. 	ongoing

TRANSPORTATION AND SOLID WASTE SERVICES

Operational Efficiency and Services Review	All departments within the Transportation and Solid Waste Service Area will participate in the review	May
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Transportation Services	<i>action</i>	<i>due date</i>
New Flyer CNG Project	Implement	Mar
Facilities shop CNG upgrade	Design and construct	Mar
CNG Compressor Station	Design and install	Mar
Transit Business Plan	Bring Transit future plan to Board for approval	Sept
Work order inventory system	Design and install new system for Mechanics	July
Google type trip planner	Design and implement	Apr
Update Operations Manual	Review and update the manual	Apr
Dispatcher Operations Manual	Design and implement the manual	June
Driver Routing Manual	Design and implement a manual	Sept
Prideaux Street Transit Exchange	Implement lighting upgrades	Feb
Brooks Landing Transit Exchange	Design transit exchange	June
Downtown Transit Exchange	Preliminary design of a new Transit Exchange	Oct

Woodgrove Transit Exchange	Preliminary design for upgrade and expansion	Dec
HandyDART Fleet (Arboc)	Implement replacements	May
On-time performance monitoring	Design and implement new monitoring program	Dec
GPS bus monitoring	Design and install	Dec
Bus stop implementation plan	Prepare report for Board approval	Dec

Solid Waste Services	action	due date
Zero Waste Programs:		
Solid Waste Management Plan	Review, update and amend	Dec
SWMP Public Consultation Program	Develop and implement	Dec
Commercial Food Waste Ban Expansion	Communicate, collaborate, enforce	Sept
North Nanaimo Yard Waste Drop-Off	Award cost recovery contract	Apr
Construction/Demolition Waste Recycling Options	Undertake study; report to Board	June
WSML License Application Process	Review and update process	ongoing
WSML License Compliance	Monthly, Quarterly Inspections (12 sites)	ongoing
Illegal Dumping Enforcement Program	Respond to public inquiries/complaints	ongoing
Region-Wide Zero Waste Newsletters	Prepare and distribute two newsletters	Nov
Review flow control	Study of issue and prepare Board report with options	June
Curbside Collection Program:		
Curbside Collection Bylaw	Update and amend Bylaw No. 1591	Mar
Multi-Material BC PPP Recycling Program	Implement and monitor service contract	ongoing
Amend curbside collection contract with BFI Canada	Revise and amend contract language and term to reflect changes to Provincial recycling program	ongoing
Program Newsletters	Prepare and distribute three newsletters	ongoing
Disposal Facilities:		
Bylaw 1531 – 2013 Tipping Fees	Review and amend	Nov
Cell One Nature Park Phase 1	Preliminary design	Oct
Operations Building at Landfill	Detailed design for new operations building	Sept
Maintenance Building at Landfill	Detailed design for new maintenance building	Sept
North Berm	Detailed design for berm	June
Underground Utilities (North Berm)	Detailed design, tender award and construction	Oct
Tire and Equipment Wash Down Facility	Detailed Design and Construction of facility	Nov
Procedures Manual	Prepare procedures manual for Solid Waste facilities	Sept



RDN REPORT		
CAO APPROVAL		
EAP		
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JAN 07 2014		
RHD		
BOARD		

MEMORANDUM

TO: J. Harrison
Director, Corporate Services

DATE: January 14, 2014

FROM: J. Hill
Manager, Administrative Services

SUBJECT: A Bylaw to Secure Long Term Debt for the City of Nanaimo Water Treatment Plant

PURPOSE:

To introduce "Regional District of Nanaimo Security Issuing (City of Nanaimo) Bylaw No. 1694, 2014" for three readings and adoption.

BACKGROUND:

City of Nanaimo Bylaw No. 7127 authorizes the borrowing of \$22.5 million for the construction of a water treatment plant. The Board adopted Bylaw No. 1688 on July 23, 2013 which authorized the Regional District to secure \$13.3 million dollars for the first phase of funding for this project. The City of Nanaimo Council adopted a resolution at its November 18, 2013 meeting authorizing the Regional District to secure \$9.2 million dollars for the second phase of borrowing for this project (Attachment 1). On the basis of the resolution, staff have prepared a security issuing bylaw for the Board's consideration, which can be adopted by the Board without further assents or approvals (Attachment 2).

ALTERNATIVES:

1. Give "Regional District of Nanaimo Security Issuing (City of Nanaimo) Bylaw No. 1694, 2014" three readings and adopt the bylaw as presented.
2. Take no action on the request.

FINANCIAL IMPLICATIONS:

Alternative 1

Under the terms of the bylaw the Regional District and its member municipalities are responsible for repayment of the debt; however, the City of Nanaimo is obligated to raise sufficient funds annually to make the debt payments. The City of Nanaimo has accounted for the debt in its five year plan so that this request is consistent with their budget documents.

Alternative 2


The Regional District could determine that it is not in the best interests of the region to secure these borrowings. Staff are not aware of any reason to do so and recommend proceeding to adopt the bylaw.

SUMMARY/CONCLUSIONS:

Following the procedures for securing long term debt, the City of Nanaimo has adopted a resolution authorizing the Regional District to prepare a bylaw to secure \$9.2 million dollars for the purpose of the Water Treatment Plant construction project. Bylaw No. 1694 is introduced for this purpose and may be adopted without further assents or approvals. Staff recommend proceeding with the bylaw as presented.

RECOMMENDATION:

1. That the Board consent to the borrowing of \$9.2 million dollars from the Municipal Finance Authority of British Columbia over a 20 year term for the purpose of funding the City of Nanaimo's Water Treatment Plant construction project.
2. That "Regional District of Nanaimo Security Issuing (City of Nanaimo) Bylaw No. 1694, 2014" be introduced and read three times.
3. That "Regional District of Nanaimo Security Issuing (City of Nanaimo) Bylaw No. 1694, 2014" be adopted.



Report Writer



Director Concurrence



C.A.O. Concurrence



REGULAR COUNCIL MEETING

2013 NOV-18

7. CORPORATE SERVICES:

(c) Municipal Security Issuing Resolution – Water Treatment Plant

- 59113 It was moved and seconded that Council approve borrowing from the Municipal Finance Authority of British Columbia, as part of the 2014 Spring Borrowing Session, \$9.2 million as authorized through City of Nanaimo "Water Treatment Plant Loan Authorization Bylaw 2011 No. 7127", and that the Regional District of Nanaimo be requested to consent to the borrowing over a twenty year term and include the borrowing in their Security Issuing Bylaw. The motion carried unanimously.

CERTIFIED CORRECT:

I. Howat,
DEPUTY CORPORATE OFFICER

REGIONAL DISTRICT OF NANAIMO**BYLAW NO. 1694**

**A BYLAW TO AUTHORIZE THE ENTERING INTO OF AN
AGREEMENT RESPECTING FINANCING BETWEEN THE
REGIONAL DISTRICT OF NANAIMO (THE "REGIONAL
DISTRICT") AND THE MUNICIPAL FINANCE AUTHORITY
OF BRITISH COLUMBIA (THE "AUTHORITY")
ON BEHALF OF THE CITY OF NANAIMO**

WHEREAS the Municipal Finance Authority of British Columbia (the "Authority") may provide financing of capital requirements for Regional Districts or for their member municipalities by the issue of debentures, or other evidence of indebtedness of the Authority and lending the proceeds therefrom to the Regional District on whose request the financing is undertaken;

AND WHEREAS the City of Nanaimo is a member municipality of the Regional District of Nanaimo (the "Regional District");

AND WHEREAS the Regional District is to finance from time to time on behalf of and at the sole cost of the member municipality, under the provisions of Section 824 of the *Local Government Act*, the works to be financed pursuant to the following loan authorization bylaw;

Municipality	L/A Bylaw No.	Purpose	Amount Borrowing Authorized	Amount Already Borrowed	Borrowing Authority Remaining	Term of Issue (Yrs.)	Amount of Issue
City of Nanaimo	7127	Water Treatment Plant	\$22,500,000	\$13,300,000	\$9,200,000	20	\$9,200,000
Total Financing pursuant to Section 824							<u>\$ 9,200,000</u>

AND WHEREAS the Regional Board, by this bylaw, hereby requests such financing shall be undertaken through the Authority;

NOW THEREFORE the Board of the Regional District of Nanaimo in open meeting assembled enacts as follows:

1. The Regional Board hereby consents to financing the debt of the City of Nanaimo in the amount of Nine Million Two Hundred Thousand Dollars (\$9,200,000) in accordance with the following terms.
2. The Authority is hereby requested and authorized to finance from time to time the aforesaid undertakings at the sole cost and on behalf of the Regional District and its member municipalities up to, but not exceeding Nine Million Two Hundred Thousand Dollars (\$9,200,000) in lawful money of Canada (provided that the Regional District may borrow all or part of such amount in such currency as the Trustees of the Authority shall determine but the aggregate amount in lawful money of Canada and in Canadian Dollar equivalents so borrowed shall not exceed \$9,200,000 in Canadian Dollars) at such interest and with such discounts or premiums and expenses as the Authority may deem appropriate in consideration of the market and economic conditions pertaining.
3. Upon completion by the Authority of financing undertaken pursuant hereto, the Chairperson and the Director of Finance of the Regional District, on behalf of the Regional District and under its seal, shall at such time or times as the Trustees of the Authority may request, enter into and deliver to the Authority one or more agreements, which said agreement or agreements shall be substantially in the form annexed hereto as Schedule 'A' and made part of this bylaw (such Agreement or Agreements as may be entered into, delivered or substituted hereinafter referred to as the "Agreement") providing for payment by the Regional District to the Authority of the amounts required to meet the obligations of the Authority with respect to its borrowings undertaken pursuant hereto, which Agreement shall rank as debenture debt of the Regional District.
4. The Agreement in the form of Schedule 'A' shall be dated and payable in the principal amount or amounts of monies and in Canadian dollars or as the Authority shall determine and subject to the *Local Government Act*, in such currency or currencies as shall be borrowed by the Authority under Section 1 and shall set out the schedule of repayment of the principal amount together with interest on unpaid amounts as shall be determined by the Treasurer of the Authority.
5. The obligation incurred under the said Agreement shall bear interest from a date specified therein, which date shall be determined by the Treasurer of the Authority, and shall bear interest at a rate to be determined by the Treasurer of the Authority.
6. The Agreement shall be sealed with the seal of the Regional District and shall bear the signature of the Chairperson and the Director of Finance of the Regional District.
7. The obligations incurred under the said Agreement as to both principal and interest shall be payable at the Head Office of the Authority in Victoria and at such time or times as shall be determined by the Treasurer of the Authority.
8. During the currency of the obligation incurred under the said Agreement to secure borrowings in respect of City of Nanaimo Loan Authorization Bylaw 7127, there shall be requisitioned

annually an amount sufficient to meet the annual payment of interest and the repayment of principal.

9. The Regional District shall provide and pay over to the Authority such sums as are required to discharge its obligations in accordance with the terms of the Agreement, provided, however, that if the sums provided for in the Agreement are not sufficient to meet the obligations of the Authority, any deficiency in meeting such obligations shall be a liability of the Regional District to the Authority and the Regional Board of the Regional District shall make due provision to discharge such liability.
10. The Regional District shall pay over to the Authority at such time or times as the Treasurer of the Authority so directs such sums as are required pursuant to section 15 of the *Municipal Finance Authority Act* to be paid into the Debt Reserve Fund established by the Authority in connection with the financing undertaken by the Authority on behalf of the Regional District pursuant to the Agreement.
11. This bylaw may be cited as "Regional District of Nanaimo Security Issuing (City of Nanaimo) Bylaw No. 1694, 2014".

Introduced and read three times this day of , 2014

Adopted this day of , 2014

CHAIRPERSON

CORPORATE OFFICER

Schedule 'A' to accompany "Regional District of Nanaimo Security Issuing (City of Nanaimo) Bylaw No. 1694, 2014"

Chairperson

Corporate Officer

C A N A D A
PROVINCE OF BRITISH COLUMBIA

AGREEMENT
REGIONAL DISTRICT OF NANAIMO

The Regional District of Nanaimo (the "Regional District") hereby promises to pay to the Municipal Finance Authority of British Columbia (the "Authority") at its Head Office in Victoria, British Columbia, the sum of _____ Dollars (\$_____) in lawful money of Canada, together with interest calculated semi-annually in each and every year during the currency of this Agreement; and payments shall be as specified in the table appearing on the reverse hereof commencing on the ____ day of _____, 20__, provided that in the event the payments of principal and interest hereunder are insufficient to satisfy the obligations of the Authority undertaken on behalf of the Regional District, the Regional District shall pay over to the Authority such further sums as are sufficient to discharge the obligations of the Regional District to the Authority.

Dated at _____, British Columbia, this ____ of _____, 20__.

IN TESTIMONY WHEREOF and under the authority of Bylaw No. 1694 cited as "Regional District of Nanaimo Security Issuing (City of Nanaimo) Bylaw No. 1694, 2014". This Agreement is sealed with the Corporate Seal of the Regional District of Nanaimo and signed by the Chairperson and the Director of Finance thereof.

Chairperson

Director of Finance

Pursuant to the *Local Government Act*, I certify that this Agreement has been lawfully and validly made and issued and that its validity is not open to question on any ground whatever in any Court of the Province of British Columbia.

Dated this ____ day of _____, 20__.

Inspector of Municipalities of British Columbia



RDN REPORT		
CAO APPROVAL		✓
EAP		
COW	✓	
JAN 02 2014		
RHD		
BOARD		

MEMORANDUM

TO: W. Idema
Director of Finance

DATE: December 11, 2013

FROM: T. Moore
Manager, Accounting Services

FILE:

SUBJECT: Bylaw No. 1693– A Bylaw to authorize preparation of 2014 Parcel Tax Rolls

PURPOSE:

To introduce for three readings and adoption “2014 Parcel Tax Assessment Roll Bylaw No. 1693, 2014”.

BACKGROUND:

Section 806.1(2) of the *Local Government Act* requires that the Board adopt a bylaw to provide for the preparation of assessment rolls in order to levy parcel taxes. The “2014 Parcel Tax Assessment Roll Bylaw No. 1693, 2014” introduced with this report identifies twenty eight services for which parcel taxes form a part of the annual revenues.

When a parcel tax is to be imposed for the first time (ie either a new service or new parcel due to subdivision), a parcel tax review panel must be established to consider any concerns respecting the parcel tax roll. The types of corrections which can be addressed by the review panel include updating an owner’s name and address, considering whether a parcel is correctly included or excluded from the service and considering whether an exemption has been properly or improperly allowed. For the most part, owners simply call the Regional District office to provide corrective information and/or staff establish whether a property should be on the roll or not by reference to the establishing bylaw. In the last three years there have been no personal attendances at the review panel.

The review panel consists of 3 people, which may be any combination of staff and Board members. A tentative date for the review panel would be Wednesday, February 19, 2014 between 4:30 pm and 5:30 pm in the Regional District Committee Room. Section 806.1(2)(b) of the *Local Government Act* requires that the authenticated parcel tax rolls be forwarded to the Surveyor of Taxes before February 28th, however, the Surveyor of Taxes office controls the time the rolls are received by our offices and therefore the dates outlined in this report may be amended slightly to ensure sufficient notice to property owners and Board appointed panel members.

ALTERNATIVES:

There are no alternatives to this process.

FINANCIAL IMPLICATIONS:

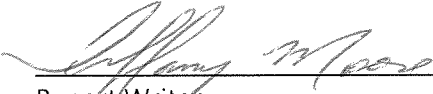
Advertising and mailing costs are provided in the 2014 budget for this purpose.

SUMMARY/CONCLUSIONS:

Pursuant to the *Local Government Act* this report introduces a bylaw which will provide for the preparation of parcel tax rolls for 2014. The parcel tax review panel will meet tentatively on Wednesday, February 19, 2014 between 4:30 and 5:30 pm to hear any concerns regarding information contained in the parcel tax rolls.

RECOMMENDATION:


1. That the "2014 Parcel Tax Assessment Roll Bylaw No. 1693, 2014", be introduced and read three times.
2. That the "2014 Parcel Tax Assessment Roll Bylaw No. 1693, 2014" be adopted.
3. That the Board appoint the Chairperson, the Manager, Administrative Services and the Director of Finance to preside as the 2014 parcel tax review panel.



Report Writer



Director



A / C.A.O. Concurrence

REGIONAL DISTRICT OF NANAIMO

BYLAW NO. 1693

A BYLAW TO PROVIDE FOR THE PREPARATION OF
PARCEL TAX ROLLS FOR THE YEAR 2014

WHEREAS the Board of the Regional District of Nanaimo shall, pursuant to Section 806.1(2)(a) of the *Local Government Act*, provide by bylaw for the preparation of an assessment roll for the purpose of imposing a parcel tax under Section 806.1(2);

NOW THEREFORE the Board of the Regional District of Nanaimo in open meeting assembled, enacts as follows:

1. Assessment rolls for the purpose of levying a parcel tax for the Year 2014 are to be prepared for the following services:

Sewer:

French Creek Sewerage Facilities Local Service Area	Establishing Bylaw No. 813, 1990
Fairwinds Sewerage Facilities Local Service Area	Conversion Bylaw No. 947, 1994
Pacific Shores Sewer Local Service Area	Establishing Bylaw No. 1021, 1996
Surfside Sewer Local Service Area	Establishing Bylaw No. 1124, 1998
Barclay Crescent Sewer	Establishing Bylaw No. 1391, 2004
Cedar Sewer Service	Establishing Bylaw No. 1445, 2005
Cedar Sewer Commercial Properties Capital Financing Service	Establishing Bylaw No. 1513, 2007
Cedar Sewer Large Residential Properties Capital Financing Service	Establishing Bylaw No. 1517, 2007
Cedar Sewer Sportsfield Capital Financing Service	Establishing Bylaw No. 1519, 2007
Cedar Sewer Small Residential Properties Capital Financing Service	Establishing Bylaw No. 1521, 2007
Cedar Sewer Small Residential Properties Stage 2 Capital Financing Service	Establishing Bylaw No. 1565, 2009
Hawthorne Rise Sewer Service	Establishing Bylaw No. 1686, 2013

Water:

Surfside Properties Water Supply Specified Area	Establishing Bylaw No. 694, 1985
French Creek Water Local Service	Conversion Bylaw No. 874, 1992
French Creek Bulk Water Supply Local Service Area	Establishing Bylaw No. 1050, 1996
Nanoose Bay Bulk Water Supply Local Service Area	Establishing Bylaw No. 1049, 1996
Decourcey Water Local Service Area	Establishing Bylaw No. 1096, 1998
San Pareil Water Local Service Area	Establishing Bylaw No. 1170, 1999
Driftwood Water Supply Service Area	Establishing Bylaw No. 1255, 2001
Englishman River Community Water Service	Establishing Bylaw No. 1354, 2003
Melrose Terrace Community Water Service	Establishing Bylaw No. 1397, 2004
Nanoose Peninsula Water Service	Establishing Bylaw No. 867.01, 2005
Whiskey Creek Water Services	Establishing Bylaw No. 1605, 2010
San Pareil Water System (Fire Protection Improvements) Service	Establishing Bylaw No. 1646, 2013

Other:

Regional Parks	Establishing Bylaw No. 1231, 2001
Cassidy Waterloo Fire Protection Service Area	Establishing Bylaw No. 1388, 2004
Meadowood Fire Protection Service Area	Establishing Bylaw No. 1509, 2006
Crime Prevention and Community Justice Support	Establishing Bylaw No. 1479, 2006
Drinking Water and Watershed Protection Service Area	Establishing Bylaw No. 1556, 2008
Northern Community Economic Development Service	Establishing Bylaw No. 1649, 2011

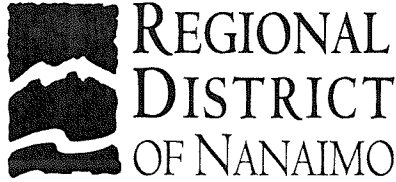
2. The bylaws referred to in (1) above include any subsequent amendments.
3. Unless otherwise noted herein a parcel tax shall be levied on the basis of a single amount for each taxable property with land and improvements or land only within the service area.
4. Parcel taxes for Regional Parks, Cassidy Waterloo Fire Protection, Drinking Water & Watershed Protection, Northern Community Economic Development and Crime Prevention & Community Justice Support shall be levied on the basis of a single amount for each parcel, which shall be defined as a taxable folio within the service area assessed for land and improvements, or land only or improvements only.
5. Parcel taxes with respect to the Cedar Sewer Commercial Capital Financing Service will be levied on the basis of the size of each parcel with a parcel defined as a taxable folio within the service area assessed for land and improvements, or land only or improvements only and the amount of the parcel tax will be established as a rate per hectare.
6. Parcel taxes with respect to the Cedar Sewer Large Residential Properties Capital Financing Service will be levied on the basis of a rate per unit of size with a unit of 1 established for a property up to 2 hectares in size and a unit of 2 established for properties greater than 2 hectares in size.
7. Parcel taxes with respect to the Cedar Sewer Service (sewer collection and treatment) will be levied on the basis of a rate per unit of size with units established as:
 - Parcel of land less than or equal to .2 ha = 1
 - Parcel of land greater than .2 ha up to 1 ha = 2
 - Parcel of land greater than 1 ha up to 3 ha = 3
 - Parcel of land greater than 3 ha = 6
8. Parcel taxes under Sections (3) and (4) above shall not be levied on folios with the following characteristics:
 - i) water, including but not limited to foreshore leases
 - ii) continuous structures physically identifiable as telephone, hydro, or other utility wires, fiber or cables.
9. It is the responsibility of taxpayers with properties described under Section 8 to notify the Regional District in order to note those properties as exempt from the particular parcel taxes otherwise applicable.
10. This bylaw may be cited as "2014 Parcel Tax Assessment Roll Bylaw No. 1693, 2014".

Introduced and read three times this XX day of January, 2014.

Adopted this XX day of January, 2014.

CHAIRPERSON

CORPORATE OFFICER



RDN REPORT	
CAO APPROVAL	✓
EAP	
COW	✓
JAN 03 2014	
RHD	
BOARD	

MEMORANDUM

TO: W. Idema
Director of Finance

DATE: December 20, 2013

FROM: T. Moore
Manager, Accounting Services

FILE:

SUBJECT: A Bylaw to amend the requisition limit for the Electoral Area A Recreation and Culture Service

PURPOSE:

To consider amendments to “Electoral Area ‘A’ Recreation and Culture Service Establishment Bylaw No. 1467, 2005”.

BACKGROUND:

The Electoral Area ‘A’ Recreation and Culture service has a requisition limit which is the greater of \$96,750 or the amount obtained by multiplying the net taxable value of land and improvements in the service area by a tax rate of \$0.15 per thousand dollars of assessment which allows for a requisition based on 2013 assessments of \$160,007. The Electoral Area Director has requested that the bylaw be amended to allow for larger requisitions for 2014 to 2018. Bylaw 1467.01 will establish a revised limit consistent with this request. The proposed Amendment Bylaw has a requisition limit which is the greater of \$200,000 or \$0.187 per thousand dollars of assessment which allows for a requisition of \$199,475 based on 2013 assessments.

If an amendment to an establishing bylaw increases the requisition limit by less than or equal to 25 percent over five years, the bylaw does not require the approval of the Inspector. Bylaw No 1467.01, 2014 amends Bylaw No. 1467, 2005 and increases the requisition limit by less than 25% of the original bylaw, therefore it will not require the approval of the Inspector.

ALTERNATIVES:

1. Approve the bylaw as presented.
2. Amend the bylaw for a lower requisition limit and approve an amended bylaw.

FINANCIAL IMPLICATIONS:

Alternative 1

The requisition limit is being amended at this time at the request of the Electoral Area Director. The recommended limit does not obligate the Board to adopt budgets with the maximum amount noted in

the bylaw - it does however provide the ability to draft future budgets which reflect the wishes of the community with respect to Community Recreation and Culture.

Alternative 2

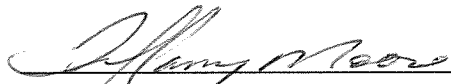
A reduced requisition limit has no immediate financial implications. If a future budget approval exceeded the bylaw limit it can be amended at that time.

SUMMARY/CONCLUSIONS:

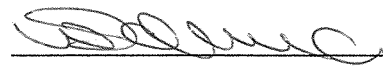
The Electoral Area Director has requested that Bylaw 1467, 2005 be amended to allow for larger requisitions for 2014 to 2018. Bylaw 1467.01 will establish a revised limit consistent with this request. The proposed Amendment Bylaw has a requisition limit which is the greater of \$200,000 or \$0.187 per thousand dollars of assessment which allows for a requisition of \$199,275 based on 2013 assessments. The recommended limit does not obligate the Board to adopt budgets with the maximum amount noted in the bylaw - it does however provide the ability to draft future budgets which reflect the wishes of the community with respect to Community Recreation and Culture. Staff recommend adopting the bylaw as presented.

RECOMMENDATION:

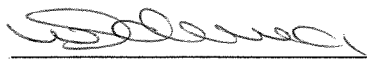
1. That "Electoral Area 'A' Recreation and Culture Service Amendment Bylaw No. 1467.01, 2014" be introduced and read three times.
2. That "Electoral Area 'A' Recreation and Culture Service Amendment Bylaw No. 1467.01, 2014" be adopted.



Report Writer



Director of Finance



A/C.A.O. Concurrence

REGIONAL DISTRICT OF NANAIMO

BYLAW NO. 1467.01

**A BYLAW TO AMEND THE
ELECTORAL AREA 'A' RECREATION
AND CULTURE SERVICE ESTABLISHMENT BYLAW NO. 1467**

The Board of the Regional District of Nanaimo, in open meeting assembled, enacts as follows:

1. Electoral Area 'A' Recreation and Culture Service Establishment Bylaw No. 1467, 2005 is amended by:

Deleting Section 6 and then substituting the following:

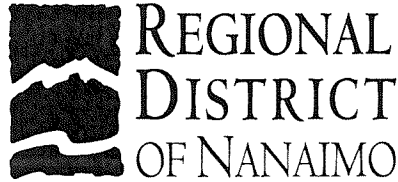
6. In accordance with section 800.1(1)(e) of the *Local Government Act*, the maximum amount that may be requisitioned for the cost of the service is the greater of:
 - (a) Two Hundred Thousand (\$200,000) Dollars; or
 - (b) The amount equal to the amount that could be raised by a property value tax rate of \$0.187 per \$1,000 applied to the net taxable value of land and improvements in the Service Area.
2. This bylaw may be cited for all purposes as the "Electoral Area 'A' Recreation and Culture Services Amendment Bylaw No. 1467.01, 2014".

Introduced and read three times this ___ day of _____, 2014.

Adopted this ___ day of _____, 2014.

CHAIRPERSON

CORPORATE OFFICER



RDN REPORT	
CAO APPROVAL <input checked="" type="checkbox"/>	
EAP	<input type="checkbox"/>
COW	<input checked="" type="checkbox"/>
JAN 03 2014	
RHD	<input type="checkbox"/>
BOARD	<input type="checkbox"/>

MEMORANDUM

TO: W. Idema
Director of Finance

DATE: December 20, 2013

FROM: T. Moore
Manager, Accounting Services

FILE:

SUBJECT: A Bylaw to amend the requisition limit for the Electoral Area A Community Parks Service

PURPOSE:

To consider amendments to “Electoral Area ‘A’ Community Parks Local Service Amendment Bylaw No. 798, 1990”.

BACKGROUND:

The Electoral Area ‘A’ Community Parks service has a requisition limit which is the greater of \$94,000 or the amount obtained by multiplying the net taxable value of land and improvements in the service area by a tax rate or \$0.11 per thousand dollars of assessment which allows for a requisition based on 2013 assessments of \$117,338. The 2014 Financial Plan includes a requisition of \$127,745. Bylaw 798.08 will establish a revised limit consistent with the financial plan. The proposed Amendment Bylaw has a requisition limit which is the greater of \$146,650 or \$0.1375 per thousand dollars of assessment which allows for a requisition of \$146,673 based on 2013 assessments.

If an amendment to an establishing bylaw increases the requisition limit by less than or equal to 25 percent over five years, the bylaw does not require the approval of the Inspector. After five years from establishment, the baseline date is five years before the date of the proposed amendment. This would make Bylaw No. 798.07, 2007 our baseline. Bylaw 798.08, 2014 increases the Bylaw No 798.07,2007 requisition limit by 25% therefore it will not require the approval of the Inspector.

ALTERNATIVES:

1. Approve the bylaw as presented.
2. Amend the bylaw for a lower requisition limit and approve an amended bylaw.

FINANCIAL IMPLICATIONS:

Alternative 1

The requisition limit must be amended at this time because the planned requisition for 2014 exceeds the requisition limit. The recommended limit does not obligate the Board to adopt budgets with the

maximum amount noted in the bylaw - it does however provide the ability to draft future budgets which reflect the wishes of the community with respect to the acquisition, development and management of community parks.

Alternative 2

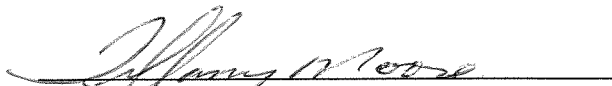
A reduced requisition limit has no immediate financial implications. If a future budget approval exceeded the bylaw limit it can be amended at that time.


SUMMARY/CONCLUSIONS:


It has come to staff's attention that the amount to be requisitioned in 2014 for the Electoral Area A Community Parks Service exceeds the current bylaw limit (\$127,745 approved versus \$117,338 authorized). A bylaw amendment is required and staff recommend revising the bylaw to a maximum requisition limit of the greater of \$146,650 or \$0.1375 per thousand dollars of assessment which allows for a requisition of \$146,673 based on 2013 assessments. The recommended limit does not obligate the Board to adopt budgets with the maximum amount noted in the bylaw - it does however provide the ability to draft future budgets which reflect the wishes of the community with respect to the acquisition, development and management of community parks. Staff recommend adopting the bylaw as presented.

RECOMMENDATION:

1. That "Electoral Area 'A' Community Parks Local Service Amendment Bylaw No. 798.08, 2014" be introduced and read three times.
2. That "Electoral Area 'A' Community Parks Local Service Amendment Bylaw No. 798.08, 2014" be adopted.


Report Writer


Director of Finance


A/C.A.O. Concurrence

REGIONAL DISTRICT OF NANAIMO

BYLAW NO. 798.08

A BYLAW TO AMEND ELECTORAL AREA 'A'
COMMUNITY PARKS LOCAL SERVICE
ESTABLISHMENT BYLAW NO. 798, 1990

The Board of the Regional District of Nanaimo, in open meeting assembled, enacts as follows:

1. Electoral Area 'A' Community Parks Bylaw No. 798, 1990 is amended by:

Deleting Section 4 and then substituting the following:

4. The maximum amount that may be requisitioned for this service shall be the greater of:
 - (i) One hundred and Thirty Thousand (\$146,650); or
 - (ii) The amount obtained by multiplying the net taxable value of land and improvements in the service area by a tax rate of \$0.1375 per thousand dollars of assessment.
2. This Bylaw may be cited as "Electoral Area 'A' Community Parks Local Service Amendment Bylaw No. 798.08, 2014".

Introduced and read three times this ____ day of _____, 2014.

Adopted this ____ day of _____, 2014.

CHAIRPERSON

CORPORATE OFFICER



RDN REPORT	
CAO APPROVAL	/
EAP	
COW	✓
JAN 03 2014	
RHD	
BOARD	

MEMORANDUM

TO: W. Idema
Director of Finance

DATE: December 13, 2013

FROM: T. Moore
Manager, Accounting Services

FILE:

SUBJECT: Report on Actuarial Services for Unfunded Liabilities

PURPOSE:

To examine the cost effectiveness of utilizing the services of an Actuary to more accurately project the unfunded liabilities related to employee benefits.

BACKGROUND:

Unfunded Liabilities represent the estimated amount of cumulative future expenditures required to meet obligations which result from current operations. Some of these liabilities are related to contractual employment obligations. A special reserve has been set aside to meet Retirement Benefit obligations. Employees who retire qualify for a one time payout of up to 60 days of their accumulated unused sick leave.

The Regional District calculates the value of this Retirement Benefit liability for employees aged 40 or older based on a statistical analysis of the age and length of service of its workforce. The reported liability reflects the likelihood that employees 55 or older will retire and become eligible for this benefit. The unfunded portion of the estimated employee retirement benefit liability is the difference between the total estimated liability and the amount recorded in other liabilities. In 2012, the Regional District was overfunded by \$371,238 because the total estimated liability was \$1,573,120 and the amount recorded in other liabilities was \$1,944,367. The Employee retirement benefit payments are being funded by an accounting charge on wages paid in the year.

Cory Vanderhorst, MNP LLP appeared as a delegation at the Regional District of Nanaimo Committee of the Whole meeting on May 14, 2013 and provided a verbal and visual overview of the 2012 Audited Financial Statements and Audit Findings Report. On page 5 of the MNP report, under Matters arising from Management Discussions was the following:

The Regional District does not use an actuary to determine values associated with sick and severance liabilities. The calculations associated with these liabilities are quite complex, thus the risk of misstatement is greater if values are not actuarially determined. While using an

actuary is not required, given the level of complexity involved in the calculations, we recommend analyzing the cost/benefit of using an actuary to determine if it would be economically feasible.

At the Regional District of Nanaimo Board meeting held May 28, 2013, the following motion was passed:

MOVED Director Willie, SECONDED Director Veenhof, that staff be directed to prepare a report that examines the cost effectiveness of utilizing the services of an Actuary to more accurately project the unfunded liabilities related to employee benefits for the Regional District of Nanaimo.

CARRIED

Staff contacted other Regional Districts that are using actuaries to get information about costs and which actuaries are providing this type of service. We requested information from two firms who provide actuarial services. Only one firm responded to our request and subsequently provided us a Proposal for Actuarial Valuation of Post Employment Benefits attached as Schedule A. The quote is competitive with costs that other Regional Districts have told us that they are paying for similar Actuarial Services.

ALTERNATIVES:

1. Utilize the services of an Actuary for unfunded liabilities related to employee benefits:
 - Under this alternative, the RDN would enter into a three year agreement with Mercer on a trial basis. This will allow us to gain Actuary expertise and determine if the outcome of the calculations would be different from the ones that we develop in house.
2. Status Quo:
 - Under this alternative, the RDN would continue status quo and would not seek the services of an Actuary for unfunded liabilities related to employee benefits.

FINANCIAL IMPLICATIONS:

1. Utilize the services of an Actuary for unfunded liabilities related to employee benefits:

- The estimated incremental cost to the Regional District of Nanaimo is \$8,000 in the first year and \$3,000 each year for the following two years.
- The table below shows how the cost would be allocated for the first year of service based on service area:

City of Nanaimo	\$ 4,223
City of Parksville	680
Town of Qualicum Beach	542
District of Lantzville	197
Electoral Area A	315
Electoral Area B	325
Electoral Area C	236
Electoral Area E	482
Electoral Area F	329
Electoral Area G	414
Community Parks – Area H	257
Total	\$ 8,000

- The maximum impact on a service area’s tax requisition would be \$0.027 per \$100,000 of assessed value.
- The cost for Actuary services would go down from \$8,000 in Year 1 to \$3,000 in Year 2 and Year 3 respectively. We also expect some savings in audit fees from MNP of \$500 to \$1,000 due to reduced time needed to analyze internal liability calculations.
- There are also potential efficiencies associated with RDN staff hours to prepare, update and maintain RDN liability spreadsheets and potentially a reduced risk of manual or automated error in the excel spreadsheets currently used.
- Finally, there is a perceived increase in accuracy of the amounts in the Financial Statements by using the expertise of an actuary.

2. Status quo

- There would be no financial implications associated with this alternative.

STRATEGIC PLAN IMPLICATIONS:

The Action Areas of the 2013-2015 Strategic Plan supports utilizing the services of an Actuary to more accurately project the unfunded liabilities related to employee benefits are as follows:

- Balance the RDN’s vision for the region and pursuit of innovation with fiscal responsibility by ensuring that increases to the costs of existing services are kept to a minimum, and that consideration of increased service levels balances the need for fiscal restraint with residents’ needs and desires, and Board vision, values and priorities.

SUMMARY/CONCLUSIONS:

At the Regional District of Nanaimo Board meeting held May 28, 2013, the following motion was passed:

MOVED Director Willie, SECONDED Director Veenhof, that staff be directed to prepare a report that examines the cost effectiveness of utilizing the services of an Actuary to more accurately project the unfunded liabilities related to employee benefits for the Regional District of Nanaimo.

CARRIED

The RDN could enter into a three year agreement with an Actuarial firm called Mercer on a trial basis. This will allow us to gain Actuary expertise and determine if the outcome of the calculations would be different from the ones that we develop in house.

Per the table above, the maximum impact on a service area's tax requisition would be \$0.027 per \$100,000 of assessed value. In the second and subsequent year, we expect this impact to decrease as the cost of the Actuarial Service will decrease from \$8,000 to \$3,000 per year in year 2 and year 3. We also expect some savings in audit fees charged by our auditor, MNP of \$500 to \$1,000 per year.


Staff recommend using Mercer Actuarial Services on a trial basis for three years and that a review be performed at that time to determine continuation of the agreement.

RECOMMENDATION:


That the Board direct staff to enter into a three year agreement with Mercer to provide actuarial services for unfunded liabilities related to employee benefits.



Report Writer



C.A.O. Concurrence



Director Concurrence



Nick Gubbay, FCIA, FFA
Partner

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Vancouver, British Columbia V6C 3S8
+1 604 609 3198
Fax +1 604 683 4639
nick.gubbay@mercer.com
www.mercer.ca

Private & Confidential

Ms. Tiffany Moore, CGA
Manager, Accounting Services
Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC V9T 6N2

VIA EMAIL

03 December 2013

Subject: Proposal for Actuarial Valuation of Post Employment Benefits

Dear Tiffany:

Further to your request of November 28, 2013, Mercer is pleased to submit our proposal to the Regional District of Nanaimo (“RDN”) to conduct an actuarial valuation of RDN’s post employment benefits liabilities. In this proposal, we have provided a description of our methodology, data required, our estimated fees and our relevant experience.

Methodology

The benefits to be included in the valuation are:

- Vested sick leave banks (sick banks which accumulate with rendered service and can be paid out in the event of retirement or death) for both the CUPE Local 401 and Exempt employee groups

These benefits require recognition of liabilities and expense in accordance with PS 3255 of the Public Sector Accounting Standards Handbook.

The following is a description of our proposed approach to the valuation:

Step 1: Identify and Collect Data	<ul style="list-style-type: none"> • Discuss with you the key plan terms of the accumulating sick leave bank benefits. • Identify and collect the data necessary to conduct our review. • To ensure RDN is comfortable with the data used we will provide you with a summary of the data for your approval. • Discuss and clarify the data requirements once the project begins.
--	--

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 03 December 2013
 Ms. Tiffany Moore, CGA
 Regional District of Nanaimo

Step 2: Review Assumptions	<ul style="list-style-type: none"> • In order to calculate the liabilities, it will be necessary to review certain assumptions relating to the future course of events (i.e., economic and demographic variables). • Discuss these assumptions with you while the data is being prepared.
Step 3: Estimate Liabilities	<ul style="list-style-type: none"> • Calculate the liabilities based on the employee data provided and the assumptions established. • Subject the valuation results to our stringent internal peer review process and ensure that they are reasonable and appropriate. • Provide benefit obligations and annual expense information for fiscal year 2014.
Step 4: Deliver Report	<ul style="list-style-type: none"> • Present our findings in the form of a preliminary report. • After meeting with you to discuss this preliminary report and to identify any necessary revisions, finalize the report.

We normally recommend a three year valuation cycle with a full valuation prepared in the first year followed by extrapolations prepared in the subsequent two years. This helps to minimize fees incurred to meet your reporting requirements.

Data Requirements

If we are selected to perform this valuation we will require census data for your employees who are entitled to the benefits along with data regarding past utilization of the benefits. The data should be collected at a single point in time, for example, as at December 31, 2013. If a different date is more convenient for extraction please indicate the effective date of the data. We have attached a summary of the required data in Appendix A.

Estimated Fees

Our professional fees are based on our time required to complete a project. Out-of-pocket expenses are billed in addition, at cost. All professional fees are subject to GST.

Based on the methodology presented above, our fee to complete the new valuation is estimated to be \$8,000. We will work with RDN's resources to complete this project efficiently and effectively. This fee quote is based on the availability of complete and accurate data. In the event that certain data is not available and/or the suggested work plan does not meet your needs and/or additional benefits requiring valuation are identified, our fees may change. To the extent that the scope of the project changes, our fees will change accordingly. We will discuss with you in advance any potential increase in fees above our quoted range.

In the absence of significant changes to the provisions of the benefit plans or RDN's workforce, we would recommend that formal valuations be prepared once every three years with extrapolations of the valuations in the interim periods as needed for financial reporting purposes.

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03 December 2013
Ms. Tiffany Moore, CGA
Regional District of Nanaimo

We estimate that these annual extrapolations will cost approximately \$3,000 per year based on the assumption that there are no alterations to benefit plans or membership groups that require changes to the underlying valuation.

If RDN would like to smooth its costs over the valuation cycle, Mercer will be pleased to facilitate this by charging a fixed annual fee of \$4,650 (exclusive of GST and any out-of-pocket costs) for each of the next three years.

Our fee estimates anticipate the requirement to provide a response to a standard form audit confirmation letter. If we are required to provide the auditors any supplementary information or participate in meetings or conference calls the additional work will be considered out of scope and billed on a fee for service basis. Our estimated fees also exclude any additional benefits that may require recognition under PS 3255.

Depending on the availability of RDN's resources and based on our experience, we estimate a timeframe of approximately four to six weeks from the receipt of accurate data to complete this project. Upon receiving your authorization to proceed, we can agree on an overall timeline and specific milestones to complete this project. Should you wish to proceed with the valuation and incorporate the results in your 2013 financial statements we recommend initiating the process as soon as possible.



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03 December 2013
Ms. Tiffany Moore, CGA
Regional District of Nanaimo

Relevant Experience

The project team and Mercer Vancouver's post employment valuation group have extensive experience in conducting detailed actuarial valuations of non-pension, post retirement and post employment benefit liabilities for organizations in the public sector. We have been preparing valuations to meet PSAB reporting requirements for public sector organizations in British Columbia for over 10 years. We have an in-depth understanding of the PSAB accounting requirements and the plans captured by them. We also receive very favourable feedback on our valuation reports from audit firms.

Blaine McIntosh will be responsible for managing the actuarial valuation work, and I will approve the actuarial valuation and sign the report. We will consult with other experts in Mercer, as appropriate, and will draw upon technical, analytical and administrative resources as required.

We are excited about the opportunity to work with RDN and look forward to discussing our proposal with you. Please do not hesitate to contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Nick Gubbay".

Nick Gubbay, FCIA, FFA
Partner

Copy:
Blaine McIntosh, Mercer

Enclosure

i:\prospects\regional district of nanaimo\moore 131129 valuation proposal.docx

APPENDIX A

Data Requirements

The data should be collected at a single point in time, for example, as at November 30, 2013. If a different date is more convenient for extraction please indicate the effective date of the data.

For your convenience, we have included a census data template in Excel. Our template displays the following requirements for each employee (including disabled employees and employees on leaves of absence):

- Name or Unique Employee ID Number
- Gender
- Date of birth
- Date of hire
- Hourly rate of pay
- Number of hours worked per day– if earnings information is provided as a salary, we will still require the scheduled number of hours worked per day
- Group (CUPE employees and Exempt employees)
- Indicator for any employees currently on long term disability
- Number of hours in current sick bank (if current sick bank is recorded in days, please report to us in days and clearly indicate that all banks are recorded in days)
- Number of sick hours (or days – be sure to indicate clearly which is provided) used in the previous 12 months or previous calendar year
- Full time equivalent

To complete our disclosure, we also require the actual sick leave benefit payments paid on retirement or death during 2013. This should include payments for recently retired or deceased employees and should be for the full calendar year period of January 1, 2013 to December 31, 2013.



RDN REPORT		
CAO APPROVAL		<input checked="" type="checkbox"/>
EAP	<input type="checkbox"/>	<input type="checkbox"/>
COW	<input checked="" type="checkbox"/>	<input type="checkbox"/>
JAN 06 2014		
RHD	<input type="checkbox"/>	<input type="checkbox"/>
BOARD	<input type="checkbox"/>	<input type="checkbox"/>

MEMORANDUM

TO: Paul Thorkelsson
Chief Administrative Officer

DATE: January 3, 2014

FROM: Wendy Idema
Director of Finance

SUBJECT: Feasibility Study Reserve Accounts Update

PURPOSE:

To provide information regarding the use and status of feasibility study reserve accounts.

BACKGROUND:

The *Local Government Act* provides authority for the recovery of feasibility study costs for new services. The *Act* permits costs to be recovered from one or more areas affected by the study, and if the study results in a new service being established, the costs are transferred to that service upon establishment. This process has been used several times since 2002 when this section of the *Act* was implemented for projects such as sewer servicing studies and for regional service reviews.

In the past there has been a combination of individual electoral area feasibility study funds and general grouped feasibility funds utilized. One of the grouped funds used is a Regional Feasibility reserve used for costs related to regional service reviews in the past and currently being utilized for any external costs related to the operational efficiency and service review. The current balance is \$60,000 with approximately \$40,000 allocated to the operational and efficiency review currently underway.

The other grouped fund is one for Electoral Areas only established in 2005 which currently has approximately \$7,000 available. Funds have been drawn from this account most recently for planning costs around the sidewalk servicing study.

There are several areas where costs are likely to be incurred in 2014 related to feasibility studies where there is no service for an area such as possible taxi-saver programs in electoral areas, the request for beach accesses on Mudge Island and Gas Tax transfer agreements with other communities or not-for-profit societies. Generally, costs are related to professional legal or engineering consulting services or for public information meetings/materials to engage with residents.

ALTERNATIVES:

1. Receive the report on the status of Feasibility Study Reserve Accounts for information only at this time.
2. Provide alternate direction to staff for management of costs related to feasibility studies.

FINANCIAL IMPLICATIONS:

There are no specific financial implications related to this report at this time. There may be a need to replenish the feasibility study reserve funds in future particularly if there is a need for regional service reviews or if there are a number of feasibility projects undertaken in a specific year. Should this occur, it will be included as part of the annual budgeting process.

STRATEGIC PLAN IMPLICATIONS:

The 2013-2015 Strategic Plan includes several areas that support the review of existing services, development of new services and ensuring stakeholder participation in decision making. In particular, the Regional Federation section of the plan includes the following action item.

- Enhance the reputation of the RDN as a valuable and effective level of government for delivering services, exploring regional issues, and creating opportunities for dialogue with residents.


SUMMARY/CONCLUSIONS:

The *Local Government Act* provides authority for the recovery of feasibility study costs for new services. The *Act* permits costs to be recovered from one or more areas affected by the study, and if the study results in a new service being established, the costs are transferred to that service upon establishment. The RDN currently holds a Regional Feasibility reserve account (\$60,000) being used for costs related to the operational efficiency and service review in 2014, and a general Electoral Areas reserve account (\$7,000) which is used for costs related to possible new services such as the sidewalk servicing study carried out over the last few years.

There are likely to be future costs related to new feasibility studies or service reviews that cannot be allocated directly to a service and it may be necessary to replenish the feasibility study funds through the budget process.

RECOMMENDATION:

That the report on the status of Feasibility Study Reserve Accounts be received.



Report Writer



A CAO Concurrence



RDN REPORT	
CAO APPROVAL <input checked="" type="checkbox"/>	
EAP	<input type="checkbox"/>
COW	<input checked="" type="checkbox"/>
JAN 06 2014	
RHD	<input type="checkbox"/>
BOARD	<input type="checkbox"/>

MEMORANDUM

TO: Paul Thorkelsson
Chief Administrative Officer

DATE: January 3, 2014

FROM: Wendy Idema
Director of Finance

SUBJECT: 2014 Proposed Budget External Requests for Funding

PURPOSE:

To provide information and financial implications related to requests for funding received from various community groups.

BACKGROUND:

Preliminary 2014 budget information was provided to the Board during November including some information regarding requests for funding received from community groups. At that time, the total tax requisition to be collected for 2014 was estimated at \$35,105,080 (2013 = \$33,105,685) for the general service requisition and \$42,629,370 (2013 = \$40,140,985) with local service areas included. During January and February as final 2013 year end results are known and carry forward projects are identified, the 2014 budget will be updated and the 2014 to 2018 financial plan will be completed.

The following table identifies the funding requests known at this time totaling approximately \$167,000. These items are not included in the current estimated tax requisition. Additional information on each request is provided below and appendices are attached with back-up information received from the requesting organizations along with copies of previous reports provided to the Board on the requests.

Requesting Organization	Amount Requested
Oceanside Hospice Society	\$60,000 request for ongoing annual operations funding – requires creation of new service and voter approval
Nanaimo Hospice Society	\$25,000 request for capital funding for new building - \$10,000 was provided in 2013 for this
Lighthouse Country Marine Rescue Society	\$5,000 request for ongoing annual operations funding – requires creation of new service and voter approval
Oceanside Community Policing	\$29,220 (\$24,220 for community policing office & \$5,000 additional funding for the Citizens on Patrol program) - would be added to the existing Northern Community Justice service
Nanaimo RCMP Victim Services	\$2,500 additional to current \$5,000 received annually under the Southern Restorative Justice/Victim Services Service Area
Nanaimo Regional Rail Trail Partnership	\$15,000 request for seed funding - meets grants-in-aid criteria but exceeds \$5,000 limit
Nanaimo & Area Land Trust	\$30,000 - assumed request amount same as 2013, NALT will present at January 14 COW meeting with more details

Two of these requests would require the creation of a new service and voter approval to proceed as they are requests for ongoing operational funding that are outside of the grants-in-aid criteria. The remainder of the requests can be incorporated into existing service areas as additional requisitions if approved.

Oceanside Hospice Society – This group originally approached the RDN for funding in 2013 and at the August 27, 2013 Board meeting, the following motion was passed.

Pending the outcome of the CVRD's resolution through UBCM to amend the *Hospital District Act*, that staff be directed to notify the Oceanside Hospice Society that funding is only available through the Grants in Aid program at this time.

The final amended motion at UBCM regarding funding for hospice care resolved that the *Hospital District Act* be amended to allow funding to support capital costs of hospice societies and centres only; it did not include operational funding. As a result of this, Oceanside Hospice Society has provided a renewed request for operational funding of \$60,000 annually. This request does not meet existing grants-in-aid criteria and would require the creation of a new service with voter approval. Neither the RDN or the Hospital District have funded operational costs for health care in the past and consideration must be given to whether the request falls within the objectives of programs or services provided by the RDN.

The cost to participating areas for this service (Parksville, Qualicum Beach, Electoral Areas E, F, G & H) based on 2013 assessments would be \$0.59 per \$100,000 of assessed value which would be ongoing. Appendix 1 provides additional information on the Oceanside Hospice Society's request as well as the original staff report from 2013.

Nanaimo Hospice Society – This group presented a request for \$25,000 in capital funding for their new Hospice building in November. This is in addition to the 2013 amount approved by the RDN Board of \$10,000 for this project as a special one-time grant in aid. Because it is capital funding for a facility owned by the Society, it does meet grants-in-aid criteria, but requires special Board approval as it would exceed the \$5,000 grant-in-aid limit.

Participants in this funding would be Nanaimo, Lantzville and Electoral Areas A, B & C with a one-time cost (if the full \$25,000 was approved) of \$0.126 per \$100,000 of assessed value. Appendix 2 provides additional information on the Nanaimo Hospice Society's request.

Lighthouse Country Marine Rescue Society – This group presented a request for \$5,000 in ongoing annual operational funding in February 2013. They have received grants-in-aid funding previously from the RDN in amounts varying from \$1,000 to \$2,100 in the last 4 years; however, as this is ongoing operational funding, their request would require creation of a new service with voter approval.

The RDN approved a service in 2009 in the District 68 area for Search and Rescue, which provides funding to the Nanaimo Marine Rescue Society and the Nanaimo Search and Rescue Society. The Lighthouse Country Marine Rescue Society has indicated they provide service to the area between Qualicum Bay and Union Bay as well as to Lambert Channel, and they do receive some funding from the Comox Valley Regional District through grants-in-aid. Given the geographic area serviced by the Society, Electoral Area H would be the only participant in the service and the cost would be approximately \$0.52

per \$100,000 of assessed value using 2013 assessments. Appendix 3 provides additional information on the Lighthouse Country Marine Rescue Society's request.

Oceanside Community Policing – This group presented a request for \$29,220 in operational funding to support their community policing office with \$24,220 and the Citizens on Patrol Society in District 69 with \$5,000. Any approved funding for this request could be included in the Regional District of Nanaimo Crime Prevention and Community Justice Support Service. Currently this service is funding \$52,500 to the Oceanside RCMP Victim Services program and \$25,000 to the Oceanside Restorative Justice program. This provides a total of approximately \$77,500 which is requisitioned through a \$3.25 parcel tax levy (2013 rate). As well varying amounts to support mileage reimbursements to the Citizens on Patrol Society (\$5,160 in 2013 and \$3,230 projected for 2014) have been incorporated in the Grants in Aid service over the last few years. The request for the Citizens on Patrol additional funding is to support their operational costs on an annual basis.

Adding \$29,220 to the parcel tax levy for this service would increase the tax by approximately \$1.22 per parcel for the service participants, Parksville, Qualicum Beach, Electoral Areas, E, F, G and H. The package of information provided by the Oceanside Community Policing group is included as Appendix 4 along with a more detailed staff report on this request.

Nanaimo RCMP Victim Services Program – Representatives of this program presented a request for additional funding at the June 25, 2013 Board meeting. They are currently provided with annual funding of \$5,000 under the Southern Community Restorative Justice and Victim Services Support Service and have requested an additional \$2,500.

Electoral Areas A, B and C participate in this service and the cost of the additional funding would be \$0.08 per \$100,000 of assessed value. Appendix 5 provides additional information on this group's activities, and they have also advised that the caseload for RDN areas outside of the City of Nanaimo has increased from 37 in 2009 to 51 in 2012.

Nanaimo Regional Rail Trail Partnership – This group presented a request for \$15,000 in start-up funding to the Board in October, 2013. As noted in their information included in Appendix 6, they are asking several groups and local governments to partner in the process and all funding partners will be included in the planning process and will have a vote on project prioritization. Up to 10% or \$1,000 of each contribution would be used for fundraising, website development and raising support with the remainder allocated to trail projects.

This request for funding appears to meet grants in aid criteria and could be reviewed as a one-time amount in that service. The Partnership recently received \$20,000 from Tourism Nanaimo's \$125,000 development fund. All participants in the RDN would be included in funding this grant and the cost would be \$0.05 per \$100,000.

Nanaimo & Area Land Trust – This group presents to the Board annually to request operational funding which has been provided through the Regional Parks Operations Service. Approved funding has varied between \$20,000 and \$30,000 since 2009. The impact on tax requisitions for a \$30,000 grant ranges between \$0.07 and \$0.13 per \$100,000 for all participants in the RDN as the requisition is based on a combination of population and assessments. The Nanaimo & Area Land Trust will be presenting their request for funding at the January Committee of the Whole meeting and additional information will be provided then.

ALTERNATIVES:

1. Approve, amend or reject the proposed funding requests as submitted and proceed with any required bylaws, voter approval processes and additions to the 2014 to 2018 financial plan.
2. Provide alternate direction to staff regarding the proposed funding requests.

FINANCIAL IMPLICATIONS:

If all of the funding requests were approved at the full amount, the \$167,000 increase represents a 0.4% increase to the overall 2013 requisition including local services. The Regional District of Nanaimo's budget affects taxpayers differently depending on where they own property in the Regional District and these requests will impact different areas as noted above and as summarized in Appendix 7. The following table summarizes the total impact on each area if all requests were added to the 2014 budget at full amount.

	2014 estimated RDN General Services Requisition for a \$300,000 assessed value	Tax impact of all additions on a \$300,000 assessed value
Nanaimo	\$297	\$0.88
Lantzville	\$306	\$0.84
Parksville	\$540	\$3.43
Qualicum Beach	\$486	\$3.40
Electoral Area A	\$454	\$1.14
Electoral Area B	\$267	\$0.96
Electoral Area C	\$435	\$0.98
Electoral Area E	\$355	\$3.34
Electoral Area F	\$467	\$3.51
Electoral Area G	\$477	\$3.42
Electoral Area H	\$459	\$4.93

Note: requisition amounts are for RDN services only and do not incorporate other government's amounts. All amounts are based on 2013 assessment values.

Some of these requests are one time and will impact only 2014; however, there would be ongoing impacts for the Oceanside Hospice Society, Lighthouse Country Marine Rescue Society, Oceanside Community Policing and Nanaimo RCMP Victim Services requests. It should also be noted that several of the groups requesting funding have indicated their need is being driven by the loss of gaming funding from the Province that they could previously be more reliant on.

STRATEGIC PLAN IMPLICATIONS:

The Action Areas of the 2013-2015 Strategic Plan supports the development of community services and volunteer organizations, but also encourages fiscal responsibility as follows:

- Enhance the reputation of the RDN as a valuable and effective level of government for delivering services, exploring regional issues, and creating opportunities for dialogue with residents by supporting volunteer opportunities for residents;
- Balance the RDN’s vision for the region and pursuit of innovation with fiscal responsibility by ensuring that increases to the costs of existing services are kept to a minimum, and that consideration of increased service levels balances the need for fiscal restraint with residents’ needs and desires, and Board vision, values and priorities.

The 2014 – 2018 Financial Plan, when completed, will represent the consolidated cost of implementing the Strategic Goals and Actions over the next five years and will directly reflect the Board’s work to balance those goals with the need for fiscal responsibility within current economic conditions.

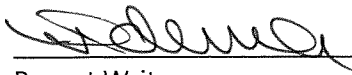
SUMMARY/CONCLUSIONS:

There are currently seven requests for additional or new funding that have been received from different community groups within the RDN as detailed above. Additional information on the requests is included in Appendices 1 through 6, and Appendix 7 summarizes the financial impacts to each participant in the RDN. The cost of these requests on individual tax requisitions varies as it is dependent on which services are included in any specific area.

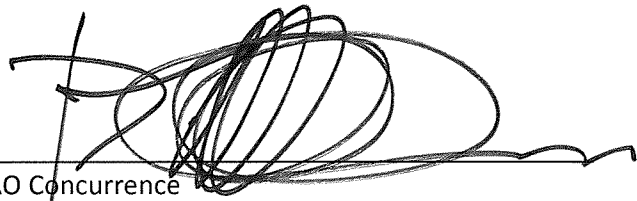
Overall, the requested funding totals approximately \$167,000, which is a 0.4% increase to the 2013 general services tax requisition amount of \$33,105,685. Currently the 2014 general services tax requisition based on the preliminary budget as submitted in November totals \$35,105,080 excluding these additions. The 2014 – 2018 Financial Plan will be completed over the January - February 2014 period as final results for 2013 are known and as any new items such as these funding requests are identified and approved.

RECOMMENDATION:

That the report on the 2014 funding requests from community groups be received and that the Board provide direction to staff on any further analysis or information required regarding the seven requests as detailed above, or that the individual requests be approved/amended or rejected as submitted.



Report Writer



CAO Concurrence



October 8, 2013

Ms Wendy Idema
 Director of Finance
 Regional District of Nanaimo
 6300 Hammond Bay Rd
 Nanaimo, BC V9T 6N2

Dear Ms Idema

Re: Hospice Request for Financial Support as a Service

Further to your August 1, 2013 Report to the RDN Board of Directors. I would like to clarify some information contained in the report and conveyed to the Board.

There is a statement in the report (page 172/173) that at December 31, 2012 the society's financial statements report an internally restricted fund balance of \$100,000 and an unrestricted fund balance of \$341,269.

We would like to clarify with you that through the change in year end for our society to March 31, and March 31, 2013 financial statements reflecting an internally restricted sum of \$400,000, there is not a huge surplus in operating funding for our organization.

The \$400,000, internally restricted through board of director's resolution, is deemed to be for a capital for the purpose of demolition and replacing the hospice outreach and bereavement center.

Additionally, on page 173 of the report there is a statement that operational funding of health care is not a regional district service. However, missing from the report is an understanding that the services offered by Oceanside Hospice Society

It's a path we'll all walk someday.... Let us share the journey.

210 Crescent Road W., Qualicum Beach, British Columbia V9K 1J9

Ph: 250.752.6227 • Fx: 250.752.6257 • Email: info@oceansidehospice.com • www.oceansidehospice.com





are of a psychosocial, practical and spiritual nature, complementary to medical services and health care.

Currently, and in the near future it is expected that the Oceanside hospice services will continue to be of an outreach nature, serving citizens of the RDN in their private homes, 6 LTC facilities, the Palliative Care Unit at NRGH (1/3 of all patients and family members presenting are from Oceanside, rather than Nanaimo/Ladysmith) and as and when needed.

I would reiterate the information provided in our presentation to the RDN, earlier this year, that our organization serves the citizens in the areas from Deep Bay to Nanoose and at the Palliative Care Unit in NGRH, as well as out to Whiskey Creek and Errington.

Our volunteers, all RDN residents, through their donated time and efforts bring over \$100,000 in kind value to the community service delivery.

Our major funder is Gaming. However, that funding does not cover our operational costs for four part time staff. Our staff and volunteer efforts, therefore, are often redirected from direct client services to fund development (through events and fundraisers).

Sustainable annual funding through the RDN would clearly assist our organization in being able to plan and deliver more effectively the programs and services the community tells us it needs.

An RDN sum of \$60,000 per annum would ensure that all staff wages and benefits, as well as contracted counselling services could be continued to be provided to serve our client base, which in past years has been in excess of 600 individuals.

An annual RDN contribution of approximately \$100 per person to ensure that residents of the Oceanside area receive end of life community support and assistance navigating through the palliative care system, does not seem onerous.

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Now that we have received an indication of the CRVD resolution to UBCM being passed BUT amended to address only capital funding, we would ask for consideration by the RDN Board of Directors to designate hospice as an RDN funded service.

Should council wish to have me address the matter at an upcoming meeting, I should be pleased to attend.

Best wishes,

Lynn Wood, CAE
Executive Director

c.c.

RDN Directors:

Joe Stanhope

Bill Veenhof

Julian Fell

Marc Lefebvre

Dave Willie

Mayor Chris Burger

Mayor Teunis Westbroek

It's a path we'll all walk someday.... Let us share the journey.

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OCEANSIDE HOSPICE SOCIETY
FINANCIAL STATEMENTS
March 31, 2013

INDEPENDENT AUDITOR'S REPORT

To the Members of Oceanside Hospice Society

We have audited the accompanying financial statements of Oceanside Hospice Society, which comprise the statement of financial position as at March 31, 2013, and the statements of operations, statement of changes in fund balances and statement of cash flows for the year ended March 31, 2013, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the financial statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control.

An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Basis for qualified opinion

Oceanside Hospice Society derives a significant portion of its revenues from donations and fundraising, the completeness of which is not susceptible to audit verification. Consequently, we were unable to obtain sufficient appropriate audit evidence to support the completeness of donation and fundraising revenue, and we were unable to determine whether any adjustments were necessary.

Qualified opinion

In our opinion, except for the effects of the matter described in the Basis for qualified opinion paragraph, the financial statements present fairly, in all material respects, the financial position of Oceanside Hospice Society as at March 31, 2013, and its financial performance and its cash flows for the period ended March 31, 2013, in accordance with Canadian accounting standards for not-for-profit organizations.

Report on other legal and regulatory requirements

As required by the British Columbia Society Act, we report that, in our opinion, these principles have been applied on a basis consistent with that of the preceding year.

MCINTOSH NORTON WILLIAMS
certified general accountants

Qualicum Beach, B.C.
May 30, 2013

Oceanside Hospice Society
Financial Statements
March 31, 2013

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**Oceanside Hospice Society
Statement of Operations
3 Months Ended March 31, 2013**

	March 31 2013 (3 Months) \$	December 31 2012 (12 Months) \$
Revenue		
Donations	15,594	47,983
Bequests	10,000	211,508
Contracts	5,269	22,711
Fundraising	1,407	98,207
Memberships and other	787	2,954
Gaming	-	45,000
Vancouver Island Health Authority	-	15,700
Other grants	-	4,988
	<u>33,057</u>	<u>449,051</u>
Expenses		
Advertising and promotion	222	1,220
Amortization	1,845	2,480
Bank charges	403	1,535
Board meetings	782	1,145
Client services	28	1,542
Contracts	6,616	9,366
Equipment	125	500
Fundraising	2,348	79,154
Insurance	706	2,571
Memberships and licences	268	573
Office	1,574	12,320
Professional fees	4,299	5,900
Rent	1,675	9,595
Repairs and maintenance	343	1,718
Telephone	342	1,392
Travel	1,819	5,523
Utilities	1,458	3,521
Vehicle	898	4,572
Volunteer	80	1,580
Wages and employee benefits	39,731	135,151
	<u>65,562</u>	<u>281,358</u>
Excess (deficiency) of revenue over expenses before other items	<u>(32,505)</u>	<u>167,693</u>
Other income		
Investment income (Note 11)	6,589	15,924
Loss on disposal of investments (Note 4)	-	(31,931)
	<u>6,589</u>	<u>(16,007)</u>
Excess (deficiency) of revenue over expenses	<u>(25,916)</u>	<u>151,686</u>

The attached notes are an integral part of these financial statements.

Oceanside Hospice Society
Statement of Changes in Fund Balances
3 Months Ended March 31, 2013

	Invested In Capital Assets	Internally Restricted	Unrestricted	Total March 31 2013	Total December 31 2012
	\$	\$ (Note 7)	\$	\$	\$
Balance, beginning of year	<u>7,812</u>	<u>100,000</u>	<u>341,269</u>	<u>449,081</u>	<u>297,395</u>
Excess of revenue over expense	-	-	(25,916)	(25,916)	151,686
Amortization of capital assets	(1,845)	-	1,845	-	-
Transfer to restricted fund	<u>-</u>	<u>300,000</u>	<u>(300,000)</u>	<u>-</u>	<u>-</u>
	<u>(1,845)</u>	<u>300,000</u>	<u>(324,071)</u>	<u>(25,916)</u>	<u>151,686</u>
Balance, end of year - <i>page 4</i>	<u>5,967</u>	<u>400,000</u>	<u>17,198</u>	<u>423,165</u>	<u>449,081</u>

The attached notes are an integral part of these financial statements.

**Oceanside Hospice Society
Cash Flow Statement
3 Months Ended March 31, 2013**

	March 31 2013 (3 Months) \$	December 31 2012 (12 Months) \$
Operating activities		
Excess of revenue over expenses	(25,916)	151,686
Items not involving cash		
Amortization	1,845	2,480
Loss on disposal of investments	-	31,931
	(24,071)	186,097
Changes in non-cash working capital		
Accounts receivable	990	(4,613)
GST/HST refund	(1,598)	(3,893)
Property under construction	(13,469)	-
Accounts payable and accrued liabilities	(3,301)	1,521
Wages payable	858	1,206
Deferred contributions	96,000	-
Due to government agencies	1,231	605
	56,640	180,923
Cash provided		
Investing activities		
Advances from related parties	-	153,903
Investment in equities	(4,530)	(205,408)
	(4,530)	(51,505)
Cash used		
Increase in cash during the year	52,110	129,418
Cash - beginning of period	238,949	109,531
Cash - end of period	291,059	238,949

The attached notes are an integral part of these financial statements.

**Oceanside Hospice Society
Statement of Financial Position
As at March 31, 2013**

	March 31 2013 \$	December 31 2012 \$
ASSETS		
Current		
Cash	291,059	238,949
Accounts receivable	4,596	5,586
GST/HST refund	<u>9,260</u>	<u>7,662</u>
	304,915	252,197
Long-term investments <i>(Note 3)</i>	210,038	205,508
Building concept development costs <i>(Note 4)</i>	13,469	-
Capital assets <i>(Note 5)</i>	<u>5,967</u>	<u>7,811</u>
	<u>534,389</u>	<u>465,516</u>
LIABILITIES		
Current		
Accounts payable and accrued liabilities	7,188	10,488
Wages payable	3,798	2,939
Due to government agencies	4,238	3,008
Deferred contributions <i>(Note 6)</i>	<u>96,000</u>	<u>-</u>
	<u>111,224</u>	<u>16,435</u>
NET ASSETS		
Unrestricted - <i>page 2</i>	17,198	341,269
Restricted - <i>page 2 (Note 7)</i>	400,000	100,000
Investment in capital assets - <i>page 2</i>	<u>5,967</u>	<u>7,812</u>
	<u>423,165</u>	<u>449,081</u>
	<u>534,389</u>	<u>465,516</u>

Approved by the Directors

_____ Director

_____ Director

The attached notes are an integral part of these financial statements.

**Oceanside Hospice Society
Notes to Financial Statements
March 31, 2013**

1. Purpose of the Organization

The Oceanside Hospice Society ("Society") offers compassionate supportive care to individuals and families who are facing advanced illness, death and bereavement. The Society is incorporated under the B.C. Society Act as a not-for-profit organization and is a registered charity under the Income Tax Act.

2. Significant Accounting Policies

- a) The society prepares its financial statements in accordance with Canadian accounting standards for not-for-profit organizations (ASNPO).
- b) The Society uses the deferral method of accounting for contributions. Restricted contributions are recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount can be reasonably estimated and collection is reasonably assured.
- c) Cash equivalents are comprised of highly liquid term deposits that are readily convertible to cash with maturities that are less than three months from the date of acquisition.
- d) Comparative figures have been reclassified, where applicable, to conform to current presentation.
- e) Purchased capital assets are recorded at cost. Contributed capital assets are recorded at fair value at the date of contribution. Amortization is provided annually at rates calculated to write off the assets over their useful lives. In the year of acquisition only one-half of the following amortization rate is applied:

Van	30 %	diminishing balance
Computer equipment	55 %	diminishing balance
Medical equipment	20 %	diminishing balance

**Oceanside Hospice Society
Notes to Financial Statements
March 31, 2013**

2. Significant Accounting Policies (continued)

- f) The preparation of financial statements in conformity with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reporting amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues, expenses, gains and losses during the reporting period. These estimates are reviewed periodically, and, as adjustments become necessary, they are reported in earnings in the period in which they became known. By their nature, these estimates are subject to measurement uncertainty and the effect on the financial statements of changes in such estimates in future periods could be significant. Since a precise determination of many assets and liabilities depends on future events, actual results may differ from such estimates and approximations.
- g) Volunteers contribute an invaluable amount of hours per year to assist the Oceanside Hospice Society in carrying out its service delivery activities. Because of the difficulty of determining their fair value, contributed services are not recognized in the financial statements.
- h) The society has elected to apply CICA Handbook Section 3861 in place of CICA Handbook Section 3862 "Disclosure" and Section 3863 "Presentation". Section 3862 and 3863 require extensive disclosures about the significance of financial instruments for an entity's financial position and results of operations overall, as quantitative and qualitative disclosures on the nature and extent of risks arising from financial instruments. Management believes that the cost of preparing the additional disclosures exceed any incremental benefit.

3. Investments

	March 31 2013	December 31 2012
	\$	\$
Royal Bank of Canada Shares	<u>210,038</u>	<u>205,508</u>

Investments are initially recorded at fair value at the date of acquisition. Subsequently, investments in debt securities, such as treasury bills and government bonds, are recorded at amortized cost. Investments in publicly traded equity securities are recorded at fair value based on quoted market prices. Unrealized gains or losses are recognized in the statement of operations. Transaction costs, such as commissions, arising from investments in publicly traded equity securities are expensed when incurred.

4. Building Concept Development

The society has begun the planning process of building a new base of operations. The Society is currently in the process of negotiating a long term lease with the Town of Qualicum Beach who owns the property. Upon approval of the long term lease the Society will start a fundraising drive to raise the capital needed to build the facility. During the period ended March 31, 2013 the Society spent \$13,469 on concept drawings.

**Oceanside Hospice Society
Notes to Financial Statements
March 31, 2013**

5. Capital assets

			March 31 2013 Net \$	December 31 2012 Net \$
	Cost \$	Amortization \$		
Van	26,071	24,246	1,825	2,606
Computer equipment	938	910	28	62
Medical equipment	<u>8,179</u>	<u>4,065</u>	<u>4,114</u>	<u>5,143</u>
	<u>35,188</u>	<u>29,221</u>	<u>5,967</u>	<u>7,811</u>

6. Deferred Contribution

The deferred contribution includes \$94,000 funding received from a Gaming grant in the current period that is related to the year ending March 31, 2014. A \$2,000 grant from the Regional District of Nanaimo for the purchase of computer equipments has also been deferred as the equipment had not been purchased as at March 31, 2013.

7. Internally Restricted Net Assets

Internally restricted net assets represent funds restricted by the Society's Board of Directors for future capital expenditures.

8. Lease Obligations

The society has entered into an operating lease for rental of a photocopier. The total obligation under this lease over the next three years is as follows:

	Year	\$
	2014	2,379
	2015	<u>2,195</u>
Balance of operating lease obligation		<u>4,574</u>

9. Parksville Qualicum Community Foundation

The Society has established a fund with the Parksville Qualicum Community Foundation whereby individuals can donate funds to the Foundation in the name of the Society. The funds cannot be accessed or controlled by the Society, but are invested by the Foundation and pay investment income annually to the Society. As a result, the value of this investment is not recognized in the financial statements. The most recent market value available for the account was at December 31, 2012 at \$7,220 (September 30, 2012 - \$7,115).

**Oceanside Hospice Society
Notes to Financial Statements
March 31, 2013**

10. Strategic Charitable Giving Foundation - Investor's Group

The Society has contributed \$25,000 to the Investor's Group Charitable Giving Foundation in memory of Betsy Christian. The funds cannot be accessed or controlled by the Society, but are invested by the Foundation and pay investment income annually to the Society. As a result, the value of this investment is not recognized in the financial statements. The most recent market value available for the account was March 31, 2013 at \$25,360.

11. Investment Income

Investment income includes unrealized gains on investments in publicly traded equity securities and dividend income. The unrealized gains in the current year are \$4,530 (2012 - \$11,909), and dividend income in the current year is \$2,059 (2012 - \$4,015).

12. Financial Instruments

The financial instruments of the Society consist of cash, accounts receivable, investments, related-party loans receivable, and accounts payable and accruals. Unless otherwise noted, it is management's opinion that the Society is not exposed to significant interest, currency, or credit risks arising from these financial instruments. The fair value of the instruments approximates their carrying values, unless otherwise noted.

The Society is exposed to financial risk that arises from the fluctuation in interest rates and in the credit quality of its customers and related-parties.

Credit Risk

The Society's credit risk consists principally of cash and cash equivalents, and accounts receivable. The Society maintained cash and cash equivalents with reputable and major financial institutions.

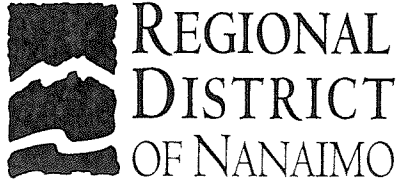
Interest Rate Risk -

The Society is exposed to interest rate risk with respect to cash and cash equivalents. There are no derivative financial instruments to mitigate these risks.

Fair Value

The Society's cash and cash equivalents, accounts receivable, and accounts payable and accrued liabilities are short-term financial instruments whose fair value approximates their carrying values.

Investments in Royal Bank of Canada shares are recorded at market value.



RDN REPORT	
CAO APPROVAL	✓
EAP	
COW	
AUG 07 2013	
RHD	
BOARD	✓

MEMORANDUM

TO: Wendy Idema
Director of Finance

DATE: August 1, 2013

FROM: Tiffany Moore
Accounting Services Manager

SUBJECT: Request from the Oceanside Hospice Society for financial support

PURPOSE:

To discuss alternatives with respect to the request for funding, from the Oceanside Hospice Society.

BACKGROUND:

At the Regional District of Nanaimo Committee of the Whole meeting held November 13, 2012, Lynn Wood, Executive Director, Oceanside Hospice Society appeared as a delegation. The following motion was passed in response to the request from the Oceanside Hospice Society for a letter of support for the Society to be a regional service provider to assist them in applying for grants from other funding agencies:

MOVED Director Willie, SECONDED Director Veenhof, that the Regional District of Nanaimo support Oceanside Hospice as a regional service provider.

At the Regional District of Nanaimo Board meeting held March 26, 2013, the following motion was passed in response to a request from the Oceanside Hospice Society to explore the development of a service area in support of the provision of hospice care:

MOVED Director Veenhof, SECONDED Director Lefebvre, that staff be directed to review the request from Oceanside Hospice Society for ongoing funding support, discuss with the Society specific needs as necessary, and report back to the Board on options for consideration in the 2014 budget.

The Oceanside Hospice Society has requested support in the amount of \$60,000 from the Regional District of Nanaimo, to ensure that all staff wages and benefits, as well as contracted counseling services could be continued to be provided to serve the Society's client base. A copy of their letter is attached for information. The total expenses for the year ended December 31, 2012 were \$281,357, with \$135,151 related to wages and benefits and \$9,366 related to contracts. For the year ended December 31, 2012, the Society raised \$449,051 from the following sources: 47% bequests; 22% fundraising; 11% donations; 10% gaming; 5% contracts; 3% VIHA; and 2% memberships and other. As well at December 31, 2012, the

society's financial statements report an internally restricted fund balance of \$100,000 and an unrestricted fund balance (surplus) of \$341,269.

The Oceanside Hospice Society's official catchment area encompasses City of Parksville, Town of Qualicum Beach, Electoral Areas E, F, G and H. In 2012 services were provided to 600 clients, which increased from 100 clients in 2004.

This request from Oceanside Hospice Society is for a contribution to operating expenses including wages and benefits, as well as contracted counseling services which are not eligible for Grants-In-Aid Funding under current RDN approved criteria. The RDN has previously provided funding for operational purposes through the establishment of a service including a voter approval process such as those used to provide funds to the Oceanside Victims Services Program and the Restorative Justice Program. Under Section 796 of the Local Government Act, a Regional District may operate any service the board considers necessary or desirable for all or part of the Regional District. The establishment of a service requires the approval of the Electors, participating municipalities, and the Inspector of Municipalities per Section 801 of the Local Government Act. The Board may consider establishing a service to provide ongoing funding support to the Oceanside Hospice Society and the voter approval process could be incorporated with the 2014 election.

Additionally, consideration must be given to whether the request falls within the objectives of programs or services provided by the Regional District of Nanaimo. Operational funding of health care has not been included in RDN services in the past. The Nanaimo Regional Hospital District provides capital funding to designated hospital facilities and the RDN has provided capital funding for health care through Grants in Aid Funding. In 2013 a Grant in Aid of \$10,000 was provided to the Nanaimo Hospice Society toward the capital cost of their new building.

Oceanside Hospice Society has provided us with information that the Cowichan Valley Regional District (CVRD) is forwarding a resolution to the UBCM for consideration at its 2013 Annual Convention. The resolution requests that the Hospital District Act be amended to provide enabling legislation authorizing Regional Hospital Districts to requisition funds to support the capital and operating costs of hospice societies and centres located within a Regional Hospital District. If the UBCM resolution is successful, there would no longer be a need for the establishment of a service.

ALTERNATIVES:

1. Pending the outcome of the CVRD's resolution through UBCM to amend the Hospital District Act, that staff be directed to plan for the establishment of a service to provide ongoing funding support to the Oceanside Hospice Society by incorporating a voter approval process with the 2014 election.
2. Pending the outcome of the CVRD's resolution through UBCM to amend the Hospital District Act, that staff be directed to notify the Oceanside Hospice Society that funding is only available through the Grants in Aid program at this time.

FINANCIAL IMPLICATIONS:

Alternatives 1

If a service was established, the costs would be shared among participants on the basis of assessments. Under Alternative 1, based on 2013 assessments, at a \$60,000 grant amount, the tax rate is estimated at \$0.60 cents per \$100,000 of assessment. The table below indicates the share of this Grant-in-Aid.

	Alternative 1
Parksville	15,089
Qualicum Beach	12,019
Area E	10,702
Area F	7,296
Area G	9,180
Area H	5,714
Total	\$60,000

With regard to future budget impacts, there are currently requests for additional or new funding from several community service organizations including the Oceanside Hospice Society, the Oceanside/District 69 RCMP Community Policing Program, the Deep Bay Royal Canadian Marine Search and Rescue Unit 59, and the Nanaimo RCMP Victim Services Program. Although no request has been received to date, the Nanaimo Community Hospice Society would likely be interested in similar operational funding if the Board was to approve operational funding for Oceanside Hospice Society.

Alternative 2

The financial implications associated with Alternative 2 would not be determined until Oceanside Hospice Society provided us with a funding request that meets the Grants in Aid Funding criteria.

STRATEGIC PLAN IMPLICATIONS:

The Oceanside Hospice Society aims to provide dignity and peace to community members at the end of their lives, assists people caring for the terminally ill, and supports those grieving the loss of a friend or family member. In the 2013-2015 Strategic Plan, the Board acknowledges that RDN communities are home to a high proportion of elders, and that innovative approaches to caring for elders including housing and health care options that allow for aging within one's community, are important aspects of community development in the region.

SUMMARY/CONCLUSIONS:

At the Regional District of Nanaimo Committee of the Whole meeting held November 13, 2012, Lynn Wood, Executive Director, Oceanside Hospice Society appeared as a delegation. The following motion was passed in response to the request from the Oceanside Hospice Society for a letter of support for the Society to be a regional service provider to assist them in applying for grants from Western Economic Diversification Canada and Provincial Gaming:

MOVED Director Willie, SECONDED Director Veenhof, that the Regional District of Nanaimo support Oceanside Hospice as a regional service provider.

At the Regional District of Nanaimo Board meeting held March 26, 2013, the following motion was passed in response to a request from the Oceanside Hospice Society to explore the development of a service area in support of the provision of hospice care:

MOVED Director Veenhof, SECONDED Director Lefebvre, that staff be directed to review the request from Oceanside Hospice Society for ongoing funding support, discuss with the Society specific needs as necessary, and report back to the Board on options for consideration in the 2014 budget.

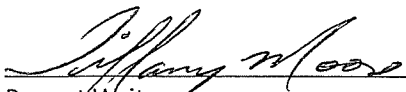
This request from Oceanside Hospice Society is for a contribution to operating expenses, including wages and benefits, as well as contracted counseling services which are not eligible for Grants in Aid funding under current RDN approved criteria. The Board may consider establishing a service to provide ongoing funding support to the Oceanside Hospice Society and the required voter approval process could be incorporated with the 2014 election.

Additionally, consideration must be given to whether the request falls within the objectives of programs or services provided by the Regional District of Nanaimo. Operational funding of health care has not been included in RDN services in the past. The Nanaimo Regional Hospital District provides capital funding to designated hospital facilities and the RDN has provided capital funding for health care through Grants in Aid Funding. In 2013, a Grant in Aid of \$10,000 was provided to the Nanaimo Hospice Society toward the capital cost of their new building.


Oceanside Hospice Society has provided us with information that the Cowichan Valley Regional District (CVRD) is forwarding a resolution to the UBCM for consideration at its 2013 Annual Convention. The resolution requests that the Hospital District Act be amended to provide enabling legislation authorizing Regional Hospital Districts to requisition funds to support the capital and operating costs of hospice societies and centres located within a Regional Hospital District. If the UBCM resolution is successful there would no longer be a need for the establishment of a service.

RECOMMENDATION:

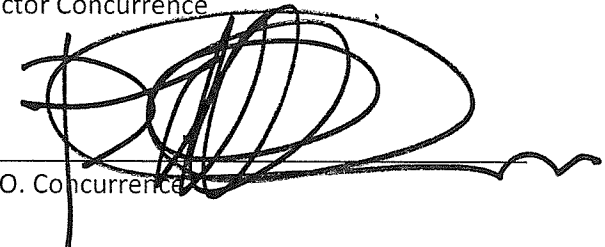
1. Pending the outcome of the CVRD's resolution through UBCM to amend the Hospital District Act, that staff be directed to notify the Oceanside Hospice Society that funding is only available through the Grants in Aid program at this time.



Report Writer



Director Concurrence



C.A.O. Concurrence



May 30, 2013

Ms Wendy Idema
Director of Finance
Regional District of Nanaimo
6300 Hammond Bay Rd
Nanaimo, BC V9T 6N2

Dear Ms Idema

Further to our email of April 11, 2012 I am enclosing a copy of the financial statements for our Non Profit charity, for the period ending December 31, 2012. These statements were approved at the 25 April 2013 AGM of the society.

My delay in forwarding this information to you has been that our society has taken steps to change the society year end to March 31st, in concert with many of the government agencies and funders with which we interact.

We are in the process of finalizing the January 2013 – March 31, 2013 audit with our auditor and will likely conduct a second AGM in the summer of 2013.

In addition, our society is planning to develop a long term base of operations, so the board is setting aside capital as internally restricted funds for that purpose. These funds are generally generated from wills, bequests and gifts.

Our presentation to the RDN, earlier this year was to receive consideration by the RDN for provision of regional hospice services. This, as our organization serves the citizens in the areas from Deep Bay to Nanoose and at the Palliative Care Unit in NGRH, as well as out to Whiskey Creek and Errington.

In that we cover a considerable geographic area, our staff and volunteers mainly provide services in the home of the client, at the PCU, or in any of the six LTC

It's a path we'll all walk someday.... Let us share the journey.

210 Crescent Road W., Qualicum Beach, British Columbia V9K 1J9

Ph: 250.752.6227 • Fx: 250.752.6257 • Email: info@oceansidehospice.com • www.oceansidehospice.com





facilities within the area. Our volunteers, all RDN residents, through their donated time and efforts bring over \$100,000 in kind value to the community service delivery.

Our major funder is Gaming. However, that funding does not cover our operational costs for four part time staff. Our staff and volunteer efforts, therefore, are often redirected from direct client services to fund development (through events and fundraisers).

Sustainable annual funding through the RDN would clearly assist our organization in being able to plan and deliver more effectively the programs and services the community tells us it needs.

An RDN sum of \$60,000 per annum would ensure that all staff wages and benefits, as well as contracted counselling services could be continued to be provided to serve our client base, which in past years has been in excess of 600 individuals.

An annual RDN contribution of approximately \$100 per person to ensure that residents of the Oceanside area receive end of life community support and assistance navigating through the palliative care system, does not seem onerous.

Kindly let me know if you would like copies of the January – March audited statements and new year budget, once they are approved at our AGM.

I am happy to supply any other details in support of your request.

Best wishes,

A handwritten signature in cursive script that reads "Lynn Wood".

Lynn Wood, CAE
Executive Director

It's a path we'll all walk someday... Let us share the journey.

210 Crescent Road W., Qualicum Beach, British Columbia V9K 1J9

Ph: 250.752.6227 • Fx: 250.752.6257 • Email: info@oceansidehospice.com • www.oceansidehospice.com





NANAIMO COMMUNITY
HOSPICE

APPENDIX 2

Caring • Commitment • Compassion

To: RDN Board Members – November 12, 2013 Meeting
From: Nanaimo Community Hospice Society
Re: Request for Financial Support - \$25,000

In late 2012 Nanaimo Community Hospice approached the Regional District of Nanaimo Board to ask for \$25,000 in support for the Expand the Heart of Hospice Capital Campaign to raise \$1.25 Million to move Hospice to a new home with twice the space and room to grow. The RDN very graciously responded with a \$10,000 donation from the 2013 budget cycle. We thank you so much for partnering with us in this way.

The campaign has raised \$1,010,500 in realized donations and pledges. This allowed us to purchase, renovate, furnish and move to our new facility. We still have \$200,000 left to raise to reach our ultimate goal of being mortgage free by April 2015.

We are asking the RDN to approve a further \$25,000 in funding to NCHS from your 2014 budget. This will go a long way towards helping us get back to the place we were prior to our Expand the Heart of Hospice campaign – one where funding efforts are focused exclusively on programs and supports that serve a very vulnerable population within our community.

As a result of funds raised to date the original building, which had some unexpected surprises, has been completely remediated and now provides our organization with a greatly increased asset. More importantly, it has provided us with a facility that is ultimately suited to the work of Hospice in our community. We are now able to offer a warm, welcoming, and homelike setting for the young children, teens, adults and seniors who reach out for support. We have already experienced an increased demand for our services, now that we have a greater capacity to serve, and have been able to both enhance existing programs and start adding much needed new services.

Nanaimo Hospice staff and volunteers have direct contact with over 2,250 individuals annually in their homes, in care facilities, in hospital, and at Hospice House, as well as through education and support provided in the schools, in the workplace, and through a variety of local educational institutions and community events.

The support of RDN has been invaluable. Thank you so much for your generosity in 2013 and thank you for considering this renewed request for support as part of your 2014 funding cycle. I look forward to attending your Board Meeting on November 12th and to presenting at that time.

Wendy Pratt,
Executive Director

A New Home For Hospice

Creating a Legacy for the Future

Thank you to everyone who helped make this happen!



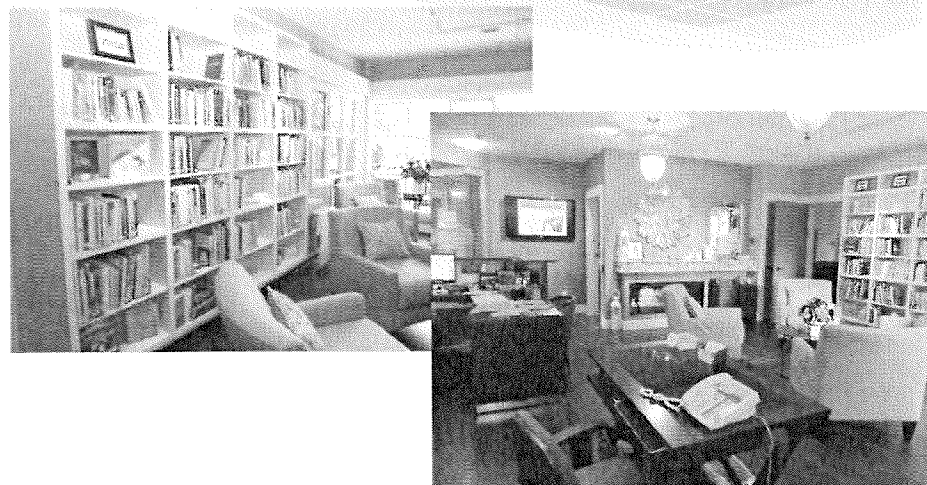
Lots of Parking – Beautiful Welcoming Entry



Entry – Reception - Library



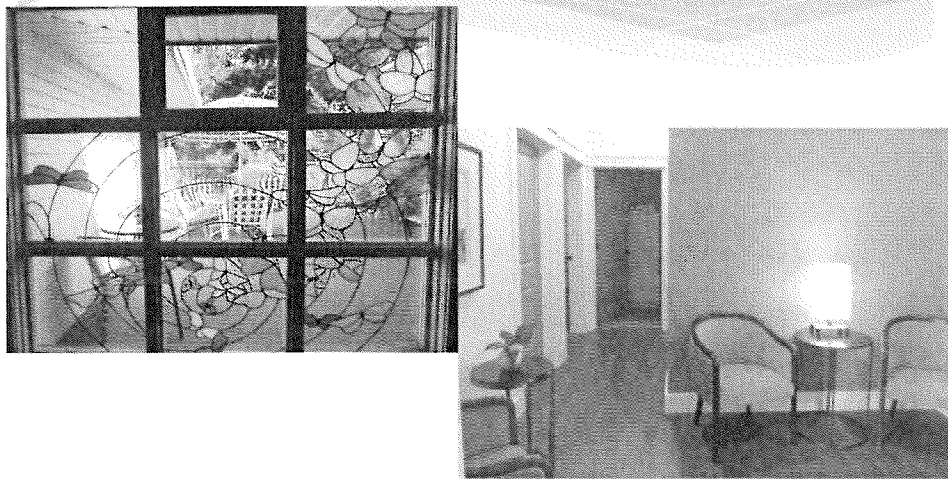
Beautiful Library Space and Program Coordinator's Office



Children's Room off Reception and Children's Therapeutic Garden



"Transitions" Stained Glass Window and Counselling Reception



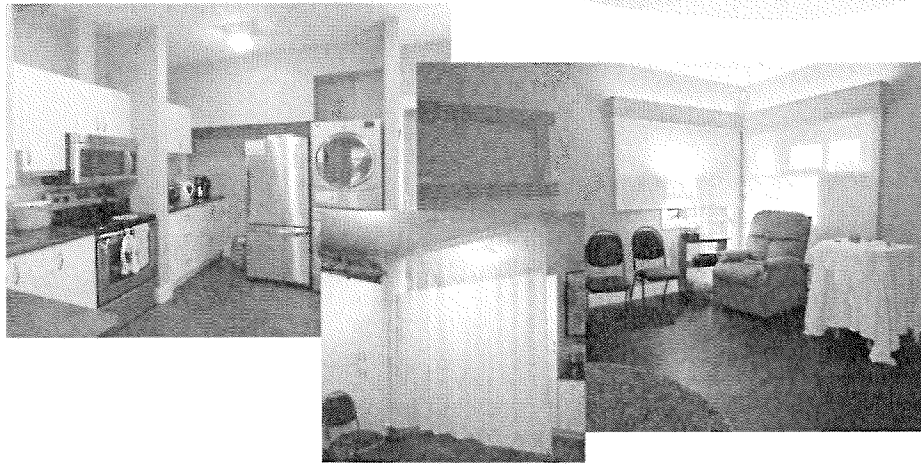
Counselling & Treatment Rooms



Multi-Purpose Room #1 Training – Programs - Self Care Clinic



Kitchen & Multi-Purpose Room #2



Upstairs - Downstairs



Serenity Garden – Coming In 2014



Summary of our Campaign *We couldn't have done it without you!*

- * \$1.25 Million campaign launched Feb 2012
- * \$1,010,500 Raised to date
- * + \$200,000 left to raise
- * **GOAL:** To be Mortgage free by 2015

- * RDN Gift in 2013 - \$10,000
- * **OUR ASK TODAY** - \$25,000

Hospice Palliative Care In The Future?

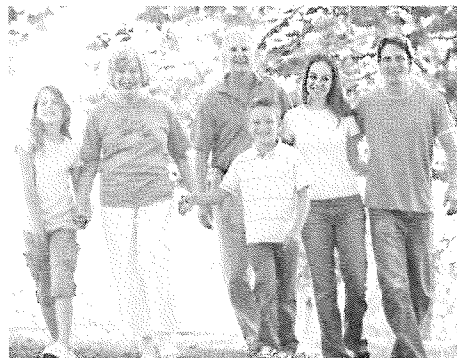
Advance Care Planning

For You - For Me – For Our Community

- * HPC started in England in early 60's
- * HPC now International in Scope
- * HPC is Gold Standard for End of Life Care
- * Only 15-30% of Canadians Have Access to Care
- * Baby Boom is becoming Elder Boom – huge demand!
- * We need to change model of care – New Hospice House

Creating a Legacy for the Future

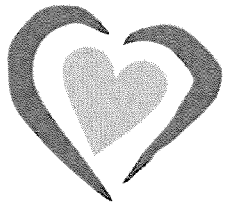
**Working with
Families
Hospice Helps
Build a Strong &
Healthy
Community**



Nanaimo Community Hospice - Expand the Heart of Hospice Campaign Report

Total Amount Raised to date from Campaign: \$1,010,470

169,471	Bank Balance January 6, 2014			
-30,000	Garden & Other	Jul-05	projected expenses	
139,471	Projected Balance at Year End 2013			
1,600	Nanaimo North Rotary	Jan-14	outstanding pledge	
3,300	Ramsay Lampman Rhodes	Jan-14	outstanding pledge	
15,000	Port Authority	Jan-14	outstanding pledge	
3,333	J & L L	Mar-14	outstanding pledge	
25,000	NCFdtn	Mar-14	outstanding pledge	
187,704	Balance available prior to mortgage payment 2014			
-150,000	Mortgage Payment	Apr-14		
500	Chaley	Dec-14	outstanding pledge	
10,000	Dragonboat	Dec-14	projected	
12,500	Harmac	Dec-14	outstanding pledge	
2,500	1/2 Prom Banquet/Auction	Mar-14	projected	
5,000	KC Fashion Show	mid 14	projected	
2,000	50's Dance	mid 14	projected	
2,500	Redliners Car Show	mid 14	projected	
2,000	VIREB Hockey Game	mid 14	projected	
74,704	Funds available prior to mortgage payment April 2015			
1,600	Rotary North	Mar-15	oustanding pledge	
-285,000	Mortgage Pymt	Apr-15		
-208,696	Shortfall to be Mortgaged			
100,000	Proceeds of Burn Mortgage Camp 2014		projected	
-108,696	Mortgage - Worst Case Scenario			



NANAIMO COMMUNITY
HOSPICE

Caring • Commitment • Compassion

**2012 Annual
Report**

Celebrating 32 Years of Caring

Expanding The Heart Of Hospice



Building Healthy Community

*Our vision is that the dying will
experience peace and dignity; their
caregivers will receive the help they need;
and their friends and families will be
supported in their grief.*

2012 – Annual Review

Dying, Caregiving and Grieving are three of life's greatest challenges that will affect everyone at some point in their lives. In 2012 NCHS offered 16 unique programs and services to address these issues in our community.

- **In Your Home** – 41 palliative individuals and over 60 family members were supported at home (1,077 volunteer hours).
- **Supportive Counselling** – 598 adults, 72 Children and 54 Teens received a total of 1,646 free supportive counselling sessions. During the year 3 VIU practicum students were mentored through our counselling programs.
- **Palliative Care Unit** – 428 palliative patients were admitted to the unit. 50 volunteers provided support daily to patients and their family members. (5,358 volunteer hours).
- **Group Programs** – A monthly average of 156 adults took part in a variety of group programs including Caregivers Support, Companions Through Grief, Surviving Widowhood, Finding My Way/Coping with Grief, and the Saturday Morning Walking Groups. (2576 volunteer hours)
- **Self Care Clinic & Scents of Comfort** – Volunteers provided complementary therapies (reiki & relaxation and aromatherapy hand massages) to a monthly average of 110 individuals at Hospice House, in patient homes, on the palliative care unit, and community support groups (Alzheimer's). (2,740 volunteer hours)
- **Comfort & Care** - To date, over 3,900 comfort cushions and over 600 comfort shawls have been created by hand for the benefit of palliative and grief clients including 300 cushions that have been sent to Nepal as part of our twinning project. (3,793 volunteer hours)
- **Community Education/Outreach** – Volunteers and staff provided education and support at Hospice House, in the classroom, in the workplace, and in various community group settings.
- **Volunteer Education** - Volunteers participated in basic and continuing education to enhance their skills (workshops, conferences, in-house sessions). (2,740 volunteer hours)
- **Library Resources** – The hospice library is well resourced and in 2012 was used extensively by clients, volunteer, staff, community educators, and the general public (open 9-4pm – Mon-Fri). Over 750 lends annually. (250 volunteer hours).
- **Twining** – Winner of the Lloyd Jones Collins Award and the CFPC Family Medicine Award for Scholarship, the 30 minute documentary film featuring the impact and challenges of the **Partners in Compassion** twinning project between Nanaimo & Bhaktapur in Nepal is available at www.nanaimohospice.com/videolinks . 8 volunteers completed a 2012 site visit to provide education and support to staff at Bhaktapur Cancer Centre. (636 volunteer hours)
- **Friends of Hospice** – Friends of Hospice contributed many hours to maintain Hospice House, provide support in the office, and help with fundraising and special events. (3,411 volunteer hours)
- **Hospice Shoppes** – 110 Volunteers supported our two thrift stores with all profits going directly to hospice programs and services in 2012. In addition to giving of their time in the stores, many volunteers also worked through our **Elders in Transition Program** providing free services to seniors and their families when dealing with downsizing and/or disbursement of possessions after the loss of a loved one.

Hospice is

People

Hospice cares for people when they are often at their most vulnerable.

Healing

Hospice supports people to heal emotionally and spiritually.

Hope

Hospice helps people find hope in the darkness

Comfort

Hospice partners with medical caregivers to ensure comfort care.

Dignity

Hospice believes in preserving a person's dignity and self-worth.

Meaning

Hospice helps people find a sense of peace, purpose and love.

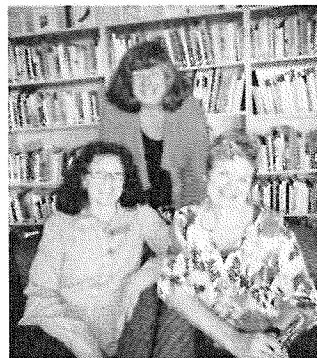
Growth

Hospice supports people to live more deeply than ever before.

Thank you to our staff, volunteers, and friends of hospice for all their help in 2012.



April 2012 Celebrating Grand Opening of the Bowen Rd Thrift Store



Welcoming New Staff Terry, Kelly & Carol To Hospice House



Hike for Hospice Title Sponsors First Memorial Funeral Services and Central Drugs



Volunteers Connie & Rita at Celebrate a Life Trees Country Club Mall 2012

Helping Hospice Help Others

At some time, in some way, we must all face the end of life, and most of us share a common hope that when death comes to us, or to a loved one, it will be peaceful; that we will be surrounded by those we love feeling safe, comfortable, and cared for; and that our loved ones who are left behind will be comforted and supported in their grief. (Living Lessons)

Growth Comparison – Number Served + Volunteer Hours Provided 2000 vs. 2011

2000		2012			Referrals have increased dramatically in 12 years with over 300,000 volunteer hours contributed (valued at over \$5Million) to the work of Hospice, with over 19,000 individuals benefiting from support in their homes, in hospital, in care facilities, and through Hospice House.
Number Served	Client-Based Volunteer Hrs	Number Served	Client-Based Volunteer Hrs	Thrift Store Volunteer Hrs	
650	8,600	2,315	22,968	18,050	

2012 - People & Programs	Total
Adult Bereavement & Anticipatory Grief – Individual Counseling and Group Programs	650
Support to Palliative Patients & Family Caregivers in their homes & on palliative care unit	1,152
Child & Youth Programs – Individual Counseling and Education in Schools	180
Education and Outreach in Community – To professionals, universities, families, public	333
TOTAL NUMBER SERVED IN 2012	2,315



THIRD PARTY EVENTS raise over \$20,000 in 2012 - From Left: Volunteer, Sue Harper put on a 50's Dance – Steve Marshall Ford hosted a Ladies Night for Hospice – Vancouver Island Real Estate Board put on a Hockey Game for Hospice – and Hub Insurance hosted a Beer & Burger Night ... just to name a few!



Capital Campaign Committee 2012

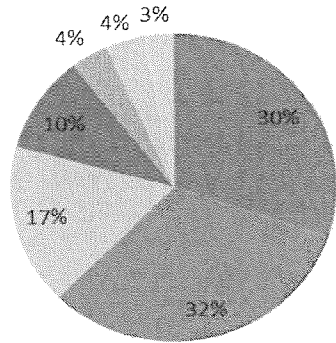
Back: Anne Judson, Moira Jenkins, Cindy Koutecky, Karen Boudreau – Front: Jon Lampman, Dave Hammond, Jim Stewart, Chris Erb, Dave Sherstone



Board of Directors 2012

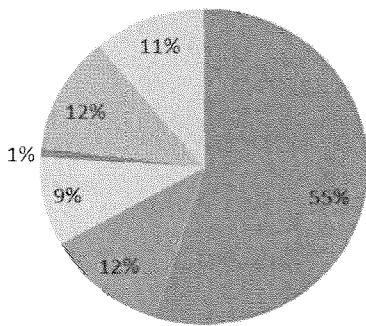
Back: Suzanne Benoit, Dave Sherstone, Gordon Cluchey, Karen Boudreau – Front: Jeanne Fahiman (ex-officio) Dianne Magor, Kris Clark, Terry Lyons, Wendy Pratt (ex-officio)

2012 - % of Total Revenue



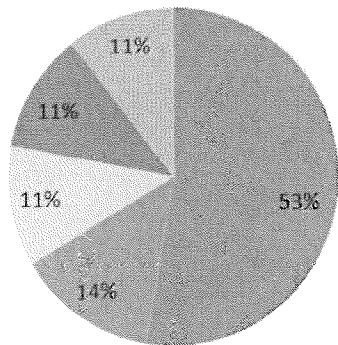
- Donations
- Thrift Store
- Gaming
- FR/Other
- United Way
- VIHA
- Twinning

2012 - % of of Wages Distribution



- Grief/Palliative
- Volunteer Training/Support
- Community Outreach
- Twinning
- Fundraising
- Administration

2012 - Expenses by %



- Client Programs
- Staff/Volunteer Education/Support/Fees
- House/Office
- Administration
- Fundraising & Other

THANK YOU to everyone who supported Hospice programs in 2012 and to everyone who contributed to the Expand the Heart of Hospice capital campaign throughout 2012. We wish we could put everyone's picture in this Annual Report! Here's a recap of where the capital funds are coming from to date:

Individuals: \$598,103 Corporations: \$133,298
Service Clubs: \$134,224 Fundraising Events: \$64,522

Nanaimo Community Hospice acknowledges funding in 2012 from Gaming (\$77,000) VIHA (\$15,700) United Way (\$15,000) in 2012.

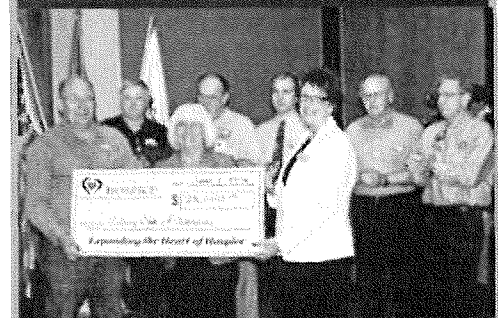
EXPAND THE HEART OF HOSPICE



Port Authority Donates \$50,000



Ramsay Lampman Rhodes \$10,000



Rotary Clubs - \$50,000 Total



Mid-Island Co-op \$15,000



Dragon Boat Festival - \$20,000

NANAIMO COMMUNITY HOSPICE SOCIETY

FINANCIAL STATEMENTS

(UNAUDITED)

December 31, 2012

REVIEW ENGAGEMENT REPORT

To the Directors

We have reviewed the statement of financial position of **Nanaimo Community Hospice Society** as at December 31, 2012, and the statements of operations, changes in net assets, and cash flows for the year ended December 31, 2012. Our review was made in accordance with Canadian generally accepted standards for review engagements and accordingly consisted primarily of enquiry, analytical procedures, and discussion related to information supplied to us by the society.

A review does not constitute an audit and consequently we do not express an audit opinion on these financial statements.

We draw attention to Note 2 to the financial statements which describes that **Nanaimo Community Hospice Society** adopted Canadian accounting standards for not-for-profit organizations on January 1, 2012 with a transition date of January 1, 2011. These standards were applied retrospectively by management to the comparative information in these financial statements, including the statement of financial position as at December 31, 2011 and January 1, 2011 and the statements of operations, changes in net assets, and cash flows for the period ended December 31, 2011 and related disclosures. We were not engaged to report on the restated comparative information. Review reports with the qualification noted below were issued for periods ended December 31, 2011 and December 31, 2010 under pre-changeover accounting standards by a previous accountant.

Basis for Qualified Opinion

As is common with many charitable organizations, the society derives revenue from donations and fund raising, the completeness of which is not susceptible to satisfactory audit verification. Accordingly, our review procedures for these revenues were limited to the amounts recorded in the records of the society and we were not able to determine whether any adjustments might be necessary to donation revenue, excess of revenue over expenses, assets and net assets.

REVIEW ENGAGEMENT REPORT

(Continued)

Qualified Opinion

In our opinion, except for the effects of the matter described in the *Basis for Qualified Opinion* paragraph, the financial statements present fairly, in all material respects, the financial position of **Nanaimo Community Hospice Society** as at December 31, 2012, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

As required by the *Society Act of British Columbia*, we report that, in our opinion, these principles have been applied on a basis consistent with that of the preceding year.

Nanaimo, B.C.
April 29, 2013

CHURCH PICKARD
Chartered Accountants

NANAIMO COMMUNITY HOSPICE SOCIETY

STATEMENT OF FINANCIAL POSITION as at **December 31, 2012**

(unaudited)

	December 31, 2012	December 31, 2011	January 1, 2011
Assets			
Current			
Cash - unrestricted	\$ 5,980	\$ 88,536	\$ 97,350
Externally restricted gaming funds - Note 6	9,087	65,552	4,824
Accounts receivable	10,360	5,791	8,312
Grants receivable	-	10,000	274
Prepaid expenses	13,295	18,319	13,090
Marketable securities - Note 5	<u>4,989</u>	<u>-</u>	<u>-</u>
	43,711	188,198	123,850
Property and equipment, and leasehold improvements - Note 3	1,139,621	127,929	134,324
Externally restricted cash and deposits - Note 16	238,877	39,421	53,223
Internally restricted cash and deposits - Note 16	<u>-</u>	<u>184,754</u>	<u>127,065</u>
	<u>\$ 1,422,209</u>	<u>\$ 540,302</u>	<u>\$ 438,462</u>
Liabilities			
Current			
Accounts payable and accrued liabilities	\$ 31,075	\$ 20,611	\$ 15,299
Current portion of capital lease obligation - Note 7	-	2,364	2,126
Deferred revenue - Note 6	9,087	73,815	13,387
Current portion of long-term debt - Note 8	150,000	-	-
Deferred revenue related to capital campaign	<u>237,773</u>	<u>37,964</u>	<u>-</u>
	427,935	134,754	30,812
Capital lease obligation - Note 7	-	1,129	3,457
Deferred contributions related to property and equipment - Note 9	269,626	21,662	75,388
Long-term debt - Note 8	<u>435,000</u>	<u>-</u>	<u>-</u>
	<u>1,132,561</u>	<u>157,545</u>	<u>109,657</u>
Net Assets			
Net investment in property and equipment	284,995	102,772	106,576
Internally restricted net assets - Note 16	-	184,754	127,065
Externally restricted net assets - Note 16	247,964	104,973	-
Unrestricted net assets	<u>(243,311)</u>	<u>(9,742)</u>	<u>95,164</u>
	<u>289,648</u>	<u>382,757</u>	<u>328,805</u>
	<u>\$ 1,422,209</u>	<u>\$ 540,302</u>	<u>\$ 438,462</u>

Approved:

NANAIMO COMMUNITY HOSPICE SOCIETY

STATEMENT OF OPERATIONS

For the year ended **December 31, 2012**

(unaudited)

	2012	2011
Income		
Revenue - Schedule 1	\$ 225,403	\$ 359,437
Hospice Shoppe - net - Schedule 2	106,765	132,124
Rental (loss) - Schedule 3	<u>(5,617)</u>	<u>-</u>
	<u>326,551</u>	<u>491,561</u>
Expenses		
Programs - grief and palliative support	182,976	173,653
Programs - Community Outreach	48,090	49,164
Programs - volunteer training and support	45,672	44,931
Fundraising activities and special events	40,578	43,384
Wages and benefits - administrative - Note 14	39,115	32,728
Office	17,895	14,875
Professional fees	15,499	6,952
Programs - Twinning	14,345	8,594
Property taxes	6,290	2,449
Amortization	5,474	6,324
Telephone	4,768	4,721
Professional development	4,279	4,667
Utilities	4,002	3,352
Insurance	3,359	3,145
Repairs and maintenance	3,276	18,796
Interest on capital lease obligation	<u>135</u>	<u>524</u>
	<u>435,753</u>	<u>418,259</u>
Excess of (expenses over revenue) revenue over expenses before undernoted items	(109,202)	73,302
Capital campaign - net - Note 11	19,073	(19,350)
Loss on disposal of property and equipment	<u>(2,980)</u>	<u>-</u>
Excess of (expenses over revenue) revenue over expenses	(93,109)	53,952
Net assets beginning of the year	<u>382,757</u>	<u>328,805</u>
Net assets end of the year	<u>\$ 289,648</u>	<u>\$ 382,757</u>

Contributed volunteer services - Note 10

NANAIMO COMMUNITY HOSPICE SOCIETY

STATEMENT OF CHANGES IN NET ASSETS

For the year ended **December 31, 2012**

(unaudited)

	Investment In Property and Equipment	Internally Restricted Capital Campaign	Externally Restricted Capital Campaign	Externally Restricted Gaming	Unrestricted	Total 2012	Total 2011
Balance, beginning of the year	\$ 102,772	\$ 184,754	\$ 39,421	\$ 65,552	\$ (9,742)	\$ 382,757	\$ 328,805
Excess of (expenses over revenue) revenue over expenses	(5,905)	-	(70,718)	-	(16,486)	(93,109)	53,952
Purchase of capital assets (net of disposals)	1,025,923	(184,754)	(262,483)	-	(578,686)	-	-
Interest earned	-	-	919	-	(919)	-	-
Deferred donations received for capital campaign	(256,287)	-	531,738	-	(275,451)	-	-
Mortgage advanced	(585,000)	-	-	-	585,000	-	-
Termination of obligation under capital lease	3,492	-	-	-	(3,492)	-	-
Gaming grants and donations	-	-	-	11,307	(11,307)	-	-
Wages	-	-	-	(67,772)	67,772	-	-
Balance, end of the year	\$ 284,995	\$ -	\$ 238,877	\$ 9,087	\$ (243,311)	\$ 289,648	\$ 382,757

NANAIMO COMMUNITY HOSPICE SOCIETY

STATEMENT OF CASH FLOWS

For the year ended **December 31, 2012**

(unaudited)

	2012	2011
Cash provided (used):		
Operating activities		
673374 Excess of (expenses over revenue) revenue over expenses	\$ (93,109)	\$ 53,952
Items not involving cash		
Amortization	10,003	10,685
Loss on disposal of property and equipment	<u>2,980</u>	<u>-</u>
	(80,126)	64,637
Changes in non-cash operating accounts		
(Increase) decrease in accounts receivable	(4,569)	2,521
Decrease (increase) in grants receivable	10,000	(9,726)
Decrease (increase) in prepaid expenses	5,024	(5,229)
Increase in accounts payable and accrued liabilities	10,464	5,310
(Decrease) increase in deferred revenue	(64,728)	60,428
Increase (decrease) in deferred capital contributions	<u>443,079</u>	<u>(15,762)</u>
	<u>319,144</u>	<u>102,179</u>
Investing activities		
Purchase of property and equipment	(1,029,960)	(4,288)
Increase in marketable securities	<u>4,989</u>	<u>-</u>
	<u>(1,024,971)</u>	<u>(4,288)</u>
Financing activities		
Repayments of capital lease obligation	(3,492)	(2,090)
Proceeds from long-term debt	<u>585,000</u>	<u>-</u>
	<u>581,508</u>	<u>(2,090)</u>
(Decrease) increase in cash	(124,319)	95,801
Cash, beginning of the year	<u>378,263</u>	<u>282,462</u>
Cash, end of the year	<u>\$ 253,944</u>	<u>\$ 378,263</u>
Cash is defined as:		
Cash - unrestricted	\$ 5,980	\$ 88,536
Externally restricted gaming funds	9,087	65,552
Externally restricted cash	238,877	39,421
Internally restricted cash	<u>-</u>	<u>184,754</u>
	<u>\$ 253,944</u>	<u>\$ 378,263</u>

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

1. Purpose of the organization

The Nanaimo Community Hospice Society is incorporated under the laws of the *Province of British Columbia Society Act* and is exempt from income tax as a non-profit organization. The society is also a registered charity under the *Income Tax Act*. The society operates programs that provide practical care and support to the dying, their families and caregivers, and the bereaved in the Nanaimo, Lantzville, and Cedar areas. The Hospice Twinning program, "Partners in Compassion," provides minimal support to patients and families in the palliative care unit at Bhaktapur Hospital in Nepal. The society also operates the Hospice Shoppe, a thrift store set up for the sole purpose of providing funds for Hospice programs and services. A second thrift store was opened on February 1, 2012.

2. Significant accounting policies

The society has elected to apply Canadian accounting standards for not-for-profit organizations.

These financial statements are the first financial statements for which the society has applied the Canadian accounting standards for not-for-profit organizations.

The financial statements for all periods presented were prepared in accordance with the Canadian accounting standards for not-for-profit organizations and provisions set out in First-Time Adoption, Section 1501, for first-time adopters of this basis of accounting.

The impact of adopting these standards was accounted for in net assets at the date of transition, January 1, 2011 (beginning of the first fiscal period for comparison purposes). However, because of the elections the society has chosen upon transition, no adjustments were required to be made to net assets at the date of transition.

- Property and equipment, and leasehold improvements

Property and equipment, and leasehold improvements are recorded at cost and amortized.

Amortization is recorded on a declining-balance basis over the estimated useful life of the assets, except for leasehold improvements which are on a straight-line basis, as follows:

Buildings	4%
Equipment	20%
Furniture and fixtures	20%
Vehicle	30%
Computer equipment	30 to 55%
Leasehold improvements - Hospice Shoppes	10 years

In the year of acquisition, amortization is recorded at one-half of these rates.

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

2. Significant accounting policies

- Use of estimates

The preparation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, requires management to make estimates and assumptions, mainly considering values, which affect reported amounts of assets, liabilities, revenue and expenses, and related disclosures. Amounts are based on best estimates, but actual amounts may vary from the amounts recorded. Adjustments, if any, will be reflected in operations in the period of settlement.

- Revenue recognition

The society follows the deferral method of accounting for revenue. Donations restricted for the purchase of capital assets are deferred and amortized into revenue at a rate corresponding with the amortization rate for the related capital assets. Grants, donations, and gaming revenue with external restrictions are recognized as revenue in the year in which the related expenses are incurred. Unrestricted donations are recognized when received or receivable if the amount can be reasonably estimated and collection is assured. Revenue from events is recognized when the event occurs and when the amount can be reasonably estimated and collection is reasonably assured. Revenue from the Hospice Shoppes is recognized upon receipt.

- Contributed goods and services

Volunteers contribute numerous hours each year to assist the society in carrying out its services. Contributed goods and services are recognized in the financial statements when their fair value can be reasonably determined and they are used in the normal course of the organization's operations and would have otherwise been purchased.

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

3. Property and equipment, and leasehold improvements

	Cost	Accumulated Amortization	Net 2012	Net 2011
Land	\$ 392,426	\$ -	\$ 392,426	\$ 27,888
Buildings **	797,005	76,700	720,305	70,234
Equipment	40,209	33,104	7,105	8,881
Furniture and fixtures	18,298	16,870	1,428	1,785
Vehicle	8,000	6,857	1,143	1,633
Computer equipment	46,422	42,716	3,706	3,100
Equipment under capital lease	-	-	-	4,037
Leasehold improvements	<u>24,464</u>	<u>10,956</u>	<u>13,508</u>	<u>10,371</u>
	<u>\$ 1,326,824</u>	<u>\$ 187,203</u>	<u>\$ 1,139,621</u>	<u>\$ 127,929</u>

** Includes \$445,832 for 1080 St. George Crescent which was purchased on June 29, 2012. The property is not being amortized for accounting purposes as it was not available for use in 2012.

4. Comparative figures

Certain of the comparative figures have been reclassified to conform with the current year's presentation.

5. Marketable securities

The society's investments consist of shares of publicly traded companies on Canadian exchanges and are initially and subsequently measured at fair value. Changes in fair value are recognized in net income in the period incurred. Transaction costs that are directly attributable to the acquisition of these investments are recognized in net income in the period incurred.

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

6. Deferred revenue

Deferred revenue consists of funds received in the current period that is related to a subsequent period. Changes in the deferred contributions are as follows:

	Twinning Project	Externally Restricted Gaming	General Designated Donations	Total 2012	Total 2011
Opening balance	\$ 7,483	\$ 65,552	\$ 780	\$ 73,815	\$ 13,387
Add: Amount received during the year	7,470	11,307	-	18,777	195,436
Less: Amount recognized as revenue in the year	<u>(14,953)</u>	<u>(67,772)</u>	<u>(780)</u>	<u>(83,505)</u>	<u>(135,008)</u>
	<u>\$ -</u>	<u>\$ 9,087</u>	<u>\$ -</u>	<u>\$ 9,087</u>	<u>\$ 73,815</u>

7. Obligation under capital lease

	2012	2011
Konica Minolta lease - payable at \$218 per month including an implicit interest rate of 10.6% per annum; secured by the copier equipment; due May 2013	\$ -	\$ 3,493
Less: Current portion	<u>-</u>	<u>2,364</u>
	<u>\$ -</u>	<u>\$ 1,129</u>

The copier was returned during the year. A new copier is being leased and is being treated as an operating lease for accounting purposes.

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

8. Long-term debt

	2012	2011
Mortgage - payable to James Nelson for the purchase of 945 Waddington and 1080 St. George Crescent; the loan is non-interest bearing and requires the following repayment terms:		
April 25, 2013	\$ 150,000	\$ -
April 25, 2014	150,000	-
April 25, 2015	<u>285,000</u>	<u>-</u>
	585,000	-
Less: Current portion	<u>150,000</u>	<u>-</u>
	<u>\$ 435,000</u>	<u>\$ -</u>

The loan is secured by the properties. The loan payment due April 25, 2013 was made subsequent to the date of this review report

9. Deferred capital contributions

Deferred contributions related to property and equipment represent contributions of assets and/or cash used for the acquisition of property and equipment. The changes in deferred contributions for the year are as follows:

	2012	2011
Balance, beginning of the year	\$ 21,662	\$ 75,388
Add: Capital contributions received	256,287	1,002
Less: Amortization for the year	(8,323)	(4,728)
Less: Bequest transferred to internally restricted assets	<u>-</u>	<u>(50,000)</u>
	<u>\$ 269,626</u>	<u>\$ 21,662</u>

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

10. Contributed services

Volunteers contributed 40,810 hours (2011 - 35,549 hours) to assist the society in carrying out its service delivery activities. Of these hours, 18,050 (2011 - 16,750) are related to the Hospice Shoppes' volunteers. Contributed services represent the estimated fair value of the contribution of volunteer hours to the society based on an hourly rate of \$16.50 (2011 - \$16.50).

	2012	2011
Nanaimo Community Hospice	\$ 375,541	\$ 310,183
Hospice Shoppes	<u>297,833</u>	<u>276,375</u>
	<u>\$ 673,374</u>	<u>\$ 586,558</u>

11. Capital campaign

	2012	2011
Revenue - donations recognized	\$ 75,642	\$ 996
Expenses	<u>56,569</u>	<u>20,346</u>
	<u>\$ 19,073</u>	<u>\$ (19,350)</u>

12. Government remittances

The society has the following amounts owing/receivable for government remittances at December 31, 2012:

HST	\$ 11,298	receivable
WCB	\$ 659	payable

13. Property tax exemption

The property tax exemption from the City of Nanaimo was \$2,564 (2011 - \$2,605) for 1729 Boundary Avenue.

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

14. Wages, employee benefits, and contracted services

Included in these financial statements are total wage costs (excluding Hospice Shoppe wages and employee benefits) of \$263,951 (2011 - \$218,187) and contracted services of \$62,003 (2011 - \$86,076). Wage and contracted service costs are allocated to individual programs and have been allocated based on estimated employee/contractor time as follows:

	2012		2011	
	Amount	%	Amount	%
Programs				
Community Outreach	\$ 29,336	9	\$ 28,364	9
Grief and Palliative Support	179,275	55	171,169	55
Volunteer training and support	39,115	12	34,910	12
Twinning	3,259	1	2,182	1
Fundraising	35,855	11	34,910	11
Administrative	<u>39,115</u>	<u>12</u>	<u>32,728</u>	<u>12</u>
	<u>\$ 325,955</u>	<u>100</u>	<u>\$ 304,263</u>	<u>100</u>

15. Lease commitments

The society is committed under several lease agreements for the rental of the premises for the Hospice Shoppe and for photocopier equipment. The payments for each of the next five years and in total, are as follows:

2013	\$ 84,487
2014	85,987
2015	85,987
2016	88,428
2017	<u>25,057</u>
	<u>\$ 369,946</u>

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

16. Restricted net assets

	2012	2011
Externally restricted cash capital campaign		
Balance, beginning of the year	\$ 39,421	\$ -
Donations received	531,738	37,964
Interest earned	919	1,457
Capital campaign costs	<u>(333,201)</u>	<u>-</u>
	<u>238,877</u>	<u>39,421</u>
Externally restricted cash gaming - Note 6	<u>9,087</u>	<u>65,552</u>
Internally restricted cash capital campaign		
Balance, beginning of the year	184,754	129,932
Bequest transferred to internally restricted	-	50,000
Interest earned	-	4,822
Funds spent on property purchase	<u>(184,754)</u>	<u>-</u>
	<u>-</u>	<u>184,754</u>
Total restricted assets	<u>\$ 247,964</u>	<u>\$ 289,727</u>

17. Operating loan

The society has access to an operating loan of \$202,000. The loan bears interest at prime plus 2% which was 5% at December 31, 2012.

NANAIMO COMMUNITY HOSPICE SOCIETY

NOTES TO THE FINANCIAL STATEMENTS

For the year ended **December 31, 2012**

(unaudited)

18. Financial assets and liabilities

The significant financial risks to which the society is exposed to are credit risk, interest rate risk, and market risk.

- Credit risk

Credit risk arises from the potential that a counterparty will fail to perform its obligations. The society is exposed to credit risk from customers and accounts receivable. However, the society mitigates this risk by dealing only with what management believes to be financially sound counterparties and, accordingly, does not anticipate significant loss for non-performance.

- Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The society is exposed to interest rate risk on its line of credit.

- Market risk

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. The society's investments in publicly traded securities expose the society to market risk as such investments are subject to price changes in the open market. The society does not use derivative financial instruments to alter the effects of this risk.

NANAIMO COMMUNITY HOSPICE SOCIETY

Schedule 1

SCHEDULE OF REVENUE

For the year ended **December 31, 2012**

	<u>2012</u>	<u>2011</u>
Gaming	\$ 67,959	\$ 107,362
Donations - general	67,362	84,033
Fundraising and special events	35,793	39,642
Grants - Vancouver Island Health Authority	15,700	11,700
Grants - United Way	15,160	41,440
Donations - Twinning program	12,953	6,412
Amortization of deferred capital contributions	4,630	503
Volunteer training fees	3,685	925
Interest	1,501	1,570
Memberships	660	850
Donations - bequest	-	50,000
Grants - Nanaimo Community Foundation	<u>-</u>	<u>15,000</u>
	<u>\$ 225,403</u>	<u>\$ 359,437</u>

NANAIMO COMMUNITY HOSPICE SOCIETY

Schedule 2

SCHEDULE OF HOSPICE SHOPPE REVENUE AND EXPENSES

For the year ended **December 31, 2012**

	2012	2011
Revenue		
Ladies wear	\$ 85,522	\$ 75,388
Housewares	74,565	61,718
Elders in transition	38,912	29,176
Jewelry	27,096	21,127
Books	23,548	17,775
Seasonal and sports equipment	22,533	13,794
Accessories	21,453	19,047
Arts and crafts	17,727	14,674
Men's wear	12,110	7,900
General donations	10,581	7,152
Furniture	7,020	4,783
Electronics and computers	5,303	-
Children's wear	4,038	4,950
Amortization of deferred capital contributions	3,693	4,225
Clothing recycle	679	671
Scrap metal	205	528
Interest	<u>125</u>	<u>194</u>
	<u>355,110</u>	<u>283,102</u>
Expenses		
Wages	127,670	88,494
Rent	81,168	35,304
Utilities	6,711	3,641
Vehicle	5,753	6,510
Store supplies	5,138	2,278
Office supplies	4,773	632
Amortization	4,529	4,361
Interest and bank charges	3,559	2,887
Telephone	2,991	1,797
Insurance	2,344	1,100
Volunteers	2,040	2,728
Advertising	1,216	1,150
Repairs and maintenance	<u>453</u>	<u>96</u>
	<u>248,345</u>	<u>150,978</u>
Excess of revenue over expenses	<u>\$ 106,765</u>	<u>\$ 132,124</u>

Contributed volunteer services - Note 10

(17)

NANAIMO COMMUNITY HOSPICE SOCIETY

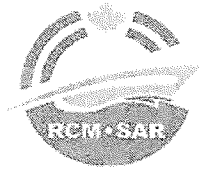
Schedule 3

SCHEDULE OF RENTAL INCOME

For the year ended **December 31, 2012**

Rental revenue	<u>\$ 4,200</u>
Expenses	
Amortization	4,225
Repairs and maintenance	2,435
Property taxes	1,791
Insurance	<u>1,366</u>
	<u>9,817</u>
Excess of expenses over revenue	<u>\$ (5,617)</u>

Lighthouse Country Marine Rescue Society supporting



ROYAL CANADIAN MARINE
SEARCH & RESCUE

**Station 59, Deep Bay
5058 Longview Drive
Bowser, BC
V0R 1G0**

Jan 15/ 2013

Chairman Stanhope and Board Members:

This letter is submitted to request that the RDN Board of Directors consider ongoing annual funding in the amount of Five Thousand (\$5,000.00) for the Royal Canadian Marine Search and Rescue (RCM-SAR), Station 59.

RCM-SAR Station 59 is funded through the non-profit Lighthouse Country Marine Rescue Society, and is situated in the RDN. We provide marine search and rescue services to both the RDN and the CVRD. Our operations area includes the popular recreational boating areas surrounding Hornby and Denman Islands, and the busy commercial shellfishing throughout Baynes Sound and the shorelines of Area H. It is one of the highest marine traffic areas along the B.C. coast.

Given our coverage, we are making this same funding request of the CVRD.

We usually receive partial funding, from B.C.Gaming, but in a constant effort to raise money we must establish alternative sources as the B.C.Gaming funds are never assured. RCM-SAR Unit 59, is an all-volunteer unit, on call 24/7, 365 days a year. Our only reimbursement is for operating costs when "tasked" by the JRCC.

Unit 59 works cooperatively with DBYC, DBHA and its Manager, DBVFD and B.C. Ambulance. We are proud of the following facts:

- 161 callouts since record keeping began (2005) resulting in:
- 3 persons saved
- 113 persons rescued from imminent danger
- \$1,897,000.00 in estimated personal property protected by response

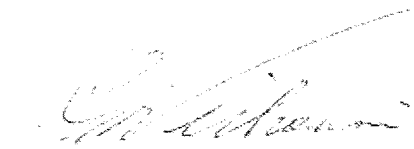
In addition to our core rescue mission, we are very active with the local community enhancing boating safety and education:

- "Kids Don't Float", which provides PFD loaners for children.
- School visits and water safety education using "Bobbi The Safety Boat"
- Public outreach water Safety Education:
 - Parksville Kids Fest, Family Days
 - Lighthouse Country Fair
 - The River Never Sleeps Festival (at Rosewall Creek)
 - Fanny Bay Days


The unit is staffed totally by volunteers who require constant training and updating of certifications. Funding is required for this training as well as operations of our station, Fast Response Vehicle, communications and safety equipment, recruitment, and community outreach programs. Our average annual operating costs are on the order of Thirty Thousand Dollars (\$30,000.00). This amount can increase tremendously, given the equipment and operating environment.

We are requesting annual funding from the Regional District of Nanaimo in the amount of Five Thousand Dollars (\$5,000.00), to support ongoing operations and training for Unit 59. Your ongoing funding to similar organizations (Arrowsmith SAR, Nanaimo Marine Rescue Society) demonstrates your understanding of the need. Our history certainly reflects the value for cost.

RDN funding will be tremendously appreciated, and will help ensure our mission of "Saving Lives On The Water" is achieved.



George Williamson, President, LCMRS



Lorne Erickson, Unit Leader, RCM-SAR, Unit 59, Deep Bay (formerly Canadian Coast Guard Auxiliary).

Lighthouse Country Marine Rescue Society supporting



**ROYAL CANADIAN MARINE
SEARCH & RESCUE**

**Station 59, Deep Bay
5058 Longview Drive
Bowser, BC
V0R 1G0**

Jan 15/ 2013

Committee of the Whole,
Regional District of Nanaimo,
6300 Hammond Bay Road,
Nanaimo, B.C.
V9T-6N2

Chairman Stanhope and Board Members:

Re: Proposal for ongoing annual funding to the Lighthouse Country Marine Rescue Society (supporting Royal Canadian Search & Rescue Unit 59, Deep Bay).

On behalf of the LCMRS, we would like the opportunity to make a brief presentation supporting our position as detailed in the attached brief.

The presentation will provide useful, fact-based, verifiable information on which to base your decision.

We look forward to your invitation.

A handwritten signature in cursive script, appearing to read "George Williamson".

George Williamson, President, LCMRS

A handwritten signature in cursive script, appearing to read "Lorne Erickson".

Lorne Erickson, Unit Leader, RCM-SAR, Unit 59, Deep Bay (formerly Canadian Coast Guard Auxiliary).

We are the LCMRS, supporting
RCM-SAR, unit 59, Deep Bay

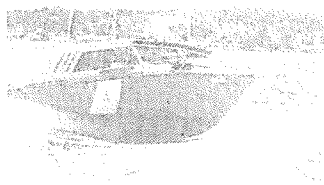
Lighthouse Country Marine Rescue Society supporting



Arising from a realized need by Mr.
John A. Mclean back in 1975

- From tragedy and death, one man took the initiative to make sure we were positioned for the future ; organizationally, functionally, and able to work towards financial stability.

From a first marine vehicle, salvaged out of a farmyard... refurbished by volunteers through private donations



The years saw a variety of names, until the Canadian Coast Guard was legislated into reality in 1995. The new name of Royal Canadian Marine Search And Rescue (emphasizing our separate operational identity) was established in 2012.



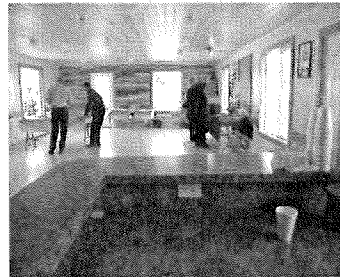
To 2007, and an elevated level of excellence with our new Fast Response Vehicle

- The Mapleguard

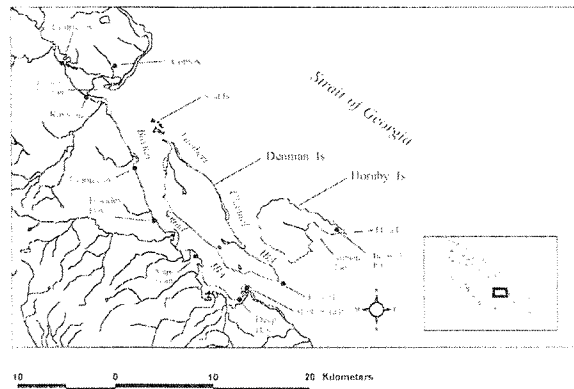


We are located in our own training facility at Deep Bay Marina

- Power and moorage is donated by the marina in recognition of our value to the boating community.

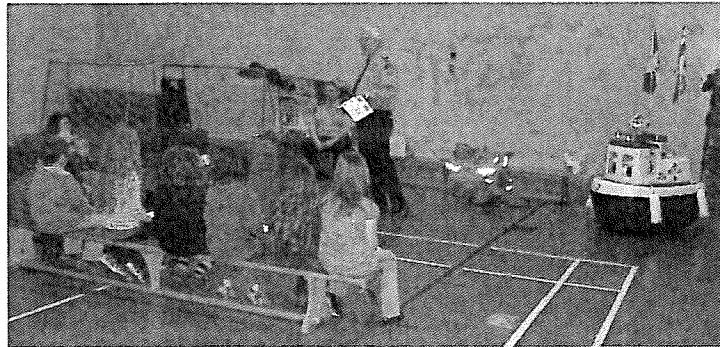


We operate regularly in the waters from Union Bay to Qualicum Bay, in Baynes Sound and Lambert Channel between Hornby and Denman Islands



We provide Boating and Water Safety Education at Community Events.

- Parksville KidsFest
- Lighthouse Country Fall Fair
- The River Never Sleeps (Rosewell Creek)



We offer our own programs to the general boating public, through the “Kids Don’t Float” free PFD loaner service.

- At the Deep Bay Dock
- At the Denman Island Dock

We also offer free boat safety inspections, if people agree and invite us aboard. This service is generally done at the different Marinas.

- We are not enforcement officers, and only point out deficiencies / offer suggestions.

But most importantly, we provide Marine Search And Rescue Service

- To ALL mariners (commercial or recreational)
- As tasked by the CCG Joint Rescue Coordination Centre
- 24 hours, 365 days

We recognize the need

- We appreciate the limited resources of the CCG, spread across the vastness of the BC coast.
- We respect the forces of nature, and the dangers at sea.
- We respond to calls for assistance , without hesitation

In conclusion

- We have a verifiable history in records kept since 2005
- 161 callouts
- 3 persons saved
- 113 people rescued from imminent danger
- \$1,897,000.00 in personal property protected

We have grown from meager beginnings, to a current position of \$307,000.00 in assets

12/31/12

LightHouse County Mutual Rescue Society
Balance Sheet
As of December 31, 2012

	2012
ASSETS	
Current Assets	
Cash	12,246.22
Accounts Receivable	14,870.41
Prepaid Expenses	4,872.02
Inventory	8,242.42
Equipment	3,512.12
Total Current Assets	43,743.21
Fixed Assets	
Land	45,000.00
Buildings	11,000.00
Equipment	10,000.00
Total Fixed Assets	66,000.00
Total Assets	109,743.21
LIABILITIES AND EQUITY	
Liabilities	
Accounts Payable	1,000.00
Total Liabilities	1,000.00
Equity	
Contributed Capital	108,743.21
Total Equity	108,743.21
Total Liabilities and Equity	109,743.21

12/31/13

LightHouse County Mutual Rescue Society
Balance Sheet
As of December 31, 2013

	2013
ASSETS	
Current Assets	
Cash	15,000.00
Accounts Receivable	18,000.00
Prepaid Expenses	5,000.00
Inventory	10,000.00
Equipment	4,000.00
Total Current Assets	52,000.00
Fixed Assets	
Land	45,000.00
Buildings	11,000.00
Equipment	10,000.00
Total Fixed Assets	66,000.00
Total Assets	118,000.00
LIABILITIES AND EQUITY	
Liabilities	
Accounts Payable	1,000.00
Total Liabilities	1,000.00
Equity	
Contributed Capital	117,000.00
Total Equity	117,000.00
Total Liabilities and Equity	118,000.00

We are dedicated to the continuation of our organization

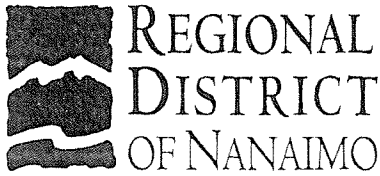
- By strengthening the support we receive
- By expanding the services we offer to the boating public
- By building awareness in water safety

The financial needs will not shrink

- Operating in a marine environment is costly
- A single replacement motor can be \$40,000
- Electronics upgrades can be \$30,000
- New propellers can be \$1,500 (set)
- A night-vision scope can be \$1,500.00
- A survival suit can be \$500.00

We need your help !

- To maintain our readiness and expertise
- To continue our work in protecting your residents and visitors alike
- To expand the services (education in water safety)we offer the community
- To assist those that find themselves in peril



RDN REPORT	
CAO APPROVAL <i>[Signature]</i>	
EAP	
COW	✓
OCT 30 2013	
RHD	
BOARD	

TO: W. Idema
Director of Finance

DATE: October 18, 2013

FROM: T. Moore
Manager, Accounting Services

FILE:

SUBJECT: Funding Request for Crime Prevention Programs in Oceanside

PURPOSE:

To provide analysis regarding Additional Funding Request for Crime Prevention Programs in Oceanside.

BACKGROUND:

Corporal Jesse Foreman appeared as a delegation at the Regional District of Nanaimo Board meeting held September 25, 2013 and made a presentation on a Funding Proposal for Crime Prevention Programs in Oceanside (Presentation attached as appendix A). The presentation provides details on an additional funding request totaling \$35,220 with \$30,220 to run specific programs through Oceanside Community Policing and \$5,000 for operating expenses for the Citizens on Patrol Society, District 69. The following motion was passed at the September 24, 2013 Board meeting:

MOVED Director Veenhof, SECONDED Director Houle, that Community Policing Funding be referred to the 2014 budget discussions.

The District 69 Community Justice Select Committee has been established as a forum to receive and consider annual reports from Restorative Justice, Victim Services and Citizens on Patrol Society, District 69 programs and to discuss other related issues of concern.

Current Funding Arrangements for Restorative Justice, Victim Services and Citizens on Patrol Society, District 69:

Victim Services are currently funded in District 69 in the following way. A service was established by "Regional District of Nanaimo Crime Prevention And Community Justice Support Service Bylaw No. 1479, 2006" which includes Parksville, Qualicum Beach and Electoral Areas E, F, G and H, and provides funding to both Restorative Justice and Victim Services programs operated through the Oceanside RCMP detachment. Funds totaling \$77,500 for these programs are raised by a parcel tax levy at a 2013 rate of \$3.25 per property. At present the Victim Services operations receive \$52,500, which matches funding provided through the Ministry of the Attorney General, the Restorative Justice program receives \$25,000 annually. The RCMP detachment in District 69 provides in-kind services of office space and operating supplies to both programs.

The Citizens on Patrol Society, District 69 apply annually to the D69 Community Justice Select Committee Grants in Aid program to obtain funds to compensate the Society members for the gasoline usage in their personal vehicles during patrols. The amounts received under this Grants in Aid Program have been based on actual expenditures made and range from \$1,320 to \$9,000 between 2006 and 2013. Citizens on Patrol Society, District 69 has submitted a request to the D69 Community Justice Select Committee Grants in Aid for \$3,232 for 2014. This report deals with an additional funding request that is separate from the existing funding in place for the Citizens on Patrol Society, District 69.

ALTERNATIVES:

1. Approve the additional funding amount of \$35,220 by parcel tax levy:
 - Under this alternative, the RDN would provide full funding for the request for Oceanside Community Policing programs and Citizens on Patrol Society, District 69 operational funding and this would be done by increasing the parcel tax levy.
 - This would allow all of the Community Policing programs outlined in the proposal to proceed and also allow for the operational funding for Citizens on Patrol Society, District 69.
 - Under this alternative, Bylaw 1479 would need to be amended to increase the amount that can be requisitioned.
2. Approve an additional funding amount which is less than \$35,220 by parcel tax levy:
 - Under this alternative, the RDN may choose to provide additional funding that is less than the amount requested
 - This alternative would not allow all of the programs as outlined in the Funding Proposal to proceed but may be more affordable to the taxpayer.
3. Approve an additional funding amount but move to an assessment based tax levy instead of the existing parcel tax levy:
 - Under this alternative, the Board would provide direction to staff to amend the existing Bylaw 1479 to allow for an assessment based tax levy.
4. Status Quo:
 - Under this alternative, funding would remain status quo.

FINANCIAL IMPLICATIONS:

1. Approve the additional funding amount of \$35,220 by parcel tax levy:
 - Under this alternative, the parcel tax levy would increase from \$77,500 to \$112,720.
 - Parcel tax rates would increase from \$3.25 per parcel to \$4.71 per parcel.
 - This represents a 45% increase in the parcel tax levy.
2. Approve an additional funding amount which is less than \$35,220 by parcel tax levy:
 - Under this alternative, the parcel tax levy would increase from \$77,500 to an amount less than \$112,720.

- Parcel tax rates would increase from \$3.25 per parcel and would be below \$4.71 per parcel depending on the amount of the additional funding approved. For example, if \$17,610 of additional funding was approved, this would result in an increase to \$3.97 per parcel.
 - There would be a parcel tax levy that would result in less than a 45% increase in the parcel tax levy depending on the amount of additional funding approved. If the amount of additional funding was \$17,610, the increase would be 22.5%.
3. Approve an additional funding amount but move to an assessment based tax levy instead of the existing parcel tax levy:
- Under this alternative, tax payers would pay \$.30 per hundred thousand of assessed value.
 - Based on the 2013 tax roll assessments, for additional funding amounts of \$17,610 or \$35,220, the requisitions would be as follows:

City of Parksville	\$ 4,427	\$ 8,854
Town of Qualicum Beach	\$ 3,526	\$ 7,053
Electoral Area E	\$ 3,147	\$ 6,295
Electoral Area F	\$ 2,135	\$ 4,270
Electoral Area G	\$ 2,697	\$ 5,394
Electoral Area H	\$ 1,678	\$ 3,354
Total	\$17,610	\$35,220

4. Status quo
- There would be no financial implications associated with this alternative.

STRATEGIC PLAN IMPLICATIONS:

The Action Areas of the 2013-2015 Strategic Plan supports providing additional funding for Crime Prevention Programs in Oceanside but also encourages fiscal responsibility as follows:

- Enhance the reputation of the RDN as a valuable and effective level of government for delivering services, exploring regional issues, and creating opportunities for dialogue with residents by supporting volunteer opportunities for residents,
- Balance the RDN’s vision for the region and pursuit of innovation with fiscal responsibility by ensuring that increases to the costs of existing services are kept to a minimum, and that consideration of increased service levels balances the need for fiscal restraint with residents’ needs and desires, and Board vision, values and priorities.

SUMMARY/CONCLUSIONS:

Corporal Jesse Foreman appeared as a delegation at the Regional District of Nanaimo Board meeting held September 25, 2013 and made a presentation on a Funding Proposal for Crime Prevention Programs in Oceanside (Presentation attached as appendix A). The presentation provides details on an additional funding request totaling \$35,220 with \$30,220 to run specific programs through Oceanside Community Policing and \$5,000 for operating expenses for the Citizens on Patrol Society, District 69. The following motion was passed at the September 24, 2013 Board meeting:

MOVED Director Veenhof, SECONDED Director Houle, that Community Policing Funding be referred to the 2014 budget discussions.

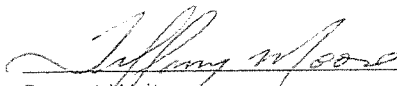
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The Citizens on Patrol Society, District 69 apply annually to the D69 Community Justice Select Committee Grants in Aid program to obtain funds to compensate the Society members for the gasoline usage in their personal vehicles during patrols. Citizens on Patrol Society, District 69 has submitted a request to the D69 Community Justice Select Committee Grants in Aid for \$3,232 for 2014. This report deals with an additional funding request that is separate from the existing funding in place for the Citizens on Patrol Society, District 69.


The Action Areas of the 2013-2015 Strategic Plan supports providing additional funding for Crime Prevention Programs in Oceanside but also encourages fiscal responsibility.

RECOMMENDATIONS:

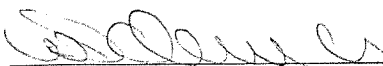
That this report on the Additional Funding Request for Crime Prevention Programs in Oceanside be received for information and be forwarded to the 2014-2018 Financial Plan discussions for consideration with other funding requirements of the Regional District of Nanaimo.



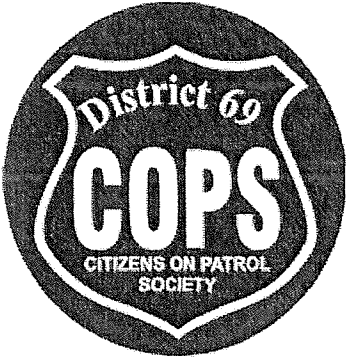
Report Writer



C.A.O. Concurrence



Director Concurrence



FUNDING PROPOSAL FOR CRIME PREVENTION PROGRAMS IN OCEANSIDE

Prepared by:

Corporal Jesse Foreman

Non-Commissioned Officer in Charge of Community Policing

Oceanside RCMP

“Police, at all times, should maintain a relationship with the public that gives reality to the historic tradition that the police are the public and the public are the police; the police being only members of the public who are paid to give full-time attention to duties which are incumbent on every citizen in the interests of community welfare and existence.” - Sir Robert Peel

Author Introduction:

My name is Corporal Jesse Foreman. I am the R.C.M. Police officer in charge of Community Policing for the communities of Oceanside. I am writing this application on behalf of the 138 dedicated volunteers who run the two Community Policing Offices and the Crime Prevention Programs in the Oceanside area.

Mission Statement:

Oceanside Community Policing is focused on encouraging and helping Oceanside residents to be engaged and active in promoting a safe community. Community Policing is a partnership between the Royal Canadian Mounted Police and the Communities of District 69.

Background:

After attending a stakeholders meeting on February, 19th, 2013 it was apparent that officials of the Regional District of Nanaimo (RDN), the Town of Qualicum Beach and the City of Parksville wanted to expand and promote Community Policing in the Oceanside area. The stumbling block (as with most initiatives) is funding. There was a preliminary group consensus reached determining that, sustainable, annual funding was needed in order to grow and expand Crime Prevention initiatives. It was apparent that stakeholders did not want to be approached randomly and every time funding was needed for a specific program or initiative. Rather, the stakeholders wanted to be approached annually with a full operations budget proposal for Crime Prevention Programs and Community Policing Initiatives.

The other item that became apparent was the fact that there was confusion as to what Community Policing means and what programs are offered. Stakeholders did not distinguish between Citizens on Patrol (COPS) and Community Policing Office (CPO)volunteers. Stakeholders often wondered why these different groups were both requiring funding and grants in aid.

Overview:

The RCMP in Oceanside has been involved with organized Community Policing since 1994. There are two Community Policing offices in the Oceanside area, one in Parksville and one in Qualicum Beach.

“Community Policing Offices of District 69” is a registered charitable Organization BN# 867509176RR001. The other major Society in Oceanside offering crime prevention is the **“Citizens on Patrol Society of District 69”** (COPS). Although the COPS are a separate society that work closely with the volunteers at the Community Policing Offices, they operate under their own budget and Board of Governance.

A total budget requirement of **\$40,220 dollars** is required in order to maintain and enhance all Community Policing initiatives. This budget is based on the current model in which the Town of Qualicum Beach and the City of Parksville continue to offer the in-kind donation of office space for their respective Community Policing Offices.

In order to avoid confusion the budget will be broken into two (2) separate proposals that describe the programs and why the funding is needed.

Oceanside Community Policing (OCP): Funding needed \$30.220

Brief Program descriptions and services provided by Oceanside Community Policing.

MEDICAL ALERT KIT: These Kits act as a storage area for people to leave their important medical information so it is readily available for Emergency Responders. The kits are made and provided through the Community Policing Offices. The importance of this program has been enhanced by the presentations being done by an ambulance attendant and volunteer Firefighters in our district. The Kit is an essential tool for anyone taking prescription medications, and is modelled after the Vial of Life program. OCP is also working with Emergency preparedness Program to include the MAK pack in Grab and Go bags in all emergency kits. Local pharmacies have asked for demonstrations in their store, and at local events.

BLOCK WATCH: This Crime Prevention Program has increased again this year, with education and promotion we anticipate including a great many more housing areas in the program. With an increase in vandalism and petty crime in the area the value of Block Watch has been reinforced. Household Insurers offer a reduction in insurance rates to residents taking part in a Block Watch program. Blockwatch is starting to expand into all areas of Oceanside.

CHILD IDENTIFICATION: This valuable program is available for all children, including teens. OCP holds Child ID clinics as often as 5 times per year, and will arrange to do the printing in our office in special circumstances. OCP volunteers continue to fingerprint approximately 300 - 400 children each year.

KEEPING IN TOUCH: Daily contact is made to seniors who live alone, have had medical problems, and often to people who have no other contact with the community. Calls are done EVERY day of the year. The Program is responsible for providing medical assistance to clients who have had falls or medical emergencies, and therefore has perhaps saved lives.

GATEKEEPERS PROGRAM: This 24 hr. Hot Line is available to persons, who know of, or suspect that someone they know is the victim of abuse be it financial, physical, mental or self abuse. Responders will refer to appropriate designated agencies to get immediate help. Our volunteers monitor the phone during business hours and a team share the afterhours monitoring. The program has had excellent rapport with the Victims Services, and the Ambulance Services who work with us to curb the cycle of abuse.

SENIORS SAFETY: As a community with a large population of seniors, our focus is on providing programs and information to enhance the lifestyle of seniors. Presentations are delivered to OAP groups, Legions, Apartment buildings, and Newcomer groups. A recent addition to the Seniors Safety Awareness is a Safe Driving event for Scooter riders, and continuing presentations with regard to frauds and scams geared to the senior population.

SCOOTER RODEO(s): The Oceanside Community Policing Offices and the RCMP now organize, sponsor and implement a Scooter Rodeo Program. The focus of the event is to promote, inform and demonstrate safe practices for seniors operating scooters and electric wheelchairs. The second annual event held in June of 2012 was a huge success and included partnerships with local businesses and ICBC. There are plans to keep growing the event as our aging population has a need for this information and exposure. With growing the event, the need for advertising, prizes and the printing of a large quantity of materials will become a necessity. There will also be the need to devote a significant amount of volunteer hours to make these events successful.

BICYCLE RODEO(s): The Oceanside Community Policing Offices and the RCMP now organize, sponsor and implement bicycle safety rodeos within the District 69 area. The events focus on bicycle safety including how to ride safe, helmet use and hand signals. Since getting involved with promoting bicycle safety there has been an overwhelming desire from schools, community groups, parks and recreation and service clubs to do more events. The RCMP has conducted 3 bicycle safety rodeos in the first half of 2013. These events need volunteers as there are several staging areas and courses for children to ride through. In consultation with the volunteers, it was decided that a large scale bicycle rodeo should be an annual event. On August 10th the first annual Oceanside Summer bike Rodeo was conducted. The event was offered to every child in the Oceanside area between 3-11 years of age. It was extremely well attended!

FANOUT PROGRAM: This program is vital to ensuring the Businesses of District 69 (Oceanside) are alerted in a timely fashion to criminal activity in their area of business. A copious amount of volunteer hours are contributed to ensure the business file is up-to-date with contact information and the program is continually being promoted to bring more businesses on line. Currently there are over 400 businesses registered with the Fanout program. The program is in the midst of a full re-vamp in which the database is being updated and changed from a fax based system to an e-mail system. This way, the Oceanside RCMP can use this database to get real time information, warnings and alerts to the business community. The program went 'live' in July of 2013 with the first business e-mail sent.

BUSINESS PROPERTY REFERENCE: This program is managed by RCMP and supported by Community Policing Volunteers by obtaining and maintaining Business Property profiles to aid the RCMP in emergency response. As well, the program provides police with current updated information on emergency contact information for business representatives.

SAFETY BEAR: The Safety Bear program is an important community participation in schools, pre schools, and community events. It is a symbol of safety for children and a valuable learning tool.

The Safety Bear also attends Special Events held by Community Policing for children in the community.

Request for Funding of Operating Expenses for

Community Policing Offices of District 69 AKA Oceanside Community Policing (OCP)

Projected In-Kind

	Proposed 2014 & Beyond
Office Space QB & PV	\$ 105,000
Utilities (QB & PV) phones, fax	\$ 3,500
Weekly advertising Oceanside Star (Bluenose motors) 52 x \$200	\$ 10,400
Total of In-Kind	\$ 118,900

Projected Revenue

	Proposed 2014 & Beyond
Donations	\$ 1,400
Other Income (primarily GST rebates)	\$ 220
Total of Revenue	\$ 1,600

Projected Expenses:

	Proposed 2014 & Beyond
Administration:	
Bank Charges ¹	\$40
Directors' & Officers' Insurance ²	\$400
Computer Supplies ³	\$200
Computing/Internet/Website	\$1,500
Meetings ⁴	\$400
Licences & Dues ⁵	\$400
Office Supplies ⁶	\$500
Photocopying (paper and cartridges)	\$500
QB Photocopier maintenance agreement	\$400
Postage	\$50
Repairs & Maintenance ⁷	\$80
Telephone ⁸	\$560
Capital Asset Purchases ⁹	\$200
Program and Event Vehicle and Insurance ¹⁰	\$6,000
New Banner and Promo material with logo	\$1,000

Volunteer Management:

Awards ¹¹	\$400
Volunteer Recognition ¹²	\$1,600
Supplies – Non-capital ¹³	\$450
Training Travel & Accommodation ¹⁴	\$2,000
Development & Printing of training manuals ¹⁵	\$600
Volunteer Orientation Package	\$400
Volunteer ID photo cards	\$100
Uniforms and safety vests	\$1,100

Operational Programs:

Blockwatch: Dues, Printed Materials and Office Supplies	\$1,450
Medical Alert Kit: Forms, brochures, labels, vials and bags	\$535
Keeping in Touch: Brochures, advertising, Event-hall, supplies, cards, & postage	\$400
Crime Prevention & Safety for Seniors 50 @ \$2.00	\$100
Gatekeepers: 24 hour monitored phone	\$480
Child Identification Program: handouts and cleanup materials	\$ 50
Fanout Business Alerts: Pamphlets/emails/stamps/office supplies	\$200
Business Property: Paper, envelopes, printer ink:	\$100

Special Community Events:

Newspaper advertisements: 4 @ \$175.00	\$700
Volunteer care – refreshments	\$1,000
Children’s prizes, pins, stickers, etc. for special events.	\$1,800
Bike Rodeo: supplies traffic cones and signage	\$200
Scooter Rodeo: Ads, food for participants	\$100
Volunteer Fair: Registration	\$ 25
Safety Bear: suit cleaning, cooling vest and maintenance	\$500
Parades, Family days, kidfest, kitefest and other community events	
20% Contingency and future development of programs and expenses	\$5300

Total of Expenditures **\$ 31,820**

FUNDING REQUIRED (Projected Expenses – Projected Revenue) **\$30,220**

¹ Bank Charges – cheques ordered for the account

² Directors’ & Officers’ Insurance – liability coverage for members of the Board of Directors in the event of a lawsuit.

³ Computer Supplies – printer cartridges, toner, and software.

⁴ Meetings – coffee and snacks for general meetings for members, including the annual general meeting

⁵ Licences & Dues – memberships in the BC Crime Prevention Association and the Oceanside Volunteer Association, filing fee for the society annual report, domain name renewal fee and web hosting fee

- ⁶ Office Supplies – stationery and other supplies, printing crime prevention notices, printing the Society’s brochure that promotes the society and is used in recruiting new members
- ⁷ Repairs & Maintenance – minor repairs to office equipment
- ⁸ Telephone: PV office main phone
- ⁹ Capital Asset Purchases – purchase of items such as printer/fax, office furniture, phones or computers that are classified as capital assets.
- ¹⁰ Vehicle Lease and Insurance, Grant of \$5600 received from City of Parksville for Aug 2013 renewal date.
- ¹¹ Awards - primarily service awards recognizing 5, 10, 15 and 20 years
- ¹² Volunteer Recognition – a catered dinner for active members (based on 60 members at \$25 per person)
- ¹³ Supplies – Non-capital – safety vests, flashlights, first-aid kits, flares, etc used in patrol kits, but excluding any items that are capital assets
- ¹⁴ Training – cost of sending a number of members to seminars or conferences related to crime prevention and aimed at enhancing our members’ skills
- ¹⁵ Design and Publishing of Training Manual.

CITIZENS ON PATROL (COPS): Funding needed \$10,000

Brief Program descriptions and services provided by Citizens on Patrol.

COPS are a well organized and highly motivated group of over 100 volunteers in the Oceanside area. They work in 5 geographical groups (patrol zones) which include, Nanoose, Parksville, Qualicum Beach, Arrowsmith and Bowser. They truly are the ‘eyes and ears’ of the community. COPS work closely with the Oceanside RCMP and patrol areas and ‘hot-spots’ identified to have problems. They also work on road safety initiatives and projects with ICBC. COPS perform 2 person vehicle patrols, foot patrols and work on other special projects. All COPS have passed an RCMP criminal records check as a requirement for membership and inclusion.

Request for Funding of Operating Expenses

Citizens on Patrol Society, District 69 (the Society) is requesting \$5,000.00 on an annual basis, with these funds to be used toward general operating expenses. This requested amount is over and above funds currently requested through the Regional District of Nanaimo’s Community Safety Grants-in-Aid Program, where these funds are used to compensate the Society members for the gasoline usage in their personal vehicles during patrols (this additional grants-in-aid funding is projected to be approximately \$5,000 per year).

The RDN grants-in-aid program has been used by the Society since 2006 to provide gasoline compensation to its members, and this expense continues to be the largest single operating expense for the Society. The Society remains hopeful that future applications for these grants-in-aid will continue to be successful since the loss of such funding could have a major negative impact on the Society’s ability to get patrols out.

In addition to the grants-in-aid funding, the Society has received volunteer recognition grants from ICBC. These grants are not, however, assured on an annual basis, and they are not intended to cover general operating expenses.

The remainder of our society's funding is through unsolicited donations. None of these donations are assured on an annual basis, and the recent downturn in the economy has seen a decrease in the donations as well. Our society has also, at times, made applications to the City of Parksville and the Town of Qualicum Beach for funding to send members to a training conference held annually for several years in Nanaimo; but, again, such funds cannot be used toward general operating expenses. Thus, it would be highly desirable to have an ongoing source of funds for general expenses.

Bank Balance: The Society's year-end bank balance fluctuates somewhat from year to year depending on the level of donations and the expenditures required, but we have been fortunate to maintain this balance in the range of \$14,000 for several years, with the balance at December 31, 2012 being \$14,222.49. While this balance is reasonably healthy, the Society feels it is prudent to have sufficient funds on hand to cover one year of operating expenses should donations and grants be unavailable to us. The average of our operating expenses from 2010 to 2012 was \$11,555.71 and thus the balance on hand at December 31, 2012 would be sufficient to cover this level of operating expenses.

Projected Revenue

	Proposed 2014 & Beyond
Donations	\$1,000
RDN Community Safety Grants-in-Aid	\$5,000
ICBC Volunteer Recognition Grant	\$500
Interest Income	\$30
Other Income (primarily GST rebates)	\$165
Total	\$6,695

Projected Expenses

	Proposed 2014 & Beyond
Awards ¹	\$400
Bank Charges ²	\$40
Batteries	\$40
Computer Supplies ³	\$200
Gasoline Compensation ⁴	\$5,000
Directors' & Officers' Insurance ⁵	\$400
Licences & Dues ⁶	\$300
Volunteer Recognition ⁷	\$2,000
Meetings ⁸	\$400
Office Supplies ⁹	\$500
Photocopying	\$100

Postage	\$25
Repairs & Maintenance ¹⁰	\$80
Supplies – Non-capital ¹¹	\$450
Telephone ¹²	\$560
Training ¹³	\$1,000
Capital Asset Purchases ¹⁴	\$200
Total	\$11,695

**FUNDING REQUIRED (Projected Expenses – Projected Revenue) \$5000 total
*if RDN Community Safety Grants in Aid remains consistent at \$5000***

- ¹ Awards - primarily service awards recognizing 10, 15 and 20 years
- ² Bank Charges – cheques ordered for the account
- ³ Computer Supplies – printer cartridges, toner, software
- ⁴ Gasoline Compensation – member drivers are compensated on a kilometre basis to cover the cost of the gasoline used in the personal vehicles while on patrol
- ⁵ Directors’ & Officers’ Insurance – liability coverage for members of the Board of Directors in the event of a lawsuit.
- ⁶ Licences & Dues – memberships in the BC Crime Prevention Association and the Oceanside Volunteer Association, filing fee for the society annual report, domain name renewal fee and web hosting fee
- ⁷ Volunteer Recognition – a catered dinner for active members (based on 80 members at \$25 per person)
- ⁸ Meetings – coffee and snacks for general meetings for members, including the annual general meeting
- ⁹ Office Supplies – stationery and other supplies, printing crime prevention notices, printing the Society’s brochure that promotes the society and is used in recruiting new members
- ¹⁰ Repairs & Maintenance – minor repairs to equipment used in patrols
- ¹¹ Supplies – Non-capital – safety vests, flashlights, first-aid kits, flares, etc used in patrol kits, but excluding any items that are capital assets
- ¹² Telephones – one-year pay and talk cards purchased for five cell phones
- ¹³ Training – cost of sending a number of members to seminars or conferences related to crime prevention and aimed at enhancing our members’ patrolling skills
- ¹⁴ Capital Asset Purchases – purchase of items such as cell phones or computers that are classified as capital assets.

Future Considerations:

There is so much room for growth and further programming with Community Policing. Every new and reinvigorated program has been met with significant budget shortfalls. All funds that existed due to the past acquisition of Gaming Grants is now gone. Community policing was not successful in acquiring a Gaming Grant this year (new and stringent conditions) and has therefore run out of funds.

The community, local government and partners have repeatedly asked Cpl. Foreman why certain programs are not being done in this area? The answer is simple, there is no money to work with.

With adequate annual funding there can be expansion of programs, implementation of new programs, training and recognition of volunteers. Oceanside is in need of this model of funding. A model that works well in the neighbouring communities of Nanaimo, Port Alberni, The Comox Valley and the regions of Cowichan.

The funding proposed allows for growth and accommodation of future needs.

Thank you very much for your consideration!

Corporal Jesse Foreman



Arrowsmith Community Justice Society
727 W. Island Highway, Parksville, BC, V9P 1B9
Phone: (250)-954-2968

NOTABLE ACHIEVEMENTS 2013

1. ACJS has partnered with Down Town Community Court in Vancouver.

- If Vancouver has an offender for a minor crime from Vancouver Island and they are in the catchment area of ACJS, then the matter is referred to ACJS and the outcome reported to Vancouver Down Town Community Court.

2. ACJS has applied to the crown council for a Memorandum of Understanding. This memorandum would enable crown to refer cases directly to ACJS.

3. Through ACJS other local area charities also benefit. For 2013, \$3,493.00 was donated to other local charities. A list of the charities is supplied at end of report. Please note that tracking of donated funds to other charities only began in 2012.

- Community Service hours for 2013 totalled 248. These hours are calculated at \$10.00 an hour. This totals \$2,480.00 in service to local volunteer agencies and or local businesses.

- Monetary restitution to victims of crime totalled \$883.00.

Arrowsmith Community Justice continues to serve the Oceanside community with pride and respect.

Linda Cherewyk

Program Co-ordinator



ACJS has collected thru conference resolutions		
	2013 Total	TOTAL (Since 2001)
Community Service Hrs	248 (\$2,480)	\$30,575
Monetary Restitution	\$883.00	\$34,449
Donations to Agencies**	\$3,493.00	\$ 4,868
** victims did not want the money and asked that the restitution be donated to specific agencies		
- Community Service hours equals \$10		

ACJS Case Report

Statistical Report for RJ & CDR

2002 - 2013

Arrowsmith Community Justice Society

Caryl Wylie – Director

Linda Cherewyk - Coordinator

Recap:

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	TOTAL
# Cases Referred	44	36	39	22	25	22	7	20	15	19	30	54	333
# Cases rejected	3	4	8	11	4	7	1	8	5	6	6	8	71
# Offenders	66	46	54	28	35	39	11	27	27	31	41	66	471
# Offenders Rejected	3	4	9	14	6	9	1	9	9	14	10	10	98
Male	49	30	38	18	21	30	5	16	23	27	34	49	340
Female	17	16	16	10	14	9	6	11	4	4	7	17	131
Minor	0	0	2	0	0	0	0	1	0	1	0	12	16
Youth	55	25	39	22	29	33	10	21	21	23	21	16	315
Adult	11	21	13	6	6	6	1	5	6	6	20	35	136
# conferences held	41	32	31	11	21	15	6	12	10	13	20	46	258
# incompletes	2	0	0	0	0	2	0	5	1	0	1	1	12
# repeat offender	3	4	8	1	1	2	0	3	1	1	1	1	26

Location breakdown: to Report date

	Parksville	Qualicum	RDN	Other
Offence occurred here:	62%	26%	11%	1%
Offender lives here:	49%	25%	21%	5%

Statistics done for calendar year. Recap of each year's statistics follow cases for that year. These figures have been compiled by *Caryl Wylie*, ACJS Director; 6 Sep 2012.

Arrowsmith Community Justice Society
Annual Budget
November 1, 2013 - October 31, 2014

	EXPENSES		INCOME	
TOTAL EXPENSES/INCOME	\$76,465.00		\$76,465.00	
EXPENSES (Cash)	\$28,065.00			
Bank Charges & Filing fees	\$150.00			
Contract Services – Coordinator	23,000.00			
Insurance	515.00			
Public Relations	100.00			
Postage	50.00			
Resource Materials (Books, Brochures)	250.00			
Stationery	250.00			
Transportation Costs - Coordinator	500.00			
- Volunteers	750.00			
Training	1,500.00			
Volunteer Expenses	1,000.00			
Projected INCOME (Cash)			28,065.00	
Municipal Grant (Parksville, QB & RDN)			25,000.00	
<i>Funds to be generated from Grants</i>			<i>3,065.00</i>	

EXPENSES (In-Kind)	\$48,400.00			
³ Accountant	900.00			
^{1&2} Conference Exp. (Rooms/Refreshments)	900.00			
¹ Meeting Rooms (Board Related)	150.00			
¹ Office Space @ \$2000/month	24,000.00			
¹ Postage & Courier	250.00			
⁴ Resource Materials (Books, Brochures)	200.00			
¹ Stationery	1,000.00			
¹ Telephone/Fax	1,000.00			
⁵ Volunteer Hours @ \$20/hr	20,000.00			
Projected INCOME (In-Kind)			\$48,400.00	
¹ RCMP			\$26,550.00	
² Community Venues (Church, Halls)			750.00	
³ Brent Johnson, CGA			900.00	
⁴ Knights of Columbus			200.00	
⁵ Volunteers (estimate 1000 hrs @ \$20)			20,000.00	

Caryl Wylie

Caryl Wylie, Chairperson
Oct 16, 2013

CHARITABLE YOUTH GROUPS - OCEANSIDE AREA

Administration Office 886 Wembley Road, Parksville

1. Mount Arrowsmith Salvation Army - Send a youth to Camp

Youth are sponsored by the Salvation Army to attend a Camp on the Mainland during the summer months

2. Mount Arrowsmith Salvation Army - Youth Lunch Program

Youth are provided with lunch during the school year .

3. Mount Arrowsmith Salvation Army - Mother Milk Program

Low income families are provided with milk for infant and toddlers.

4. Knox United Church - 345 Pym Street, Parksville (YIKES Program)

Knox United Church "Youth In Knox Exploring Spirituality," is a group for youth ages 15-16 years of age. Knox United Church sponsors youth attending a conference called "Evolve Youth Conference" on the mainland once or twice a year. The conference is expensive and some families can not afford to send their children. The church provided that funding.

5. Society Of Organized Services- 245 West Hirst, Parksville

a. Grad Wear - a program that supports upcoming graduates to receive formal clothing and accessories (gently used) (male and female) so that they can enjoy an affordable graduation (the cost is \$5.00)

b. Teen Night - A program for youth Grades 9 to 12 where youth can come together for dinner, creative projects, games and more. Guest speakers are invited for specific relevant topics.

c. Middle School Night A program for youth in Grades 6,7, and 8 where friends can come together in a safe nurturing and friendly environment to have dinner and fun while enjoying field trips, music, games and creative projects.

d. Recreation Assistance for Children and Youth A program that assists with the registration costs for recreational activities for children and youth in School District 69.

e. Caring For Kids At Christmas Community donations and volunteers allow SOS to provide toys and grocery store gift cards to help families in need at Christmas.

CHARITABLE YOUTH GROUPS - OCEANSIDE AREA

FAMILY RESOURCE ASSOCIATION - 181 Sunningdale Road W, QUALICUM BEACH

- a. **Sexual Abuse Intervention Program**
- b. **Speech and Language Program**
- c. **Supported Child Development**
- d. **Youth Services and Family Coinciding**

Oceanside RCMP Victim Services

2013 Annual Report



Oceanside RCMP Victim Services
727 West Island Highway
Parksville, BC
V9P 2N8

Prepared by:

Lynda Ewert, Program Manager

Overview

The Oceanside RCMP Victim Services Society continues to be an essential service which provides valuable support to the local RCMP and the Oceanside community. The 2012 fiscal year brought with it an all time high of new clients. Our Victim Services team was happy to meet this challenge and in doing so continued to serve the community of Oceanside in the unique way that we do. It is without a doubt that the dynamic service delivery we provide to this community would not be possible without the support of our local government and the close partnership shared with our local police.

Services Offered

24 hour on-Call Support: Our Victim Services (VS) Team is on call 24/7, to be called out at the discretion of our local RCMP. Our workers will attend homes, crime scenes, the hospital, the Detachment or wherever it is we are required in order to provide immediate support to victims of crime or trauma. When on scene VS workers will provide crisis support reducing the long term symptoms of trauma and increasing the victim's sense of safety.

Information: This is the most powerful tool that can be provided to a victim. We provide our clients with educational trauma information to aid in their recovery. As well, we provide a lot of Justice System support, in the form of file updates and general information regarding the criminal law process.

Court support: This a very demanding service which requires one of our two staff to be in Nanaimo in order to provide support to the client. This can be required at a preparatory meeting between the victim and Crown Counsel, orientating the victim to the court house in Nanaimo, or being there with the victim during the trial or other various hearings.

Referrals: VS workers seek to match the unique needs of victims to all the appropriate services at their disposal. This requires our program to stay fluent with all the various programs available in the community of Oceanside. This is done through the positive working relationships we maintain with our community partners.

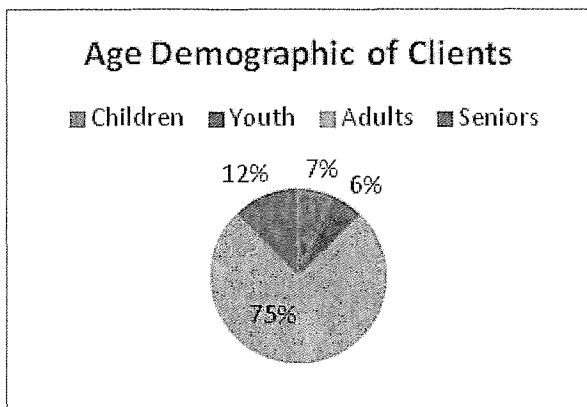
Short-term emotional support: VS workers will continue to offer support and empathy to victims of crime and trauma, over the phone or in person. This support is made available according to the client and their family's needs.

2012 Year in Review at a glance:

- 304 new clients;
- An all time high new client load for the program;
- An increase of 26% from 2011's 241 new clients;
- An increase of 54% from 2009's 197 new clients;
- July and August were the biggest months, accounting for 25% of the years new clients;
- An average of 26 new clients per month;
- Approximately 200 ongoing clients ;
- Sudden Deaths accounted for 25% of total client load;
- 72% of new clients were female;
- 75% of new clients were adult age;
- 358 referrals made out to other support agencies;

Clientele Demographics

The majority of our clients are female, and a majority are of adult age. In regards to age, when the primary victim is an elderly parent or a vulnerable child, we will often support them via their adult caregiver and as such children and senior aged victims are underrepresented. In our efforts to connect our clients to all the support resources available to help them, we made just over 350 referrals to other agencies last year. The vast majority of these referrals were to local agencies as well certain provincial programs such as the Crime Victim Assistance Program. We are very lucky to live in such a resources rich community, that we can connect so many people to support they need, right here in the Oceanside area.

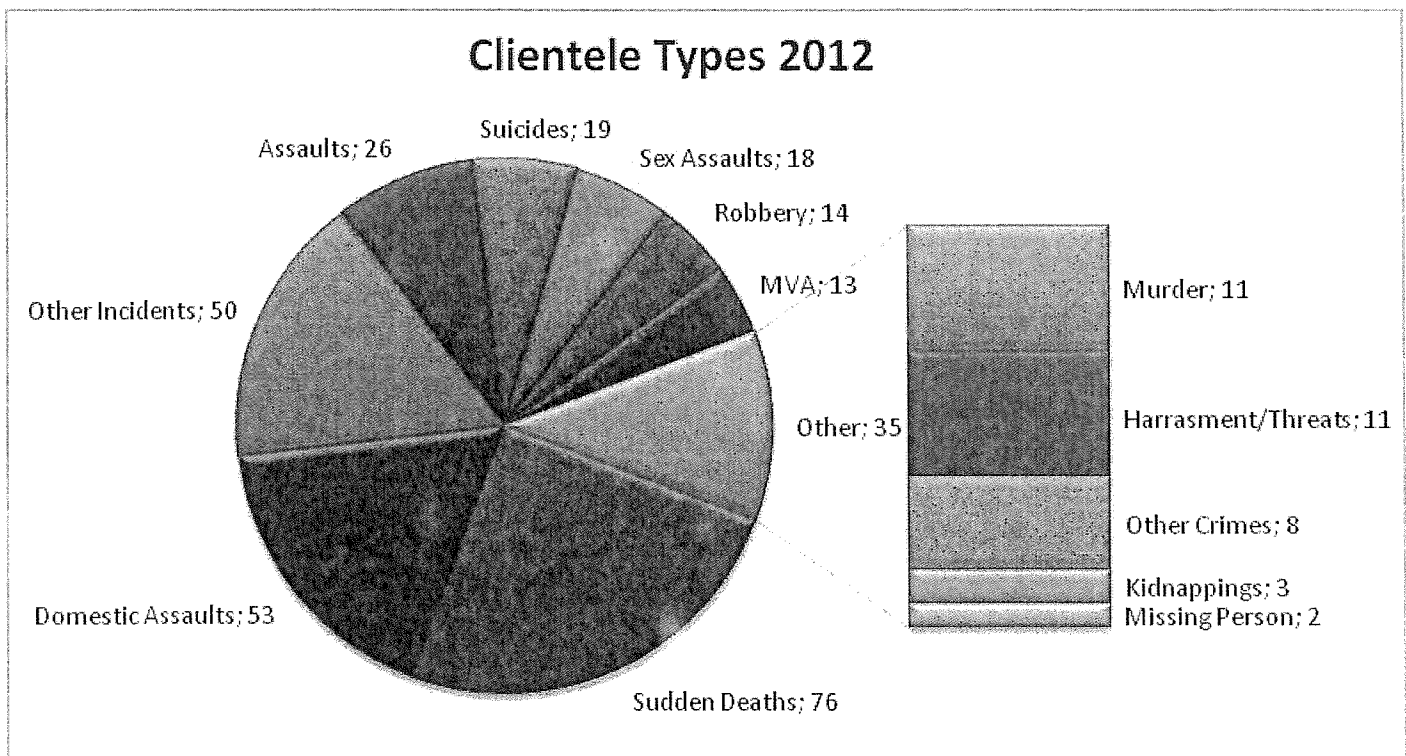


Clientele Types

The fiscal year of 2012 was a busy year for the Oceanside Victim Services Society. We received 304 new clients, an all time high for the program. This is up 25% from 2011 and up 54% from 2009. July and August were our busiest months, accounting for 25% of the total client load. At the end of the fiscal year there were approximately 200 ongoing clients. The most frequent client types were:

- Sudden Deaths, accounting for 25%;
- Domestic Assaults accounting for 17%; and
- Other Incidents accounting for 16%.

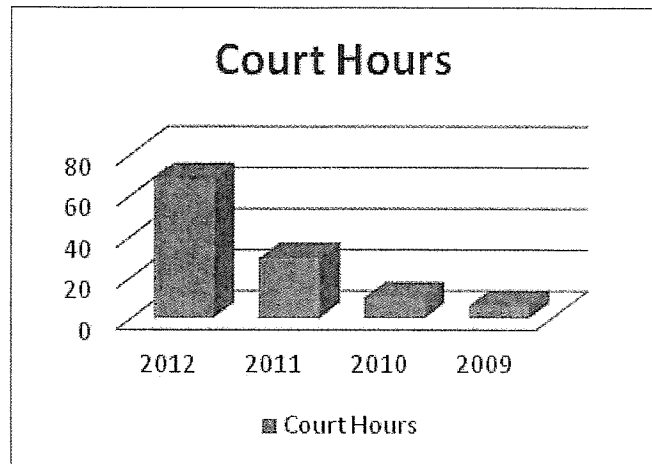
“Other Incidents” are police files where there is police intervention but no criminality. The majority of these are Family Disturbances and Breach of Peace files. These files often involve couples or families struggling with dynamics such as, parenting issues, addictions, domestic conflicts, family break up and mental health issues. In these cases Victim Services will work with these families to connect them to the appropriate support resources, be their advocate to these agencies and provide trauma support where applicable.



- “Suicides” includes: Completed and attempted
- “Murder” includes: Murder; Manslaughter and Attempted Murder
- “Kidnapping” includes: Kidnappings and Abductions

Court Support

There was a considerable increase in the need for our court support in 2012. We provided 68 hrs of court support and provided more assistance with Victim Impact Statements; Witness Orientation and Court accompaniments than in years past. In regards to the increase in court hours, we attribute this increase to two factors: one being that in 2012 we had a number of youth sexual assault files going to court. These victims are particularly



vulnerable and require more time and support, as do their caregivers. The second factor is that of time and resources. In years past when there was only enough funding for one staff person in the office at a time, there was little to no opportunity to have staff support clients at the Nanaimo Court House. Since receiving the increased funding from local government in 2010, we are now able to provide this service, and as the statistics show, it is a much needed service. The court process can be very demoralizing and traumatizing for victims, especially our youth. It is so important that victims and their families are provided the support they need in advance of court, during and after, in order not to be re-victimized.

Call Out Hours

Oceanside RCMP VS provides 24/7 On-Call support. At all times at least one VS team member is available for callout upon RCMP request. When volunteers are on-call, there is always a staff member available as their back up for more serious files. In 2012 there were a total of 39 callouts, of which, staff were required to attend 32. Staff are not paid for attending callouts. This is due to budgetary limitations. Instead, staff are compensated with time in lieu. A rough estimate of what the dollar value of those unpaid callout hours would be is \$8,000. We are very proud of the fact that we provide this service, despite the lack of financial compensation. We feel it an integral facet of our service delivery. It is not a mandated service, and some of our neighbouring VS programs have discontinued the service due to its toll on the program and staff. We are finding the program at a tipping point in this regard, largely due to the fact that the compensation is in the form of time. Staff can only take time off when their duties at work are met and when one of the two staff are available to man the office and be available for on-call. In regards to workload, the current workload makes it near impossible to take the time

that is owed to us. In regards to staffing the office, on occasion in order for staff to take their time owed, we have to pay one of our volunteers relief hours to staff the office. Otherwise, without the funds for overtime, one of the two staff have to work the additional hours, just adding the existing problem of being owed more time and we can recoup.

Volunteers

At the beginning of the 2012 fiscal year, our VS team comprised of 2 part time staff and 3 volunteers. As our caseload has increased, the need for volunteer labour has increased, especially for callouts. At the close of the fiscal year a new volunteer was entering the interview process and we are hopeful that her RCMP clearance will be completed and approved by the end of the 2013 fiscal year. Training and maintaining volunteers is a costly investment. It takes a lot of staff time to provide volunteers with the attention and continued support they deserve. We feel it is a wise investment, as last year our volunteers donated roughly \$11,000 worth of office hours, and a roughly \$13,000 worth of hours called out on-scene. They are wonderful people and we look forward to this new volunteer joining the team.

Training

In 2010 and 2011 the program invested in training for the Assistant Program Manager at the Justice Institute of BC. As such, training for this year was cut back. This year one staff attended the annual Victim Services Training Symposium in Burnaby and we held a Grief Workshop for the staff and volunteers, here in Parksville led by a local Grief Specialist from the Qualicum First Nations.

Funding

The British Columbia Ministry of Justice (MOJ) oversees Police-based Victim Services across the province. In 2006, they assessed our program as requiring a 1.5 position. As you can imagine, the size of the community and RCMP detachment, as well as the needs of Oceanside have all grown considerably since then. Nonetheless, at that time, they set the budget for our program at \$105,000, they contributed \$52,500 and mandated local government fund the remaining half. In 2010, the MOJ increased their funding from \$52,500 to \$53,460. That same year, our local government increased their funding from \$30,000 to \$52,500. With that increase in funding the program then had the means to employ the 1.5 position, split between two part

time staff. Since then, our client intake has increased by 54% from 197 new clients in 2009 to 304 in 2012. This increase has had a significant impact on our ongoing case load, which hovers at approximately 200 ongoing clients. Thanks to the funding from our local government, we have been able to meet this increased need for our services. This would have been impossible without that support. We are so grateful for this funding, as it has allowed us to come even closer to meeting the needs of our community. As we look to the future we do worry the needs of the community are beginning to exceed that which the program can absorb. We will continue to stretch every dollar and save wherever we can, such that we can continue to do the work we believe so much in at the quality of service that this community deserves.

Summary

In summary, the Oceanside RCMP Victim Services Society continues to grow, both in terms of our client load and the need for our services in the community. The sustainability of our Victim Services program has been greatly improved thanks to the continued funding from our local government. Our program is keeping up with these growing demands and hopes to continue to do so well into the future. Our team here at Oceanside RCMP Victim Services provides unique, multi-faceted, round the clock aid. We consider it a privilege to serve our community in this way and we thank you for your continued support.

Annual Expenditure April 1, 2012 - March 31, 2013

Program Revenues:

BC Ministry of Justice ¹	\$ 53,460.00
Regional District of Nanaimo	52,580.00
In Kind Value (RCMP – Office Space, telephone)	15,800.00

Program Expenditures:

Staff Wages & Benefits (12% in lieu)

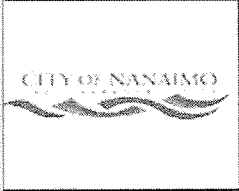
Program Coordinator	\$ 51,691.32
Assistant Program Manager	41,395.20
C.P.P. & E.I.	6,711.24
Relief Worker	353.41

Program Delivery Costs:


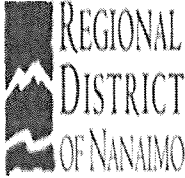

Staff & Volunteer Training	\$ 655.87
Mileage	1,612.00
Office Telephone (in kind)	3,800.00
On-Call Phones	1,773.96
Volunteer Appreciation	400.00
Office Space & Facility Costs (in kind)	12,000.00
Bookkeeping	790.00
Worksafe	657.00

TOTALS	EXPENSES	\$121,840.00
	INCOME	\$121,840.00

¹ The Ministry of Justice contract guidelines require that at least 80% of the provincial funds be allocated towards "Salaries and Benefits" for the direct service delivery.



Nanaimo RCMP Victim Services



Who are we?

- Two full time paid staff, manager and assistant manager, and one part time worker
- Ten volunteers
- On call, during and after hours, during the week – at the request of the police

Victim Services

- Nanaimo's program has been in existence since 1989
- Funded by the Ministry of Justice (Victim Services Division) the City of Nanaimo, Regional District of Nanaimo, in-kind from the RCMP and private donations
- Currently over 150 police forces in BC, RCMP & Municipal, have a funded Police Victim Services unit.

What we do and how we assist the client.....

- Emotional support
- General Information
- Practical assistance and support
- Criminal Justice related information
- Witness orientation, preparation & court accompaniment
- Act as a liaison between the client & police
- Crisis Intervention

Types of Crime and other trauma we assist with:

- Abduction
- Arson
- Break & Enter
- Criminal Harassment/Stalking
- Family Problems
- Fraud
- Home Invasion
- Homicide
- Mischief
- Motor Vehicle Accident
- Robbery
- Sexual Assault/Abuse
- Spousal Assault
- Sudden Death
- Threats

How we assist the Police.....

- Assist the police with crisis intervention:
 - At the scene
 - Hospital
 - Residence of family members
 - Next of kin notification
 - Detachment

Crisis Intervention:

- Motor Vehicle Incidents
- Next of Kin Notifications
- Domestic Violence
- Sexual Assault
- Homicide
- Fire
- Sudden Death

VOCA – Victims of Crime Act 1996

The British Columbia Victims of Crime Act provides certain rights to victims of crime including:

- Victim Services
- Benefits and financial assistance for criminal injury
- How the criminal justice system works, the status of the police investigation and court case
- The administration of the offender's sentence
- Rights to privacy

Nanaimo RCMP Victim Services Statistics

January 01, 2012 – December 31, 2012

- * Client assisted - 608 (21% increase over last year)
- * Volunteer Hours in office & on call - 1,696
- * Full time staff worked an average of 35+ hours per week as well as on call after hours
- * Call out/Crisis Intervention – 25
- * RDN Clients – 51 (8.5% of total client files)

How to reach us:

Nanaimo RCMP Victim Services

303 Prideaux Street

Nanaimo, BC

Phone: 250-755-3146

Fax: 250-755-3140



QUESTIONS?

September 19th, 2013

Board of Directors,
Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC, V9T 6N2

To the Board of Directors for the Regional District of Nanaimo,

I am writing this letter to inform you on some progress being made on the E&N Trail and as a request for your continued involvement with the project. I believe this information will be useful in completing some of your organizations strategic plans and will allow you to leverage a relatively small investment into the project into contributions from other community partners, local business and the public.

The Situation

The City of Nanaimo has completed about 8 km or about half of the proposed "Rail Trail" through the city of Nanaimo. Currently it runs from about North Nanaimo Center to the southern tip of Terminal Park. Over the past few years the district of Lantzville has started to build their sections of trail and the RDN has plans to move forward with sections in the Oceanside region. Over the past year many groups including the District of Lantzville, the RDN, the DNBA, Tourism Nanaimo (NEDC), TransCanada Trail, VIU and the Greater Nanaimo Cycling Coalition have expressed interest in seeing the trail completed through our region with the intention of eventually linking our communities along the corridor with a cycling and pedestrian trail. These groups have been meeting with City of Nanaimo Staff to discuss how to best move this project forward. We understand that the biggest impediment to this project is capital so we agreed to form a fundraising partnership that would go into the community to raise awareness and funds called the Nanaimo Region Rail Trail Partnership (NRRT). We are working with the Island Corridor Foundation and they are allowing us to use their charitable structure to raise money; similar to what the YPN did to raise funds for the Train Station. The bank account is now open and we are asking our founding partners to come up with some seed money to get the fundraising campaign underway.

To get people out of their cars we need to provide safe and easy to use alternatives. Trails separated from roads allow pedestrians and cyclists of all levels to enjoy the trail for trips to work, the school, to the grocery store and for recreational activities. Our region is also very long north to south so a few key corridors are capable of covering the majority of our population.

The Structure and Roles

We are spending the fall in search of founding partners who are able to contribute some seed money into the Partnership. In 2014 it is our hope to start a larger public campaign to build support and funds in the community. We are planning to send out requests for partnership from the NEDC/Tourism Nanaimo, Rotary Clubs, Gryo Club, Lions Clubs, Kiwanis Clubs, YPN, VIU, Nanaimo Cycling Association, Nanaimo Hotelier Association, District of Lantzville and the Regional District of Nanaimo. All funding partners who join us in 2013 will have a seat at the planning table and will have a vote when deciding

REQUEST FOR PARTNERSHIP

NANAIMO RAIL TRAIL PARTNERSHIP

which sections of trail to prioritize for fundraising purposes. Each partner would have an equal vote at the table but funding partners can choose to restrict their contribution to a particular section of trail or focus on the section that the partnership deems to be most important. 10% (up to \$1,000) of each contribution can be used for general fundraising efforts. This allows the group like the District of Lantzville to put \$5000 into the project of which 4500 will be earmarked for their desired section while \$500 can be used for general fundraising.

The Partnership takes on the role of fundraising, soliciting in-kind donations and raising public and political support. The Partnership will also apply for grants available to registered charities, prioritize sections of trail for completion and will work with the City, RDN or Lantzville to issue the Requests for Proposals.

The City of Nanaimo (or District of Lantzville or RDN if outside of city limits) will receive the RFPs handle all construction supervision and will approve all engineering designs and traffic crossings. City staff will continue apply for Grants available to municipalities from other levels of government. It is our hope that the City will consider the Trail as a priority when looking at larger grants in the future such as the federal gas tax. The City also maintains the trail going forward.

The Island Corridor Foundation approves all engineering work to ensure it does not interfere with the transport Canada guidelines for trails along railways. The ICF holds the money in trust until requested by the city of Nanaimo (or other local government if outside of city limits) and approved by the partnership. The Island Corridor will also issue all tax receipts for those who choose to donate in cash or cheque instead of online.

The Vision

We want a trail along the E&N rail line from North Lantzville to the Airport (southern end of the RDN). This trail that would make use of our underutilized transportation corridor through our community to provide alternatives to cars. The Capital Region, Cowichan Valley and Comox Valleys are actively completing their "Rail Trail". The RDN is working on sections in the Oceanside area and the hope is to complete it in its entirety from Victoria to Comox on day. A biking trail up and down the island would quickly become one of the top spots in the world to explore on bikes which of course would have huge tourism and economic spinoff. We plan to build the trail one block at a time as money is available. Our first section of trail will be decided when the partners can meet in the fall but most groups are taking about starting at the existing block behind the train station and moving north and south from there. We also hope to reduce construction costs by being a charitable partnership and soliciting in-kind donations.

The Ask

Today we are asking all founding partners to come with \$15,000 payable to the ICF-Nanaimo Region Rail Trail by the end of 2013. We would like the Regional District of Nanaimo to be one of the founding partners. We are using these funds to build our fundraising website and for leverage when writing other grant applications.

REQUEST FOR PARTNERSHIP

NANAIMO RAIL TRAIL PARTNERSHIP

We also ask that the RDN communicate with other regions which are along the E&N rail line to discuss a shared vision for trails on the corridor. Going forward we may at times also require help with traffic crossings and will continue to work with City, RDN or Lantzville staff to make these crossing safe and cost effective.

What's in it for the RDN?

We feel that linking the trail through the region will dramatically increase the ridership and have a significant impact in reducing the amount of trips taken in vehicles. The City of Nanaimo and the Regional District of Nanaimo have already identified the use of the corridor as a strategic priority and the partnership has formed to help the city raise the required funds. We also feel that it would strengthen and Provincial and Federal support and grant applications as it would be solid evidence of community support and collaboration which should help bring more money to the region. Most likely the partnership will focus on the completing the trail through Nanaimo but it is our hope to expand it one day to the southern boundary of the Region to link up with the work that the Cowichan region is doing with their trails.

Logistics

Building commuter quality trails through an existing city is fairly pricey. We are lucky enough to not have to pay for the land we are building on so most of the costs associated with the trail will be the actual construction and getting the road and rail crossings done correctly, especially when going through downtown. The last block that was build cost (Fitz to Franklin) about \$135,000 and we expect that to be more or less the norm. There are blocks which are less expensive and some sections which are more expensive (Caledonia Park). In September all Trail Partners are meeting to vote on which section of trail should be tackled first (must debate importance versus feasibility).

Thank you for taking the time to review the above information. I would be available to present to the executive or the YPN membership if you feel it is appropriate. Please let me know if you have any additional questions I can help you with when making your decision to undertake this project.

Thank you for your consideration.

Sincerely,



Andre Sullivan,
Chair, Nanaimo Region Rail Trail Partnership

REQUEST FOR PARTNERSHIP



January 7th, 2014

Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC
V9T 6N2

To the Chair and Board of Directors of the Regional District of Nanaimo,

I would like to thank you for your consideration of the Nanaimo Region Rail Trail (NRRT)'s Partnership request for \$15,000. Here is an update on our progress since we last discussed the Partnership, in October.

In February of 2014, we are planning to launch a major fundraising campaign seeking corporate donations, individual donations, and funds through grant applications. Our corporate donor package is now complete; we are putting the finishing touches on our website (to be launched in February), and the online donations system is now in place, with the first few donations already coming through. We have also identified numerous grants that are available to us as a registered charity and are in the process of applying for funding from the Island Economic Coastal Trust (ICET), which, like many grants, requires matching funding.

Our Volunteer base is currently in Nanaimo, but we are actively in talks with individuals in Parksville and Qualicum from the Mid Island Velo Association about spearheading fundraising in those communities to go along with efforts by the RDN and those municipalities to raise money for those sections of trail. At the end of October, we hosted an event for cyclists in the region to seek their feedback on their desired cycling infrastructure improvements. We conducted a survey on this subject and it was clear that the top priority for most cyclists was the completion of the Rail Trail through our region. For complete survey results please contact me at info@nanaimoregionrailtrail.ca.

We plan to use the requested to \$15,000 to help launch fundraising campaigns through the entire region. As suitable volunteers are found in each community we will be expanding our website and approaching local businesses and to donate to the trail in their region. For any additional information please contact us at info@nanaimoregionrailtrail.ca

Sincerely,

A handwritten signature in blue ink, appearing to read "Andre Sullivan".

Andre Sullivan
Chair, Nanaimo Region Rail Trail
info@nanaimoregionrailtrail.ca
(250) 616 1111

ANALYSIS OF NEW REQUESTS FOR 2014 BUDGET													
REQUESTED	TOTAL(S)	CITY OF NANAIMO			DISTRICT OF LANITZVILLE			CITY OF PARKSVILLE			TOWN OF QUALICUM BEACH		
		SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE	SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE	SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE	SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE
1 Oceanside Hospice Society	60,000			0.00%				0.37%					0.40%
2 Nanaimo Hospice Society	25,000	19,934	0.13	0.15%	934	0.13	0.15%						0.00%
3 Lighthouse Country Marine Rescue Society	5,000			0.00%			0.00%						0.00%
4 Nanaimo RCMP Victim Services	2,500			0.00%			0.00%						0.00%
5 Nanaimo Rail Trail Partnership Group	15,000	7,916	0.05	0.06%	371	0.05	0.06%	1,275	0.05	0.03%	1,016	0.05	0.03%
6 Nanaimo & Area Land Trust - will present at Jan COW, assume same amount as prior year	30,000	17,154	0.11	0.13%	737	0.10	0.11%	2,451	0.10	0.06%	1,778	0.09	0.06%
	137,500	45,004	0.29	0.34%	2,042	0.28	0.31%	18,815	0.74	0.46%	14,813	0.73	0.49%
PARCEL TAX INCREASE													
7 Oceanside Community Policing		\$29,220											
		<u>\$166,720</u>											
2013 ESTIMATED RDN GENERAL SERVICES REQUISITION FOR A \$300,000 HOME BASED ON PRELIMINARY BUDGET				\$ 272.00			\$ 284.00			\$ 502.00			\$ 471.00
2014 ESTIMATED RDN GENERAL SERVICES REQUISITION FOR A \$300,000 HOME BASED ON PRELIMINARY BUDGET				\$ 297.00			\$ 306.00			\$ 540.00			\$ 486.00
TAX IMPACT ON A \$300,000 HOME OF ADDITIONS SHOWN ABOVE				\$ 0.88			\$ 0.84			\$ 3.43			\$ 3.40

ANALYSIS OF NEW REQUESTS FOR 2014 BUDGET

REQUESTED	TOTAL(\$)	ELECTORAL AREA A			ELECTORAL AREA B			ELECTORAL AREA C				
		SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE	SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE	SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE		
1 Oceanside Hospice Society	60,000			0.00%								
2 Nanaimo Hospice Society	25,000	1,487	0.13	0.09%	1,533	0.13	0.17%	1,112	0.13	0.10%		
3 Lighthouse Country Marine Rescue Society	5,000			0.00%			0.00%			0.00%		
4 Nanaimo RCMP Victim Services	2,500	900	0.08	0.06%	927	0.08	0.10%	673	0.08	0.06%		
5 Nanaimo Rail Trail Partnership Group	15,000	591	0.05	0.03%	609	0.05	0.06%	442	0.05	0.04%		
6 Nanaimo & Area Land Trust - will present at Jan COW, assume same amount as prior year	30,000	1,491	0.13	0.09%	828	0.07	0.09%	639	0.07	0.06%		
	137,500	4,469	0.38	0.28%	3,897	0.32	0.41%	2,866	0.33	0.25%		

PARCEL TAX INCREASE

7 Oceanside Community Policing	\$29,220
	<u>\$166,720</u>

2013 ESTIMATED RDN GENERAL SERVICES REQUISITION FOR A \$300,000 HOME BASED ON PRELIMINARY BUDGET

2014 ESTIMATED RDN GENERAL SERVICES REQUISITION FOR A \$300,000 HOME BASED ON PRELIMINARY BUDGET

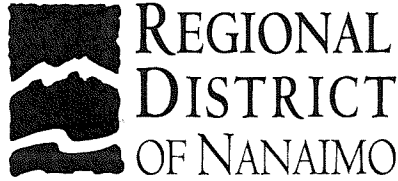
TAX IMPACT ON A \$300,000 HOME OF ADDITIONS SHOWN ABOVE

	\$ 435.00	\$ 257.00	\$ 405.00
	\$ 454.00	\$ 267.00	\$ 435.00
	\$ 1.14	\$ 0.96	\$ 0.98

ANALYSIS OF NEW REQUESTS FOR 2014 BUDGET

REQUESTED	TOTAL(\$)	ELECTORAL AREA E			ELECTORAL AREA F			ELECTORAL AREA G			ELECTORAL AREA H		
		SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE	SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE	SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE	SHARE (\$)	COST PER \$100k	% INCREASE FROM 2013 GENERAL SERVICES TAX RATE
1 Oceanside Hospice Society	60,000	10,702	0.59	0.55%	7,296	0.59	0.41%	9,180	0.59	0.41%	5,714	0.59	0.42%
2 Nanaimo Hospice Society	25,000			0.00%			0.00%			0.00%			0.00%
3 Lighthouse Country Marine Rescue Society	5,000			0.00%			0.00%			0.00%	5,000	0.52	0.37%
4 Nanaimo RCMP Victim Services	2,500			0.00%			0.00%			0.00%			0.00%
5 Nanaimo Rail Trail Partnership Group	15,000	904	0.05	0.04%	617	0.05	0.03%	776	0.05	0.03%	483	0.05	0.03%
6 Nanaimo & Area Land Trust - will present at Jan COW, assume same amount as prior year	30,000	1,203	0.07	0.06%	1,519	0.12	0.09%	1,465	0.10	0.07%	735	0.08	0.05%
	137,500	12,809	0.71	0.66%	9,432	0.76	0.53%	11,421	0.73	0.50%	11,932	1.24	0.87%

PARCEL TAX INCREASE	\$1.22/parcel	\$1.22/parcel	\$1.22/parcel	\$1.22/parcel
7 Oceanside Community Policing	\$29,220			
	<u>\$166,720</u>			
2013 ESTIMATED RDN GENERAL SERVICES REQUISITION FOR A \$300,000 HOME BASED ON PRELIMINARY BUDGET	\$ 348.00	\$ 456.00	\$ 465.00	\$ 454.00
2014 ESTIMATED RDN GENERAL SERVICES REQUISITION FOR A \$300,000 HOME BASED ON PRELIMINARY BUDGET	\$ 355.00	\$ 467.00	\$ 477.00	\$ 459.00
TAX IMPACT ON A \$300,000 HOME OF ADDITIONS SHOWN ABOVE	\$ 3.34	\$ 3.51	\$ 3.42	\$ 4.93



CAO APPROVAL		✓
EAP		
COW	✓	
DEC 31 2013		
RHD		
BOARD		

MEMORANDUM

TO: Paul Thorkelsson
Chief Administrative Officer

DATE: December 30, 2013

FROM: Tom Osborne
General Manager of Recreation and Parks

FILE:

SUBJECT: Development Funding for the E&N Regional Rail Trail

PURPOSE

To review options on sourcing and allocating funds to advance the development of the E&N Rail Trail in the Regional District of Nanaimo.

BACKGROUND

In 2008, the Regional District, District of Lantzville, Town of Qualicum Beach and the City of Parksville received a grant from the UBCM Community Tourism Program to conduct a feasibility study for a trail along the E&N rail corridor. The E&N corridor was identified in the 2005 – 2015 Regional Parks and Trails Plan as a priority for trail development.

The Island Corridor Foundation (ICF), a non-profit society representing communities along the corridor, owns the rail corridor and Regional District and the four municipalities have an agreement with ICF to construct a trail within the corridor.

There are two parts of the corridor within the Region: a portion of the Victoria subdivision from Cassidy to Cook Creek; and a portion of the Port Alberni subdivision from Parksville to Cathedral Grove. In total, there is about 118 km of rail corridor through the Region, of which 38 km lies within the four municipalities and 80 km lies in the electoral areas.

The Feasibility Study, carried out by HB Lanarc in 2009, addressed the portions of the corridor that pass through electoral areas A, E, F, G, and H and the municipalities of Lantzville, Parksville and Qualicum Beach – a total length of about 98.6 KM. The City of Nanaimo was not part of the study as this municipality has already constructed a rail trail and was in the advanced stages of planning for remaining sections along the corridor within the city’s boundaries.

The total estimated cost for the Rail Trail is \$28.20 million (2009 dollars) not including sections to be developed in the City of Nanaimo. The costs are a rough estimate as final costs will depend on the detailed plans for each site and the year that each subsection is constructed. Table 6 below is an excerpt from the Feasibility Study shows the breakdown of costs per jurisdiction in 2009 dollars.

Table 6: Summary Statistics by Jurisdiction

Jurisdiction ¹	Distance (m)	% NP ²	% DD ²	% D ²	% M & E ²	Cost Estimate ³ (\$million)	Aver \$ per meter trail ⁴
RDN Area A	9152	3%	15%	15%	67%	\$3.10	\$339
Lantzville ⁵	4907	-	11%	39%	50%	\$1.95	\$397
RDN Area E	12626	15%	21%	22%	43%	\$4.10	\$325
Parksville	3191	17%	0%	44%	39%	\$1.26	\$396
RDN Area G	13188	3%	0%	0%	97%	\$3.47	\$274
Qualicum Beach	6647	0%	7%	0%	93%	\$2.04	\$307
RDN Area H	21290	12%	5%	13%	69%	\$6.56	\$308
RDN Area F (Alberni) ⁶	16422	2%	0%	22%	76%	\$5.71	\$348
Totals	87423	0%	0%	0%	0%	\$28.20	\$325
⁵ [NFN	1431					\$0.52	\$361]
	88854						

NOTES:

- Distances assigned to each jurisdiction are approximate. Corridor sections were defined initially according to identifiable landmarks; section boundaries were later adjusted to align more with jurisdictional boundaries in order to assign distances and costs more accurately to each jurisdiction. Where the corridor runs through Area G and Parksville repeatedly, distances were estimated using the maps and costs assigned on a percentage basis (see page 13).
- Rating percentages (NP, DD, D, M&E) are approximate.
- "Cost Estimate" - no costs were estimated for sections or subsections rated as "NP" (not practical). Please see Box 1 (page 3) for items included/excluded from cost estimates.
- "Average \$ per meter" figures reflect relative differences in the difficulty of construction rather than absolute average costs.
- The length of corridor estimated to extend through the Nanoose First Nation land is removed from the Lantzville estimate – see bottom line of table for NFN portion. The section from the Lantzville boundary to Nanoose Beach Road is included in RDN Area E (previously included in Lantzville in draft report).
- These figures apply only to the portion of the Alberni line that was assessed (i.e., eastern 16 km); for the time being, the remainder of the Alberni line within the RDN would be rated NP.

As noted above, sections of the Rail Trail have been developed in the City of Nanaimo and recently the Regional District, District of Lantzville and the Town of Qualicum Beach have completed projects along or adjacent to the ICF Rail Corridor.

In the spring of 2013, the Regional District applied to UBCM to use Regionally Significant Program Gas Tax Funds in the amount 2.6 million dollars of to design and construct sections of the Rail Trail from Alberni Highway in Parksville to French Creek (Victoria Line) and from the Alberni Highway to Coombs (Alberni Line). \$150,000 has also been included in the preliminary Regional Parks and Trails Acquisition and Capital Development Budget in 2014 to be used if required on the project.

At the September 24, 2013 Regional Board Meeting the following resolution was carried:

"That staff be directed to investigate and report back to the Board on options for consideration in the 2014 budget discussion for the funding of trail projects on the E & N Rail Corridor in the Regional District of Nanaimo."

ALTERNATIVES

1. To redistribute and allocate funds from the Regional Parks and Trails Acquisition and Capital Development Budget and Five Year Financial Plan for E&N Rail Trail development projects.
2. To increase the Regional Parks and Trails Acquisition and Capital Development parcel tax in order to set aside specific funds and to further advance E&N Rail Trail Development Projects.
3. That the report on Development Funding for the E&N Regional Rail Trail be received as information.
4. To provide alternative direction.

FINANCIAL IMPLICATIONS

At present the Regional Parks and Trails Acquisition and Capital Development Budget is funded by way of a \$13.00 parcel tax on all taxable folios. This fund is used to secure regionally significant park sites and large capital regional parks and trail projects.

In recent years the fund was accessed to secure Mount Benson Regional Park, Coats Marsh Regional Park, Little Qualicum River Estuary Regional Conservation Area and Moorecroft Regional Park. Capital projects that were funded include construction of cycling and pedestrian bridges and redevelopment projects at Moorecroft, Horne Lake, Nanaimo River, Mount Benson and on the Lighthouse Country Regional Trail.

For the 2013 Regional Parks Capital Budget \$862,040 is raised through taxes by way of the \$13 parcel tax. This increases to \$881,240 by 2017 based on anticipated growth. The total amount raised over the next five years through the parcel tax is estimated to be \$4,358,215.

In 2013 \$384,000 of this fund is paying down the Moorecroft principal and interest. This decreases to \$151,000 annually in 2014 and the debt retires in 2033.

Based on the RDN's Parks Acquisition Priority List, the amount of funds required to purchase all properties identified is estimated at \$23,900,000. The amount required for trail bridges and large capital projects over the next five years is over \$2,500,000. Future projects planned for 2018 – 2022 total over \$2,670,000.

As noted above, over five years a total of \$4,358,215 will be raised through taxes to support acquisition and capital projects. Clearly, there are not enough funds available to complete all the projects listed as well as a substantial amount of acquisitions. However, in reality, not all property will become available for purchase in the next five years and financial assistance from land trusts and government grants may be available to assist.

Should the Board look to make the development of the E&N Rail Trail a priority in the coming years there are two options to consider. The first option is to redistribute and allocate funds from the Regional Parks and Trails Acquisition and Capital Development Budget in order to fund E&N Rail Trail development projects. The second option is to increase the parcel tax in order to advance sooner E&N Rail Trail development projects.

The first option would mean that sites currently on the Acquisition Priority List will have to be deferred along with reprioritizing capital projects within the twelve Regional Parks and other sections of the Regional Trail system.

Should the Board increase the parcel tax, each dollar raised through the parcel tax generates approximately \$66,000 annually.

The timing of advancing Rail Trail projects will be dependent on the availability of funds from the Regional Parks and Trails Acquisition and Capital Development Budget, municipal budgets if applicable, and likely other funds by way of government grants and community donations. Staff are suggesting that these funds could be accessed for E&N Rail Trail projects along the ICF rail corridor, including projects within municipal boundaries as well as in the Electoral Areas.

STRATEGIC PLAN IMPLICATIONS

Advancing the development of the E&N Rail Trail aligns with the current Strategic Plan as the Rail Trail provides residents the opportunity to choose transportation alternatives such as walking and cycling.

The trail infrastructure created will also become an asset for the tourism industry in the RDN and will be on par with other significant trail systems in British Columbia including the Galloping Goose Regional Trail in the Capital Regional District, the Cowichan Valley Trail in the Cowichan Valley Regional District and the Kettle Valley Trail in the Interior.

SUMMARY

At the September 24, 2013 Regional Board Meeting, staff were directed to investigate and report on options for consideration in the 2014 budget discussion for the funding of trail projects on the E & N Rail Corridor in the Regional District of Nanaimo.

The first option is to redistribute and allocate funds from the Regional Parks and Trails Acquisition and Capital Development Budget in order to fund E&N Rail Trail development projects. The second option is to increase the parcel tax in order to advance sooner E&N Rail Trail Development Projects.

Pursuing the first alternative would mean that sites currently on the RDN Regional Parks Acquisition Priority List will have to be deferred and reprioritized in addition to revising capital projects within the twelve Regional Parks and other sections of the Regional Trail system.

Alternative 2 would provide for an increase the parcel tax to a level set by the Board. Each dollar raised through the Parcel Tax generates approximately \$66,000 annually.

Based on 2009 estimates, it would cost over 28 million dollars to construct the Rail Trail where feasible along the length of the ICF corridor, not including sections to be developed in the City of Nanaimo.

The timing of advancing Rail Trail projects will be dependent on the availability of funds from the Regional Parks and Trails Acquisition and Capital Development Budget, municipal budgets if applicable, and likely other funds by way of government grants and community donations. It is suggested that funds generated as part of the parcel tax funds could be accessed for E&N Rail Trail projects along the ICF rail corridor, including projects within municipal boundaries as well as in the Electoral Areas.

RECOMMENDATION

That the report on Development Funding for the E&N Regional Rail Trail be received as information, and that the Board provide direction to staff on any related changes required for the 2014 to 2018 financial plan.



Report Writer



A/ CAO Concurrence



RDN REPORT	
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MEMORANDUM

TO: Paul Thompson
 Manager of Long Range Planning

DATE: December 19, 2013

FROM: Lisa Bhopalsingh
 Senior Planner

FILE: 6780 30

SUBJECT: Regional Growth Strategy Targets and Indicators Project

PURPOSE

To provide an update on background work and a proposed process for setting targets and selecting indicators to be used as part of a monitoring program for the Regional Growth Strategy (RGS).

BACKGROUND

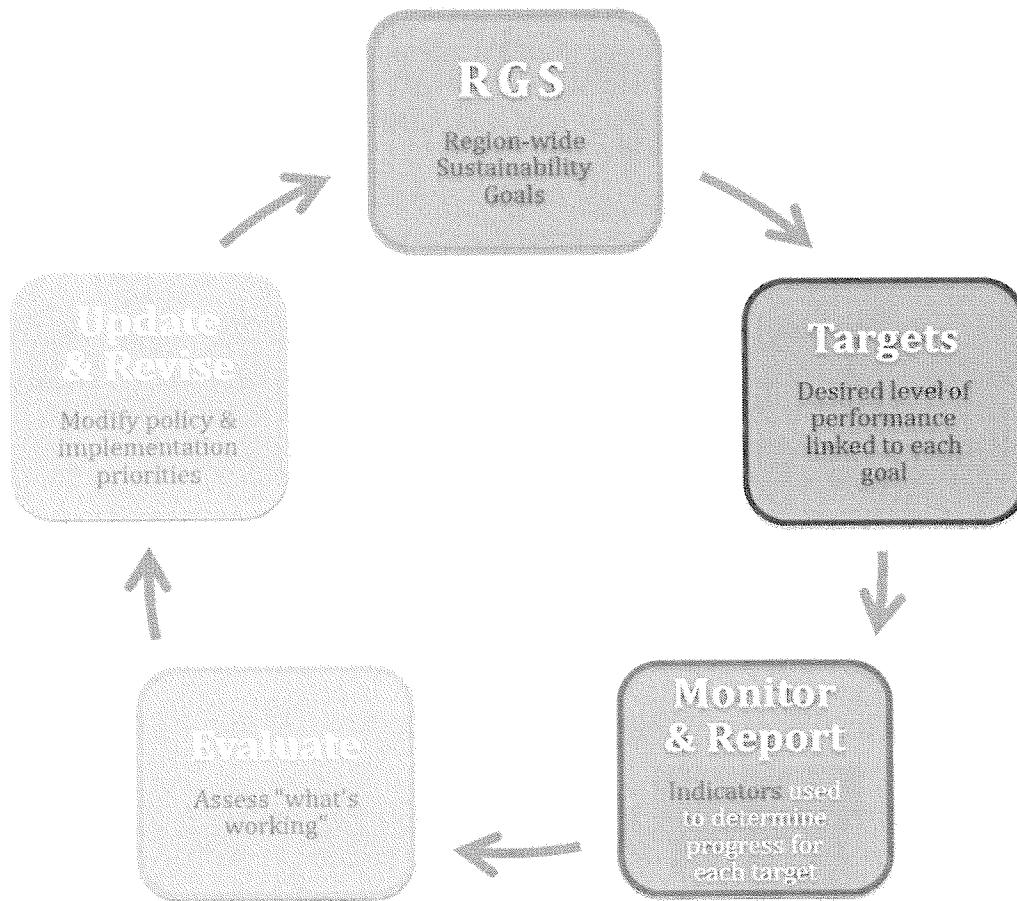
An essential part of implementing the RGS involves monitoring progress and evaluating the effectiveness of actions undertaken by the Regional District of Nanaimo (RDN) and member local governments to achieve goals aimed at creating a more sustainable and resilient community. Monitoring progress is part of being “accountable for our decisions and actions”, one of the sustainability principles that the RGS is founded on. Consistent with the requirements of Section 869 of the *Local Government Act*, the RGS includes specific policies to establish a process and program to monitor the RGS and produce yearly progress reports. This also includes direction to “establish targets to achieve key policies”.

Targets and indicators are closely linked to each other and are part of the process for RGS planning, implementing and monitoring (see Figure 1). Targets establish a specific, desired level of performance or outcome of a policy or action taken to implement the RGS. Targets can help increase accountability, prioritize actions and motivate individuals and organizations to take actions that work towards achieving the target. Relevant indicators are essential for measuring the level of progress made towards achieving a target. Without indicators, it would be difficult for decision-makers to know what level of progress is being made towards a target and whether or not actions need to be adjusted.

Since the RGS was first adopted in 1997 there have been eight monitoring reports produced and a substantial amount of work done to research and identify suitable indicators for measuring progress. One of the challenges of earlier RGS monitoring has been a lack of consistency for reporting and use of measurable indicators that could easily be compared over time. While some reports have covered similar information, a standard format for reporting was never adopted.

The attached Monitoring Background Report (Attachment 1) provides a more detailed history of monitoring the RGS. This report also provides an explanation of indicators and targets as they relate to monitoring, and considerations for selecting indicators and setting targets that build upon prior monitoring efforts.

Figure 1: Setting Targets and Monitoring through Use of Indicators in the RGS Planning and Implementation Cycle



Process for Setting Targets and Choosing Indicators

As outlined in the Monitoring Background Report, a significant amount of time and resources have been invested by the RDN in researching and selecting indicators to measure progress towards RGS goals. The proposed Terms of Reference (ToR) recognizes and incorporates this prior work. It also includes a process for setting measurable targets for RGS goals, which was not part of earlier RGS planning, implementation and monitoring processes.

The stages involved in the proposed process for setting targets and choosing suitable indicators are briefly describe in the text below and illustrated by Figure 2. Further details are provided in the ToR (see Attachment 2).

Figure 2: Proposed Process for Setting Targets and Selecting Indicators



To date, the following tasks have been completed as part of Stage 1:

- Prepared Monitoring Background Report (Attachment 1);
- Drafted Terms of Reference (Attachment 2) for setting targets and choosing indicators to measure progress;
- Compiled a comprehensive list of indicators based on prior monitoring work and information currently collected by the RDN and other agencies and used this to create a refined list of Potential Targets and Indicators for RGS goals (Attachment 2, Appendix 3); and
- Prepared draft information sheets explaining Monitoring, Targets and Indicators.

The documents and information compiled during Stage 1 will be used as the basis for engagement activities outlined in Stages 2, 3 and 4. These steps are discussed briefly in the 'Public Consultation Implications' section of this report and in further detail in the attached ToR.

As part of Stage 4, a report on the outcome of engagement activities and a recommended set of targets and indicators will be presented to the RDN Board for approval. Once approved, these targets and indicators will be used to initiate an ongoing RGS monitoring program. The results of monitoring will be communicated to the public and other interested parties through a variety of methods including the RDN website and annual reports on RGS progress.

ALTERNATIVES

1. That the RDN Board direct staff to proceed with the Targets and Indicators Project as described in the attached Terms of Reference.
2. That the RDN Board not proceed with the Targets and Indicators Project.

FINANCIAL IMPLICATIONS

The Long Range Planning Department budget for 2014 includes funds to cover costs associated with the activities as outlined in the Terms of Reference.

LAND USE IMPLICATIONS

Growth Management Implications

From a growth management perspective, knowing whether or not progress is being made to achieve growth management goals will enable the RDN to determine the effectiveness of actions being taken and the need to adjust them. Although the process of setting targets and choosing suitable indicators will not directly result in impacts on growth management, the use of targets and indicators as part of a broader monitoring process will improve the RDN's ability to make more informed growth management decisions. The outcome of this may result in adjusting policies and taking actions that improve progress towards growth management goals.

Sustainability Implications

Some prior monitoring efforts in the RDN involved the use of a wide array of indicators to measure the region's sustainability. In several cases these indicators did not directly relate to the goals of the RGS and/or areas under the RDN's influence. For example, the 2006, State of Sustainability project used motor vehicle accidents or birth weights as indicators to measure progress towards predefined characteristics of a sustainable region. While indicators like these are important for understanding progress towards broader aspects of the region's sustainability, they are of limited value to the RDN's ability to evaluate the effectiveness of actions to implement the RGS and modify them accordingly. As such, the focus of this project is setting targets and indicators that directly link to RGS Goals and areas where the RDN and member municipalities can influence the region's sustainability and long term resilience. *Attachment 2, Appendix 3* provides a list of potential targets and indicators that are linked to RGS Goals.

Public Consultation Implications

As documented in the RGS Monitoring Background Report and ToR, prior monitoring efforts (particularly the 2006 State of Sustainability project) involved a high level of consultation with relevant professionals, community members and other stakeholders. Public consultation for this project reflects the fact that many indicators used in the past are still relevant to monitoring current RGS Goals and these indicators have been endorsed by the community and RDN Board through past consultation processes.

The approach proposed for this project is one of "confirming" that the RDN is on the right path with proposed targets and a list of suitable indicators to measure progress towards them. This will involve first getting feedback from relevant professionals to check and confirm the value and practicality of using specific indicators that relate to their areas of expertise (see Stage 2 Figure 2). Feedback from relevant professionals will then be used to present a list of proposed targets and indicators to the RDN Board. Based on direction from the RDN Board, the list of targets and indicators will be adjusted and presented to the wider community for feedback during Stage 3. Community feedback will be considered in producing a final list of targets and indicators for RDN Board approval. The final Stage 5 of the process will involve initiating a monitoring program using the Board approved list of targets and indicators and, communicating the results in a meaningful manner to different interest groups.

SUMMARY/CONCLUSIONS


This report and the attached Terms of Reference provide a process for setting targets and selecting indicators that will fulfill RGS direction to "*establish a process and program to identify and establish targets to achieve key policies*" and "*monitor, evaluate and periodically report on progress*" towards achieving RGS goals, policies and targets.

The Terms of Reference for this project proposes a target setting and indicators selection process that takes into account prior monitoring efforts and includes opportunities to engage RDN staff, relevant professionals, the Board and wider community. The targets and indicators established through this project will be part of an ongoing RGS monitoring program.

Monitoring progress ensures that the RDN and member local governments are aware of the impacts and effectiveness of their decisions on creating a more sustainable and resilient community. The purpose of setting targets and choosing indicators to measure progress towards meeting RGS goals is to enable the RDN to better understand the effectiveness of actions being taken. In addition to meeting legislative requirements, this is part of the RDN's commitment to being accountable to citizens.

RECOMMENDATION

That staff proceed with the Targets and Indicators Project as outlined in the attached Terms of Reference.



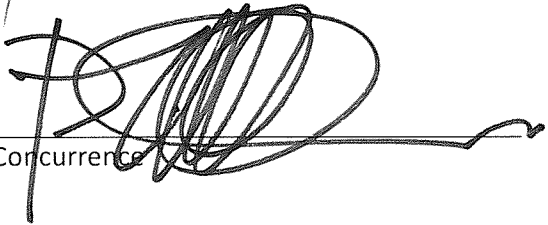
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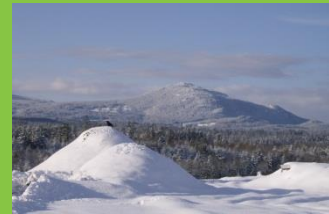
General Manager Concurrence



Manager Concurrence



CAO Concurrence



Monitoring

Background Report

REGIONAL GROWTH STRATEGY

DRAFT December 19 • 2013



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1. INTRODUCTION

1.1 MONITORING PROGRESS ON ACHIEVING THE RGS VISION

The 2011 Regional Growth Strategy (RGS) is a strategic planning document that defines a regional vision for sustainability for the Regional District of Nanaimo (RDN). The RGS uses goals and related policies to work towards achieving that vision. It establishes where we want to go and sets out actions for how we will get there.

An essential part of implementing or carrying out the 2011 RGS involves monitoring progress and evaluating the effectiveness of actions undertaken to achieve the RGS vision. Monitoring is part of being “accountable for our decisions and actions” one of the sustainability principles that the 2011 RGS is founded on.

Monitoring our progress will help us understand if our actions are having the results we intended. It could indicate that policies need to be adjusted to reflect new government powers or changes in environmental, social, and economic circumstances since the plan’s adoption. Monitoring ensures that the RDN and member local governments are making decisions that move the region towards the vision of a more sustainable community as established in the RGS.

Without effective planning, monitoring and evaluation, it would be impossible to judge if work is going in the right direction, whether progress and success can be claimed, and how future efforts might be improved.

United Nations Development Program, 2009

1.2 DOCUMENT PURPOSE:

The purpose of this document is to:

- Provide an understanding of monitoring and evaluation
- Explain the need to monitor the RGS
- Review the history of monitoring the RGS
- Review the history of selecting indicators and establishing targets to monitor the RGS
- Discuss potential steps to move forward with selecting indicators and targets for the RGS

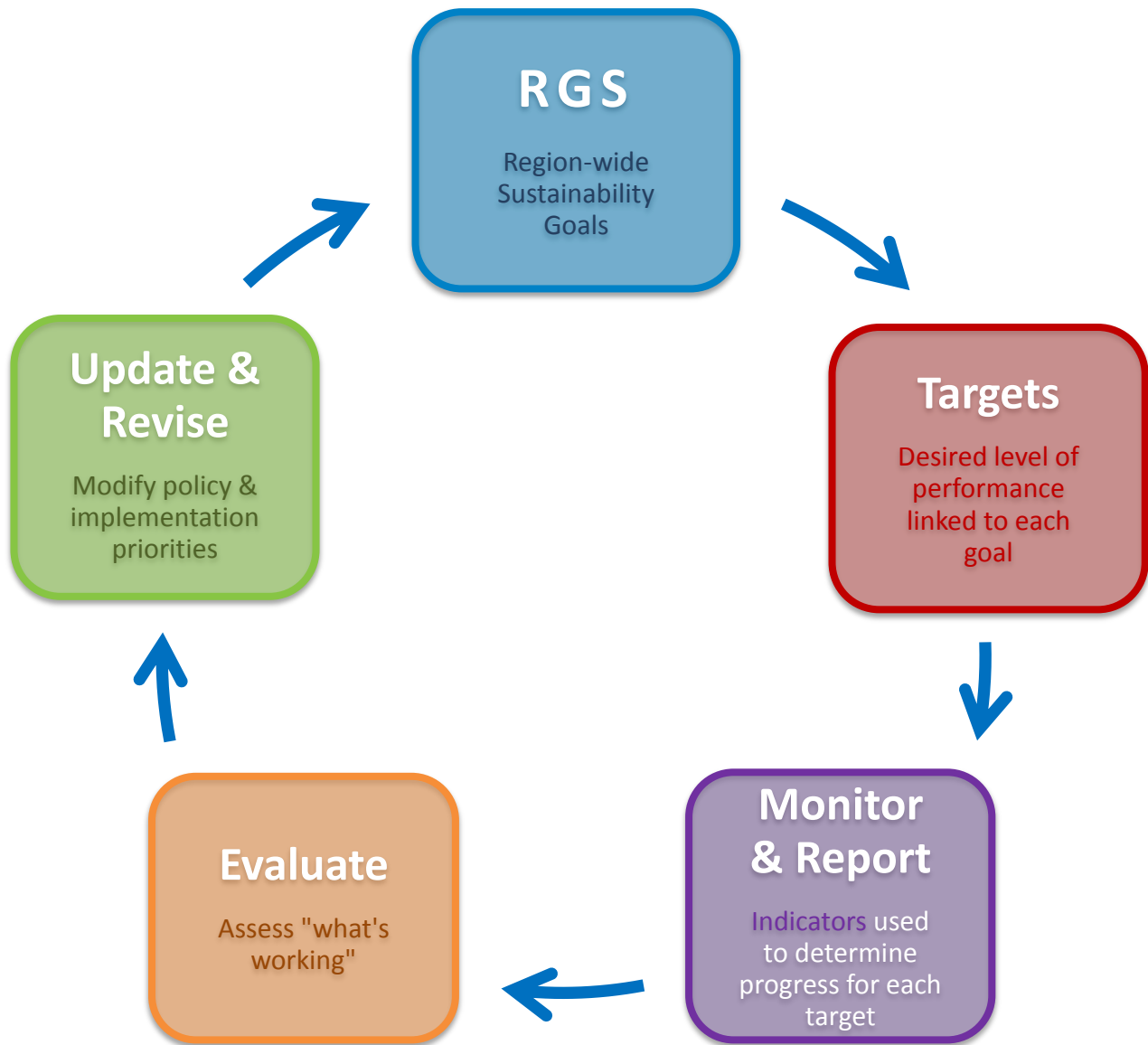
1.3 WHAT IS MONITORING?

Monitoring involves the ongoing collection of information to provide feedback on progress towards achieving RGS goals. Diagram 1 shows how monitoring is part of the process for planning and implementing the RGS. In the context of the RGS, monitoring is intended to answer the following questions:

- Are we doing what we said we would?
- What is happening? Are we making progress on achieving the results we wanted to achieve?

The first question can be answered by tracking specific actions taken by the RDN to implement the RGS. The second question requires a greater degree of effort to collect information that measures progress towards achieving specific goals. This information can be used to produce reports and evaluate progress towards achieving the goals of the plan. Indicators are frequently used to monitor progress towards achieving results.

Diagram 1: Setting Targets and Monitoring in the RGS Planning and Implementation Cycle



1.4 WHAT IS EVALUATION?

The aims of both monitoring and evaluation are very similar: to provide information that can help inform decisions, improve performance and achieve planned results. While monitoring tells us whether or not we are making progress towards our goals, evaluation provides an understanding of the value of the actions we are taking and the extent to which they are effective in achieving our goals.

Evaluation is intended to help us answer:

- How effective are our actions/policies in achieving the results we wanted?
- Do we need to adjust our actions/policies to achieve the results we want?

“...evaluation should (enable) the incorporation of lessons learned into the decision-making process ...”

Evaluation should help identify opportunities to improve the effectiveness of actions to implement the RGS.

1.5 IS MONITORING REQUIRED?

The *Local Government Act* requires regional districts that have adopted a regional growth strategy to:

- Establish a program to monitor its implementation and the progress made towards its objectives and actions, and*
- Prepare an annual report on that implementation and progress.¹*

In accordance with the legislative requirements, the RGS has the following policies under Section 5.2 Implementation:

Policy 1. Prepare an annual report on implementation and progress towards the goals and objectives of the RGS.

Policy 4. Establish a process and program to identify and establish targets to achieve key policies set out in this RGS within one year of adoption of this RGS.

Policy 5. Establish a process and program to monitor, evaluate and periodically report on regional economic, population, social and environmental trends and progress towards achieving RGS goals and policies and the targets to be established as set out in Policy 4, within one year of adoption of the RGS.

¹ British Columbia Local Government Act, Part 25 – Division 4 - Section 869 (1)

2. WHAT IS THE HISTORY OF MONITORING THE RGS?

Since the RGS was first adopted in 1997 there have been eight monitoring reports produced. One of the challenges of ongoing monitoring of the RGS has been a lack of consistency on how progress has been measured and reported over time. While some reports have covered similar information, there has been no consistency in the format of the reports or the use of measurable indicators that can easily be compared over time. This is due to a number of factors including the time and resources that were available to prepare monitoring reports, particularly those that began to use measurable indicators. The diagram below provides a summary of the eight monitoring reports to date, followed by a brief history of monitoring the RGS.

Diagram 2: Summary of RGS Monitoring Reports 1998-2013

	RGS ² Monitoring Reports	Published	Description
1	Growth Management Plan 1997 Annual Report	Jan 28, 1998 (Staff Report)	Description of activities undertaken by the RDN to carry out policies.
2	Growth Management Plan 1998 Annual Report	May, 1999	Description of activities undertaken by the RDN to carry out policies.
3	1999 Annual Report on the Growth Management Plan	March, 2000	Description of activities undertaken by the RDN to carry out policies and introduction of 'policy' indicators to measure progress.
4	2000 Annual Report on Progress Towards the Vision and Goals of the Growth Management Plan	April, 2001	First monitoring report to use a set of 32 quantitative indicators to measure progress. Document includes numerous tables, charts and diagrams to show progress as measured by indicators. Work was overseen by a group of community representatives known as the Performance Review Committee (PRC).
5	2001-2002 Annual Report Regarding Implementation Progress	August, 2003	Description of activities undertaken by the RDN to carry out policies.
6	Sustainability Report 2003-2004	May, 2005 (RDN Board Received)	Description of activities undertaken by the RDN that relate to the 22 characteristics of a sustainable region rather than to specific areas relating to RGS goals.

² The RGS was originally referred to as the Growth Management Plan until it was renamed the Regional Growth Strategy as part of its first major update in 2003.

7	Prospering Today, Protecting Tomorrow – The State of Sustainability of the Regional District of Nanaimo - 2006	Sept, 2006	Detailed analysis of 41 quantitative indicators used to show progress towards 22 sustainability characteristics of the region, some of which directly relate to policies in the RGS and areas that the RDN can influence.
			Work was overseen by a group of community representatives known as the Regional Growth Management Advisory Committee (RGMAC).
8	2012 Annual Report Regional Growth Strategy Implementation and Progress	March, 2013 (RDN Board Received)	Description of activities undertaken by the RDN and member municipalities to carry out policies in the updated 2011 RGS.

2.1 FIRST MONITORING REPORT - 1997

The first monitoring report on the RGS was produced by RDN staff in 1997. This was essentially a list of actions or projects undertaken to show progress on implementing the RGS. This first report acknowledged that it did not “measure performance of the plan” and that a priority for the following year would be “the development of performance measures to review the ‘success’.....and provide indicators of the plan’s performance”.

2.2 SECOND MONITORING REPORT - 1998

In the spring of 1998 the Performance Review Committee (PRC) was established to monitor progress towards achieving the goals of the RGS. The PRC was an RDN Board appointed committee initially made up of 13 individuals representing electoral area advisory planning commissions and the public at large from throughout the Regional District. In 2000, following the dissolution of the electoral area planning commissions the terms of reference of the PRC was amended to include sixteen members, eight from member municipalities and eight from electoral area residents.

In 1998 the PRC began a process to oversee the selection of criteria to measure progress on the RGS goals. Despite using the term ‘indicators’, the indicators used were primarily a description of activities taken to implement policies in the RGS. For example, one of the indicators to show progress for Goal 1: Strong Urban Containment was *the inclusion of Urban Boundaries in Official Community Plans*. The second monitoring report in 1998 used these ‘policy indicators’ as the basis for describing accomplishments related to implementing the plan and also provided an assessment made by the PRC on progress towards each RGS goal area.

2.3 THIRD MONITORING REPORT - 1999

The third monitoring report in 1999 used the same ‘policy indicators’ as the 1998 report and also began to introduce the use of more quantitative data. For example, a description of the indicator used for Policy 3A *“Official community plans will promote and encourage the retention of large rural holdings”* included a table to show the percentage of land under different OCP designations that conform to the minimum parcel size. The 1999 report, while still primarily a description of actions taken to implement the RGS, was the first RGS monitoring report to produce a limited amount of baseline data that could be

used to track progress on a few of the RGS goals over time. The PRC used both these quantitative and qualitative measures to assess progress made in each RGS goal area.

2.4 FOURTH MONITORING REPORT - 2000

In 2000 the RDN Board provided the PRC with financial resources to support the selection of 32 indicators and to collect baseline data on them (see Appendix 1). The process for selecting the final 32 indicators included two workshops involving representatives from Federal and Provincial levels of government, as well as two member municipalities (City of Nanaimo and City of Parksville) and members of the PRC. The fourth monitoring report in 2000 ("*2000 Annual Report on Progress Towards the Vision and Goals of the Growth Management Plan*"), can be considered the first RGS monitoring report to use a full set of true 'indicators' to measure progress towards achieving RGS goals. For example, *Population density inside and outside urban containment boundaries* was used as the indicator for Goal 1: Strong Urban Containment. The fourth monitoring report also contains tables, graphs and charts showing baseline information and in some instances compared 2000 information to baseline data collected in the 1999 monitoring report.

The fourth monitoring report clearly explained the relevance of the indicators used and provided community members with information on what actions they could take to improve progress towards RGS goals as measured by the indicators.

The Performance Review Committee was dissolved in 2002 as the RDN aimed to establish a monitoring program that was intended to provide broader opportunities for public involvement in the RGS monitoring and reporting process.

2.5 FIFTH MONITORING REPORT – 2001-2002

The fifth RGS monitoring report for 2001-2002 did not use the 32 quantitative indicators established in the 2000 report and instead focused on describing actions taken by the RDN and its member municipalities to implement the RGS (*2001-2002 Annual Report Regarding Implementation Progress, August 2003*). This report was produced after the PRC was dissolved and covered the time period of the first major review of the RGS.

2.6 RGS REVIEW & FORMATION OF THE RGMAC – 2003

Following the first major review of the RGS that resulted in the adoption of an updated RGS in 2003, the RDN established the Regional Growth Management Advisory Committee (RGMAC) with an initial mandate to monitor the regional district's progress toward the goals of the Regional Growth Strategy. Through the RGMAC, the RDN initiated the State of Sustainability project in 2003 to undertake a comprehensive monitoring program and make recommendations for how the sustainability of the region could be improved. This monitoring program represented a shift towards broader monitoring of sustainability characteristics of the whole region not all of which could be related directly to RGS Goals and policies.

The RGMAC used feedback from public workshops to identify 22 characteristics of a sustainable region under the three sub-categories, Environmental Capital, Social Capital and Economic Capital. This shift in scope resulted in the sixth monitoring report (*The 2003-2004 Sustainability Report*) describing actions

that showed progress towards the 22 characteristics of a sustainable region rather than specifically on progress towards the RGS goals.

2.7 SIXTH MONITORING REPORT – 2003-2004

The sixth monitoring report (*The 2003-2004 Sustainability Report*) was similar to the first, second, third and fifth monitoring reports in its focus on describing actions taken by the RDN and its member municipalities without using quantitative indicators to measure progress. Because it was not intended to focus on the RGS goals, the sixth monitoring report did not provide any linkages between actions taken and progress towards the implementation of RGS goals.

2.8 SEVENTH MONITORING REPORT – 2006

In 2004 the RGMAC held a public workshop attended by approximately 200 participants who helped identify over 213 potential indicators/measures that could be used to provide information on progress towards the 22 previously identified characteristics of a sustainable region. Following this workshop, the RGMAC worked with consultants to narrow the 213 indicators to a final set of 41 indicators. The selection of the final 41 indicators also included consideration of the 32 indicators selected by the PRC.

These indicators were used to produce the seventh RGS monitoring report *‘Prospering Today, Protecting Tomorrow: The State of Sustainability for the Regional District of Nanaimo’* in 2006 (see Appendix 2).

This report used the 41 indicators to analyze progress towards different aspects of Social, Environmental or Economic sustainability rather than specifically discussing progress on reaching RGS goals.

The RGMAC held a second public workshop in 2007 to discuss the outcome of the monitoring project and make recommendations for how the sustainability of the region could be improved. These recommendations were included in the report *‘Prospering Today, Protecting Tomorrow: Recommendations for a Sustainable Future.’* This report was intended to inform the second major review of the RGS that was initiated in 2007.

2.9 RGS REVIEW – 2007-2011

The seventh monitoring report and subsequent recommendations for actions to improve the status of different sustainability indicators served as a tool to inform the second major review of the RGS that was initiated in 2007 and concluded in 2011 with the adoption of an updated RGS. During the second RGS review period no monitoring reports were produced.

2.10 EIGHTH MONITORING REPORT – 2012

The 2012 annual monitoring report was produced by RDN staff in early 2013. It identifies and describes actions taken by the RDN and/or member municipalities that show progress towards implementation of the RGS since it was updated in November 2011. Similar to the first, second, third, fifth and sixth monitoring reports, this eighth report did not “... attempt to measure how effective these implementation actions are” and indicates that “the development of measures to monitor and evaluate the implementation of the RGS is a priority action for 2013”.

3. INDICATORS AND MONITORING THE RGS

This section explains what indicators are, their role in monitoring progress and how the RDN has used indicators to monitor the RGS.

3.1 WHAT IS AN INDICATOR?

Indicators are measures that can be used to show how well a social, cultural, economic or environmental system is working over a period of time. Indicators provide a focused snapshot of a small, understandable part of these complex systems.

Indicators can be used to determine to what extent progress is being made towards the goals we want to achieve.

On-going and consistent monitoring of indicators is critical to evaluating the effectiveness of policies and determining the need to change a course of action. Measuring indicators makes it possible to understand the effectiveness of policies and actions in a plan.

Indicators make it possible to demonstrate results. Indicators can also help in producing results by providing a reference point for monitoring, decision-making, stakeholder consultations and evaluation. In particular, indicators can help to:

- *Measure progress and achievements;*
- *Clarify consistency between activities, outputs, outcomes and goals;*
- *Ensure legitimacy and accountability to all stakeholders by demonstrating progress;*
- *Assess project and staff performance.*

*Signposts of Development Risk Based Management
in the United Nations Development Program*

3.2 THINGS TO CONSIDER FOR INDICATOR SELECTION:

Indicators should relate to things that the RDN has some influence or control over

Some indicators used in the past to monitor the RGS did not relate to either the RGS or the authority of the RDN. The 2006, State of Sustainability project included indicators such as motor vehicle accidents or birth weights, that while showing progress on the 22 characteristics of a sustainable region were not indicators that the RGS could directly influence. If the role of the RGS monitoring program is to measure progress towards meeting RGS goals (with a view of determining the need to adjust policies and actions taken by the RDN), then indicators that measure aspects of sustainability that are outside of RDN control may not be appropriate.

Previous Work on Indicator Selection

The RDN has done a significant amount of work on choosing indicators in previous RGS monitoring initiatives. It is important to recognize the work that has already been done and use this information in the selection of new indicators.

Commit to a set of indicators over time

A big challenge with past RGS monitoring is a lack of consistency over the indicators measured and the style of reporting since the RGS was adopted. This makes it difficult to track trends over time. Selecting indicators that will be reported consistently is essential to understanding the implications of different actions over time.

Select a practical number of indicators

The last monitoring report of the RGS done in 2006 included an in depth review of 41 indicators contained in a lengthy report. A key challenge for monitoring the RGS is selecting a practical number of indicators that allow for regular updates to be done and that also convey meaningful information to stakeholders. As has been noted in several studies *“a smaller number of indicators are more effective in communicating and mobilizing action”*.³

Make Reporting Accessible to Different Audiences

Finding effective ways of communicating the results of monitoring is essential for making information accessible and being accountable to community members. Selecting the appropriate format and technology (for example, use of written reports, versus more interactive web-based tools) will depend on the needs of different users (staff, community members, Board members) as well as available resources.

3.3 INDICATORS PREVIOUSLY USED FOR MONITORING THE RGS

While the third RGS monitoring report for 1999 began to use a few indicators and measure baseline data, the fourth RGS monitoring report for 2000 was the first report to use a full set of clearly measurable indicators. Thirty-two indicators (see Appendix 1) were selected by the Performance Review Committee (PRC) to be included in the 2000 monitoring report. The PRC worked with representatives from the Federal and Provincial governments, two member municipalities (City of Nanaimo and City of Parksville) during two workshops to select suitable indicators.

The selection of indicators was made by evaluating data according to several criteria, including availability, affordability, extent of geographic coverage, timeliness, validity, sensitivity, comparability, and credibility.

For the State of Sustainability Project work undertaken by the RGMAC, community workshops and consultants produced a list of 213 potential indicators to use for assessing the state of sustainability in the region. It is important to remember that the indicators considered and selected were intended to measure progress towards the 22 characteristics of a sustainable region and were not intended to specifically measure progress on the goals of the RGS.

³ The Sheltair Group: Indicators for Sustainable Communities: A Case Study Scan, March 2007

The following selection criteria were used to produce a smaller list of 41 ‘optimum indicators’ considered appropriate for the monitoring program: The 41 indicators selected by the RGMAC and included in the seventh RGS monitoring report in 2006, *Prospering Today, Protecting Tomorrow* are listed in Appendix 2.

2006 State of Sustainability Indicator Selection Criteria

- *Relevant.* The indicator reflects the sustainability topic of interest.
- *Linked to Action.* The indicator supports change in behaviour or improvement in decisions, goals, or policies in the region.
- *Understandable.* A diverse range of people easily understands the indicator.
- *Sensitive to change.* The indicator reveals change in the social or physical environment.
- *Integrative.* The indicator demonstrates connections among key dimensions of sustainability. This criterion is desirable but not crucial. That is, some excellent indicators pertain only to a single dimension of sustainability.
- *Comparable.* The indicator results can be compared with other regions.
- *Scale.* The indicator reveals conditions and trends at the regional or sub-regional levels.
- *Interpretable.* The indicator is free of extraneous factors that could confound its interpretation (e.g., what else could affect the indicator besides the social or physical topic of interest).

Data qualities

Sustainability indicators can only be used if data are available to support them. A good sustainability indicator is supported by data that meet all or most of the criteria listed below. These criteria were applied in the assessment of data available for candidate RDN indicators for the 2006 monitoring report.

- *Available.* Data exist to support the indicator.
- *Scale.* The data captured are at a scale appropriate for sustainability reporting needs (e.g., regional, municipal, street-level, household).
- *Temporal.* The data have been collected long enough to show trends over time and progress toward targets, and will continue to be collected in the

3.4 SUGGESTED INDICATORS IN THE 2011 RGS

During the review that resulted in the adoption of the updated RGS in 2011 a number of potential indicators related to the 11 RGS goals were identified. A list of 33 potential indicators was included in Section 5.4 with the intent that they could be used to gauge the effectiveness of policies and progress towards goals in the RGS:

Climate Change

- Reduction of GHG emissions and energy consumption indicators and targets will be established in the Community Energy and Emissions Plan.

Environmental Protection

- Water quality and quantity (surface and groundwater);
- Air quality;
- Amount of new ESA lands and riparian areas protected.

Coordinate Land Use & Mobility

- Commute to work travel mode share;
- Total length of regional trail network;
- Share of population growth within GCB;
- Share of net new dwellings located within GCB;
- Number of households within GCB that are within walking distance of transit;
- Diversity of land uses within designated mixed-use centres served by transit.

Concentrate Housing & Jobs in Growth Centres and Corridors

- Housing densities inside GCB;
- Net new dwellings located in the City of Nanaimo and major urban centres;
- Share of net new dwellings in electoral areas located within rural area GCB;
- Share of new jobs located in the City of Nanaimo and urban centres;
- Share of new jobs in electoral areas located within rural area GCB.

Rural Integrity

- Net change in land area of forestry lands (lands designated Resource Lands and Open Space excluding ALR and designated open space lands);
- Net change in land area of ALR;
- Number of new parcels subdivided in ALR lands;
- ALR range of parcel sizes;
- Gross farm receipts and number of farms by gross farm receipt category;
- Density outside the GCB.

Affordable Housing

- Housing diversity by unit type;
- Number of new affordable housing units constructed;
- Subsidized housing wait lists;
- Level of homelessness.

Resilient Economy

- Number of new jobs in the region;
- Share of jobs by economic sector.

Culture, Arts and Recreation

- Number of inventoried heritage resources;
- Kilometres of public trails and pathways.

Efficient Services

- Per capita disposal of solid waste;
- Average per capita consumption of potable water;
- Per capita length of water and sewer lines in areas with community services;
- Per capita road length.

4. THE ROLE OF BASELINES, BENCHMARKS AND TARGETS IN RGS MONITORING

Making indicators meaningful requires using baselines, benchmarks and targets to measure indicators against. Along with indicators these are key components of monitoring the RGS in order to help leaders and community members understand progress made and the need to take actions to improve performance.

4.1 WHAT ARE “BASELINES”?

Baselines represent the starting point for monitoring progress made using a set of indicators. Some baselines have been established for several of the indicators used in prior RGS monitoring programs and reports. Baselines allow us to track progress made over time, showing trends away from or towards our goals. Baselines are most useful when they are used in conjunction with targets that establish a specific level of performance or desired state that we intend to achieve over time.

4.2 WHAT ARE “BENCHMARKS”?

A benchmark is a standard, or a set of standards, used as a point of reference for evaluating performance. Benchmarks may be drawn from a local government’s own experience; using results achieved by other levels of government; or from legal requirements such as environmental regulations.⁴ Benchmarks help provide meaning or context about the performance of an indicator and can be used as a basis for setting targets.

Benchmarks allow local governments to understand how their indicator results compare with other communities of a similar size (for example, the Community Energy and Emissions Inventory allows comparison of Green House Gas energy use amongst different regional districts) or with national or provincial measures. It should be noted that using similar sized communities to establish benchmarks, has been criticized as being of limited value for comparing the level of progress between local governments, given the wide differences that typically exist in local politics, environment, economy and social contexts.

4.3 WHAT ARE “TARGETS”?

Targets represent a specific result that we want the RGS to achieve over time that is measured by indicators. While goals in the RGS describe the broad, general direction towards achieving improved sustainability or environmental performance, targets establish a specific desired level of performance or outcome of a policy or action taken to implement the RGS.

Targets can help:

- Increase Accountability – defining who is responsible for different actions to work towards a target.

⁴ <http://www.businessdictionary.com/definition/benchmark.html#ixzz1t5qX0fgf>

- Prioritize – prioritizing actions needed to reach a target including management decisions and resource allocation.
- Motivate - motivating community members and stakeholders to take actions that clearly work towards achieving a target. This may involve individuals or organizations setting their own sub-targets and taking actions in support of a broader target.⁵ For example: If the RDN established a target to reduce per capita water consumption by XX litres a day – this might be used by organizations and individuals to take actions such as: use drought tolerant landscaping, install a low flush toilet, reduce individual shower time to three minutes.

Targets are usually set by considering past performance and anticipating future capacity to improve performance over a set period of time. In order for targets to be effective they must be challenging yet achievable and also be publicly and politically acceptable.

Targets differ from benchmarks or external standards in that they are set by an organization in relation to their own goals and policies. Targets can be set internally by local governments and stakeholders implementing policies or may be developed in consultation with the public. One example of an internally set target was the RDN’s aim to divert 75 per cent of solid waste from landfills by 2010 – a target that will be re-visited as part of the next Solid Waste Management Plan review.

Targets that do not have political support are unlikely to obtain the level of funding or other resources needed for their attainment.

http://ec.europa.eu/transport/wcm/road_safety/erso/knowledge/Content/70_qrst/quantitative%20road%20safety%20targets.htm

A local government may also choose or be required to adopt targets for the environment or public health that are based on recognized health and safety standards. These are often set by senior levels of government and are typically based on research into the minimum standards necessary for the protection of ecosystems and health. Examples include the acceptable level of contaminants affecting water supplies or air quality. Another example of a target set by senior levels of government is the BC Government’s target to reduce Green House Gas (GHG) emissions by 30% of 2007 levels by 2020 and 80% by 2050.

4.4 THINGS TO CONSIDER WHEN SETTING TARGETS

Consider past and current performance

Understanding past and current performance is essential to setting meaningful targets. The aim is to set targets to improve on past performance.

Consider allocation of resources

The availability and allocation of resources may have a major impact on how achievable a target is. If resource allocation impacts the ability to maintain current

In developing targets it is important to consider how the targets will be measured or monitored, how targets and the results of monitoring fit into evaluations, and how the targets will be reported.

http://ec.europa.eu/transport/wcm/road_safety/erso/knowledge/Content/70_qrst/quantitative%20road%20s

⁵ NASCSP Targeting Field Manual, Setting and Reviewing Targets, August 2008

performance then setting a target that exceeds this is likely to be unrealistic. There needs to be an understanding of whether or not departmental budgets and plans allow for targets to be achieved or show priorities for achieving different targets.

4.5 WHAT IS THE HISTORY OF USING “TARGETS” TO MONITOR THE RGS?

Targets with specific measures to be achieved have not been used in previous efforts to monitor the RGS. However, the seventh monitoring report does include a section for different indicators called “*where do we want to go*” that introduces the idea of directional targets. Directional targets describe the desired movement towards or away from an established state rather than setting a specific number or percentage improvement to be achieved. For example:

7.7 Indicator: *Residences inside urban containment boundaries living within walking distance of a bus stop.*

7.7.3 Where do we want to go? *The region’s target is to increase the number of people residing inside the urban containment boundary that live within 400 metres of a bus stop.*

4.6 DO WE HAVE TO SET TARGETS FOR THE RGS?

Target setting is an important aspect of monitoring and evaluating the RGS. The RDN is required to set a target for reducing GHG emissions in the RGS. Aside from this, there are no other targets required to be set in the RGS. Nevertheless, as part of accountability and implementation, the 2011 RGS includes a policy (5.2.4) to “*establish a process and program to identify and establish targets to achieve key policies set out in the RGS...*” The RGS states that “*setting targets to monitor progress towards achieving the goals of the RGS is a high priority implementation action*”.

4.7 WHAT IS THE RELATIONSHIP BETWEEN TARGETS AND INDICATORS?

Targets and Indicators are closely linked. Indicators tell us whether or not the results of our actions are consistent with achieving our targets. A target that cannot be easily measured using an indicator is of limited use as it will be difficult to determine whether or not progress is being made to achieve a target and if different actions need to be taken to improve outcomes.

5. NEXT STEPS FOR MONITORING

The history of monitoring the RGS outlined above shows that since 1997 there has been considerable effort put into monitoring the RGS, including background research on indicators, data collection, public participation and the work of citizen committees in identifying and selecting suitable indicators to measure progress. These efforts serve as a solid foundation to develop a monitoring program that makes use of existing baseline information and indicators to monitor progress on the updated 2011 RGS.

The newly adopted RGS includes new goals addressing Climate Change, Affordable Housing and Food Security. Some indicators that have been researched and used in prior monitoring may be relevant to these new goals. However, there are other indicators that should also be considered as they may be more suitable measures of progress for these new goals.

As well, it should be recognized that several indicators used in past monitoring processes may not be suitable because of differences in the scope of monitoring. For example, the State of Sustainability Project included indicators that measured the impact of actions over which the RDN has limited influence rather than being focused on measuring progress towards actions taken to achieve RGS Goals.

There are many lessons to be learned from the past monitoring reports. Some reports like the 2000 Monitoring Report (a 43 page document) contained many illustrations, charts and graphs to communicate information on progress towards RGS goals. This report also included tangible actions that community members could take to improve the status of an indicator in order to make more progress towards a goal. In contrast, the last monitoring report produced by the State of Sustainability Project included a lot of technical detail. At over 300 pages, its length and format pose a challenge for use as a meaningful reporting tool for community members to understand progress towards RGS goals and the region's sustainability. Furthermore, reproducing such a report annually presents a challenge given the level of resources required.

A successful monitoring program for the RGS will involve:

- Finding the right balance between selecting a practical number of indicators that clearly provide community members and the RDN with information on progress towards the RGS goals and for which data is reliable and easily accessible on a regular basis.
- Setting politically and publically supported targets that are simultaneously challenging enough to motivate change while still being realistic.
- Engaging individuals and organizations in the monitoring process in a way that encourages them to take actions that support reaching the targets set to help achieve RGS goals.

5.1 OBJECTIVES FOR SETTING TARGETS & SELECTING INDICATORS FOR THE 2011 RGS

The proposed approach for setting targets and indicators for the 2011 RGS is based on the following objectives to:

- Build on extensive efforts to research and select indicators for monitoring earlier versions of the RGS.
- Meet requirements to monitor RGS progress and produce annual reports.
- Focus on monitoring the outcomes of actions taken to implement the 11 goals in the 2011 RGS.
- Focus on areas that the RDN has influence over rather than to more broadly monitor sustainability of the region as whole.
- Engage community members, the RDN Board and stakeholders in the process for selecting indicators and targets.
- Develop a process for monitoring that enables staff to easily produce annual reports.
- Provide innovative ways of presenting the monitoring results so that information is accessible and meaningful to community members and stakeholders.
- Present monitoring results in a way that will help to influence positive behaviour.
- Be accountable to the community and stakeholders about activities taken to implement the RGS and progress made towards the goals.
- Use monitoring as part of ongoing communication and education to encourage individuals and organizations to take actions that help work towards the goals of the RGS.

5.2 PROPOSED APPROACH FOR SETTING TARGETS & SELECTING INDICATORS FOR THE 2011 RGS

The RGS has 11 long term goals that serve to guide actions intended to achieve the vision for a more sustainable region. These goals are descriptive using words like “support, facilitate, protect and provide” and do not include reference to either measurable or directional targets (see Appendix 3).

There are generally two main approaches to setting targets:

1. Agreeing on indicators to measure progress towards RGS goals and then matching targets to these indicators or,
2. Deciding on targets for RGS goals and then finding a set of indicators that show how the target can be achieved.

In reality these two approaches are typically blended as indicators and targets cannot be selected in isolation of each other or in a sequential, linear process. Setting a target for a goal without at the same time confirming that suitable indicators are available runs the risk of not being able to measure progress towards the target. Selecting indicators first without considering potential targets may mean that the indicators selected may not be suitable for measuring progress towards an identified target. It is proposed that the process for selecting targets and indicators be integrated, blending the two approaches above.

It should be acknowledged that for some goals it may be difficult to agree on specific measurable targets that are both publically and politically acceptable. In such cases directional targets may be more appropriate and other cases targets may not be created. More than one target may be created for a goal and there may also be more than one indicator that measures progress towards meeting a chosen target.

APPENDIX 1 – INDICATORS FROM 2000 RGS MONITORING REPORT

GOAL	INDICATOR	REPORT INTERVAL (YEARS)
Goal 1: Strong Urban Containment	1. Population density inside and outside Urban Containment Boundaries.	5
	2. Amount of land inside and outside Urban Containment Boundaries.	1
	3. Number of applications to change Urban Containment Boundaries.	1
Goal 2: Nodal Structure	4. The proportion of housing types within designated nodes.	1
	5. The diversity of amenities in designated nodes.	1
	6. Housing within 400 metres of retail facilities, services, schools, Greenspace, and bus stops.	1
	7. Housing tenure, affordability, and demographic groups served by nodes.	5
Goal 3: Protection of Rural Integrity	8. Percentage of rural land in different designations.	1
	9. Actual use on rural resource lands.	1
	10. Resource industry employment by sector.	4
Goal 4: Environmental Protection	11. Drinking water – annual number of samples testing positive for fecal coliform.	1
	12. Quality of treated effluent from sewage treatment plants.	1
	13. Number of public bathing site closures.	1
	14. Number of shellfish harvesting closures.	1
	15. Percent of land protected, by type and jurisdiction.	1
	16. Air quality – Ground level zone and PM 2.5	1
	17. Percent of watercourses protected by development permit area designation.	1
	18. Percent of shoreline length having intact adjacent vegetation.	-
Goal 5: Improved Mobility	19. Number of bus riders.	1
	20. Mode of transportation to work.	5
Goal 6: Vibrant and Sustainable Economy	21. Unemployment rate.	5
	22. Migration by age and education.	5
	23. Educational attainment levels.	5
	24. Type of occupations.	5
	25. Post-secondary specialization.	5
	26. Income distribution.	5
	27. Households spending over 30% of their income on housing.	5
Goal 7: Efficient Services and Resource Use	28. Liquid waste generation.	1
	29. Amount of garbage to landfill and amount recycled per resident.	1
	30. Serviced households per kilometre of both sanitary sewer line and water line, inside Urban Containment Boundaries.	1
Goal 8: Cooperation Among Jurisdictions	31. Narrative description of senior government decisions contrary to official community plans.	1
	32. Narrative description of annual initiatives to support and implement the Growth Management Plan involving the Regional District of Nanaimo.	1

APPENDIX 2 – STATE OF SUSTAINABILITY INDICATORS, 2006 MONITORING REPORT

Indicators used in the 2006 State of Sustainability Monitoring Report

Environment

- 1-E1 Water quality for aquatic organisms in selected lakes and rivers
- 1-E2 Ground level ozone
- 1-E3 PM_{2.5}
- 1-E4 Current and projected age class distribution for Arrowsmith Timber Supply Area
- 1-E5 Amount of land and watercourses protected (nature park or DPA designation) by type

Resource

- 1-R1 Domestic water consumption trends (total and per capita)
- 1-R2 Area of private and Crown forestry land
- 1-R3 Change in amount of ALR land
- 1-R4 Sustainable farming practices
- 1-R5 Proportion of farmland in crops
- 1-R6 Amount of land outside of urban boundaries or designated industrial areas that permit subdivision minima of less than 4 (or 10) ha
- 1-R7 Number of farms reporting sale of organic products
- 1-R8 Amount of electricity and natural gas consumed, total and per capita
- 1-R9 Amount of waste to landfill per capita, amount of waste diverted from landfill in tones and amount recycled per resident
- 1-R10 Quality of biosolids from wastewater treatment plants

Community Function

- 1-CF1 Population growth, density, and amount of land in areas designated for growth and not designated for growth
- 1-CF2 Percent of residents in core housing need
- 1-CF3 Mode of transportation to work (and location of work)
- 1-CF4 Number of bus rides per capita per year
- 1-CF5 Number of residents (households) within walking distance of services
- 1-CF6 Number of residents inside urban boundaries living within 400 metres of a bus route
- 1-CF7 Vehicle ownership (total and per household)
- 1-CF8 Area of active and nature parkland for every 1000 residents
- 1-CF9 Percentage or square footage of retail inside and outside urban cores

Social

- 1-S1 Percent healthy birth weight (percent low birth weight)
- 1-S2 Life expectancy at birth
- 1-S3 Motor vehicle accident rates
- 1-S4 Teen pregnancy rate
- 1-S5 Education attainment levels
- 1-S6 Number of applicants on wait list for subsidized housing compared to number of housing units available
- 1-S7 Crime rate by crime type

Indicators used in the 2006 State of Sustainability Monitoring Report

- 1-S8 Number of, and participation in, recreational and cultural programs offered by local government and post-secondary institutions
- 1-S9 Participation in federal, provincial, and local elections

Economic

- 1-E1 Tax paid by residents and businesses
- 1-E2 Employment by class of occupation
- 1-E3 Average annual income compared to cost of living
- 1-E4 Change in number of households below low income cut off
- 1-E5 Personal income from top three industries as a proportion of total personal income in region, and personal income by industry
- 1-E6 Number of business formations and bankruptcies
- 1-E7 Unemployment rate and duration
- 1-E8 Economic health of agriculture

APPENDIX 3 – RGS 2011 GOALS

1. **Prepare for Climate Change and Reduce Energy Consumption** – Reduce GHG emissions and energy consumption and promote adaptive measures to prepare for climate change impacts.
2. **Protect the Environment** – Protect and enhance the environment and avoid ecological damage related to human activity.
3. **Coordinate Land Use and Mobility** – Ensure land use patterns and mobility networks are mutually supportive and work together to reduce automobile dependency and provide for efficient goods movement.
4. **Concentrate Housing and Jobs in Rural Village and Urban Growth Centres** – Establish distinctive activity centres and corridors within growth containment boundaries that provide ready access to places to live, work, play and learn.
5. **Enhance Rural Integrity** – Protect and strengthen the region’s rural economy and lifestyle.
6. **Facilitate the Provision of Affordable Housing** – Support and facilitate the provision of appropriate, adequate, attainable, affordable and adaptable housing.
7. **Enhance Economic Resiliency** – Support strategic economic development and link commercial and industrial strategies to the land use and rural and environmental protection priorities of the region.
8. **Enhance Food Security** – Protect and enhance the capacity of the region to produce and process food.
9. **Celebrate Pride of Place** – Celebrate the unique natural beauty, culture, history, and arts of the region.
10. **Provide Services Efficiently** – Provide efficient, cost-effective services and infrastructure.
11. **Enhance Cooperation Among Jurisdictions** – Facilitate an understanding of and commitment to the goals of growth management among all levels of government, the public, and key private and voluntary sector partners.



DRAFT
Terms of Reference
Target Setting &
Indicator Selection
Project

Regional Growth Strategy
Implementation

December 19, 2013



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1. PURPOSE

This Terms of Reference (ToR) outlines a process for setting targets and selecting indicators for the Regional District of Nanaimo's (RDN) Regional Growth Strategy (RGS). This work is part of an overall program to monitor and report on implementation and progress made towards RGS goals and objectives. This Terms of Reference includes steps for community engagement that are consistent with the RDN Board Public Consultation Policy.

2. BACKGROUND

The RGS is a strategic planning document that defines a regional vision for sustainability for the RDN. An essential part of implementing the RGS involves monitoring progress and evaluating the effectiveness of actions undertaken to achieve the RGS vision. Monitoring is part of being “*accountable for our decisions and actions*” one of eight sustainability principles that the updated 2011 RGS is founded on.

The *Local Government Act* requires regional districts that have adopted a regional growth strategy to establish a program to monitor implementation and progress made towards RGS objectives and actions, and prepare an annual report related to that.¹ Consistent with these requirements, the RGS has the following policies under Section 5.2 Implementation:

Policy 1. Prepare an annual report on implementation and progress towards the goals and objectives of the RGS.

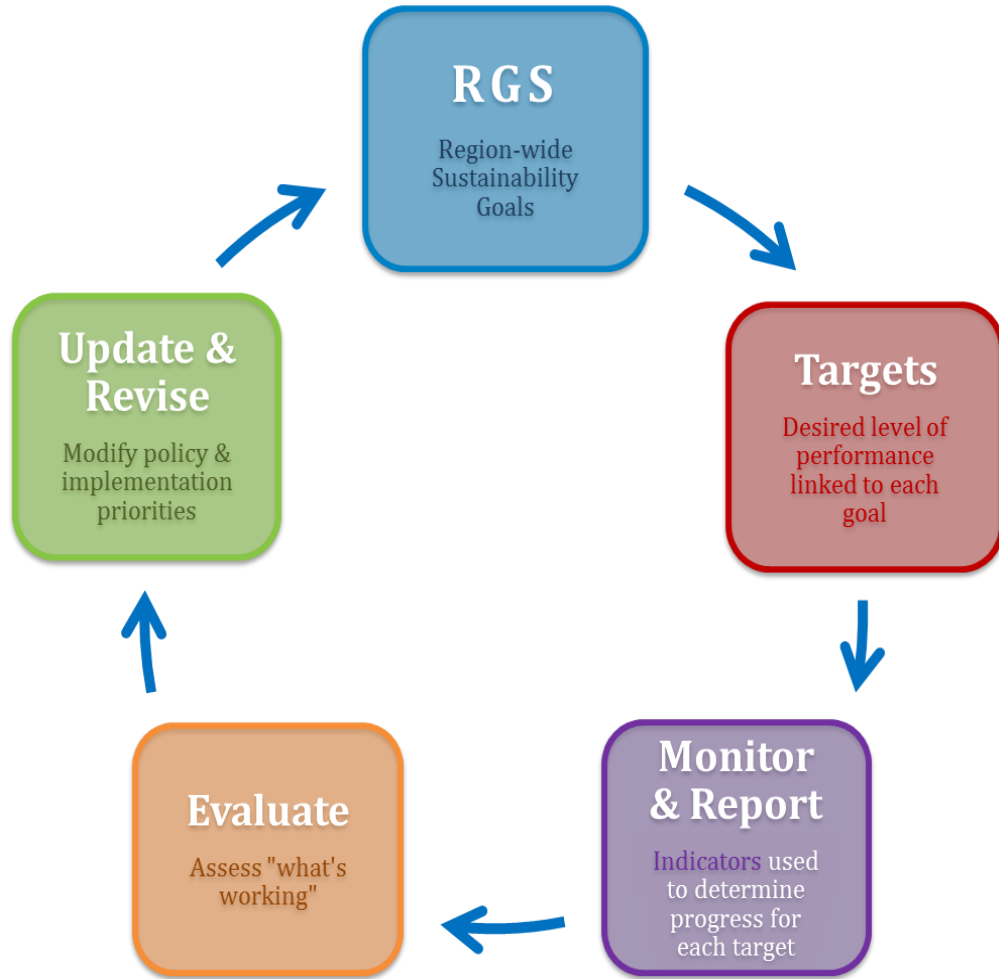
Policy 4. Establish a process and program to identify and establish targets to achieve key policies set out in this RGS within one year of adoption of this RGS.

Policy 5. Establish a process and program to monitor, evaluate and periodically report on regional economic, population, social and environmental trends and progress towards achieving RGS goals and policies and the targets to be established as set out in Policy 4, within one year of adoption of the RGS.

Targets and indicators are closely linked. The diagram below shows how targets and indicators fit into the RGS cycle and are directly related to RGS goals. Monitoring progress towards achieving these targets is done using indicators or measures that relate directly to the target. Indicators tell us whether or not the results of our actions are consistent with achieving our targets. A target that cannot be easily measured using an indicator is of limited use as it will be difficult to determine whether or not progress is being made to achieve a target and if different actions need to be taken to improve outcomes.

¹ British Columbia Local Government Act, Part 25 – Division 4 - Section 869 (1)

Figure 1: Setting Targets and Monitoring in the RGS Planning and Implementation Cycle



Since the RGS was first adopted in 1997 there have been ongoing efforts to monitor and report on implementation and progress as summarized in the table below. A more thorough review of the history of monitoring the RGS and the use of indicators can be found in the document titled *RGS Monitoring: Background Report*.

Summary of RGS Monitoring Reports 1998-2013

	RGS ² Monitoring Reports	Published	Description
1	Growth Management Plan 1997 Annual Report	Jan 28, 1998 (Staff Report)	Description of activities undertaken by the RDN to carry out policies.
2	Growth Management Plan 1998 Annual Report	May, 1999	Description of activities undertaken by the RDN to carry out policies.
3	1999 Annual Report on the Growth Management Plan	March , 2000	Description of activities undertaken by the RDN to carry out policies and introduction of 'policy' indicators to measure progress.
4	2000 Annual Report on Progress Towards the Vision and Goals of the Growth Management Plan	April, 2001	First monitoring report to use a set of 32 quantitative indicators to measure progress. Document includes numerous tables, charts and diagrams to show progress as measured by indicators. Work was overseen by a group of community representatives known as the Performance Review Committee (PRC).
5	2001-2002 Annual Report Regarding Implementation Progress	August, 2003	Description of activities undertaken by the RDN to carry out policies.
6	Sustainability Report 2003-2004	May, 2005 (RDN Board Received)	Description of activities undertaken by the RDN that relate to the 22 characteristics of a sustainable region rather than to specific areas relating to RGS goals.
7	Prospering Today, Protecting Tomorrow – The State of Sustainability of the Regional District of Nanaimo - 2006	Sept., 2006	Detailed analysis of 41 quantitative indicators used to show progress towards 22 sustainability characteristics of the region, some of which directly relate to policies in the RGS and areas that the RDN can influence. This report includes a section for different indicators called "where do we want to go" that introduces the idea of directional targets. Work was overseen by a group of community representatives known as the Regional Growth Management Advisory Committee (RGMAC).
8	2012 Annual Report Regional Growth Strategy Implementation and Progress	March, 2013 (RDN Board Received)	Description of activities undertaken by the RDN and member municipalities to carry out policies in the updated 2011 RGS.

² The RGS was originally referred to as the Growth Management Plan until it was renamed the Regional Growth Strategy as part of its first major update in 2003.

A major challenge for monitoring RGS progress so far has been a lack of consistency on how progress has been measured and reported. Of the eight monitoring reports produced to date, the majority are descriptive lists of actions taken to implement the RGS, only three make use of indicators to measure progress. Two of the reports that use indicators reflect a significant amount of work to develop a list of measurable indicators. This Terms of Reference recognizes and builds upon previous information and resources to develop indicators.

The only targets established in the 2011 RGS are related to reducing Green House Gas (GHG) emissions as required by the *Local Government Act*. This target was set based on “*established Provincial targets to reduce GHG emissions 33% below 2007 levels by 2020 and 80% by 2050*”. The RDN’s Community Energy and Emissions Plan (March 2013) continues to use these targets. Earlier versions of the RGS did not establish targets and only one monitoring report (the seventh) introduces the idea of directional targets in a section called “*where do we want to go*”. Directional targets describe the desired movement towards or away from an established state rather than setting a specific number or percentage improvement to be achieved. Target setting has been identified as an important aspect of implementing, monitoring and evaluating actions to achieve the goals of the 2011 RGS.

Relevant indicators are essential for measuring the level of progress made towards achieving a target. Without indicators, it would be difficult for decision-makers to know what level of progress is being made towards a target and whether or not actions need to be adjusted. This ToR reflects the interrelationship between targets and indicators by integrating setting targets for achieving RGS goals with the selection of suitable indicators to measure progress towards chosen targets.

3. PROJECT OBJECTIVES

The objectives for the target setting and indicator selection project are to:

- Use RGS sustainability principles to guide all aspects of the project;
- Focus on monitoring the outcomes of actions taken to implement the 11 goals in the 2011 RGS;
- Focus on areas that the RDN has influence over rather than to more broadly monitor sustainability of the region as a whole;
- Integrate the process for setting targets and selecting indicators;
- Build on the research and selection of indicators from past monitoring programs and apply this to the development of indicators and targets for use with the 2011 RGS;
- Ensure that different RDN departments are involved in the selection of targets and indicators that relate to their areas of influence;
- Engage community members, the RDN Board, municipal staff and relevant professionals in the process for selecting indicators and setting targets;
- Meet requirements to monitor RGS progress and produce annual reports;
- Develop a process for monitoring that enables staff to easily produce annual reports;
- Provide innovative ways of presenting the monitoring results so that information is accessible and meaningful to community members and stakeholders; and
- Present monitoring results in a way that will help to influence positive actions to reach targets.

4. APPROACH

The following provides details of the approach that will be used to undertake this project. This includes outlining information to be considered and the rationale for the proposed approach.

4.1 USE RGS SUSTAINABILITY PRINCIPLES TO GUIDE PROJECT

Eight sustainability principles provide a framework for the goals and policies of the 2011 RGS:

- Decisions and actions have regard for local and global consequences;
- The interconnectedness and interdependence of natural and human systems are recognized and respected;
- The healthy functioning of ecological systems is nurtured;
- The qualities of place that create pride and a sense of community are nurtured;
- Efficiency, including the concept of zero-waste, is optimized;
- Equity amongst all citizens and across generations, including future generations is ensured;
- Decision-making processes are based on participation, collaboration and co-operation with citizens, other authorities and organizations; and
- We are accountable for our decisions and actions.

These sustainability principles are “*intended to guide decision-making regarding the future life of the region*” and thereby the implementation of the RGS. These principles will be used to guide the process for the setting targets and choosing indicators to monitor the RGS. As noted earlier, undertaking this project is in keeping with the principle that “*we are accountable for our decisions and actions*”.

4.2 RELATE MONITORING DIRECTLY TO 2011 RGS GOALS AND OUTCOMES THAT THE RDN HAS INFLUENCE ON

To fulfill the requirements of the *Local Government Act* and to be accountable to RDN citizens, the monitoring program for the RGS should clearly show progress toward the RGS goals (see below). The RGS monitoring program aims to measure progress towards meeting RGS goals (with a view of determining the need to adjust policies and actions taken by the RDN). This involves selecting indicators and establishing targets that directly relate to monitoring implementation and progress towards the 2011 RGS goals. The most recent indicator based monitoring report for the RGS in 2006 looked broadly at all aspects of sustainability including several areas that were beyond the sphere of influence of the RDN and had no direct relationship to RGS goals and policies. While there are many merits to

monitoring all aspects of sustainability, such an approach will not allow the RDN to focus on the impacts and effectiveness of actions taken to implement the RGS.

Monitoring progress towards RGS goals will be more effective if measurable targets and indicators to measure progress are set in relation to the policies established to meet the RGS goals listed below:

1. **Prepare for Climate Change and Reduce Energy Consumption** – Reduce GHG emissions and energy consumption and promote adaptive measures to prepare for climate change impacts.
2. **Protect the Environment** – Protect and enhance the environment and avoid ecological damage related to human activity.
3. **Coordinate Land Use and Mobility** – Ensure land use patterns and mobility networks are mutually supportive and work together to reduce automobile dependency and provide for efficient goods movement.
4. **Concentrate Housing and Jobs in Rural Village and Urban Growth Centres** – Establish distinctive activity centres and corridors within growth containment boundaries that provide ready access to places to live, work, play and learn.
5. **Enhance Rural Integrity** – Protect and strengthen the region’s rural economy and lifestyle.
6. **Facilitate the Provision of Affordable Housing** – Support and facilitate the provision of appropriate, adequate, attainable, affordable and adaptable housing.
7. **Enhance Economic Resiliency** – Support strategic economic development and link commercial and industrial strategies to the land use and rural and environmental protection priorities of the region.
8. **Enhance Food Security** – Protect and enhance the capacity of the region to produce and process food.
9. **Celebrate Pride of Place** – Celebrate the unique natural beauty, culture, history, and arts of the region.
10. **Provide Services Efficiently** – Provide efficient, cost-effective services and infrastructure.
11. **Enhance Cooperation Among Jurisdictions** – Facilitate an understanding of and commitment to the goals of growth management among all levels of government, the public, and key private and voluntary sector partners.

4.3 INTEGRATE SELECTION OF INDICATORS WITH SETTING TARGETS

Targets and indicators are closely linked. Indicators tell us whether or not the results of our actions are consistent with achieving our targets. A target that cannot be easily measured using an indicator is of limited use as it will be difficult to determine whether or not progress is being made to achieve a target and if different actions need to be taken to improve outcomes. Subsequently, this project will involve integrating the process for establishing targets with that of selecting indicators.

4.4 RESPECT AND USE PREVIOUS WORK ON INDICATOR SELECTION

The RDN has already spent considerable time and effort developing indicators as reflected in earlier RGS monitoring initiatives and reports.

This includes extensive review and feedback from community based committees, community members and relevant professionals. Indicators selected through prior work were developed using evaluation criteria (Appendix 2) to refine and determine suitable indicators. Any new indicators not previously considered will be evaluated using similar criteria.

In order not to lose the valuable contribution and community participation in these past monitoring efforts, the process for setting targets and selecting indicators will build upon this extensive work.

A list of possible indicators to consider (Appendix 3) has been prepared by RDN staff as a starting point for this project using the following sources:

- The list of key indicators included in the 2011 RGS.
- Indicators used in past RGS monitoring reports approved by the RDN Board. Many of these indicators were selected/ proposed by committees with broad community representation and professionals knowledgeable in indicators used by different disciplines. This includes the extensive work on indicators used in the 2006 State of Sustainability Report.
- Indicators currently used by different RDN departments and approved by the RDN in departmental work plans and budgets.
- New indicators that may apply to RGS goals and that have not been previously researched or reviewed by the RDN Board or wider community.

The possible indicators identified in Appendix 3 are linked to potential targets identified for different RGS Goals.

4.5 RECOGNIZE CURRENT USE OF INDICATORS AND TARGETS

As noted earlier, the approach to this project is to build upon prior efforts to develop indicators. Targets and indicators currently being used as part of existing planning and operations by different RDN departments will also be reviewed in terms of their relevance and application to RGS goals and policies and used to develop a proposed list for consideration. As noted earlier, currently used indicators and targets that relate to RGS goals have been identified in the list in Appendix 3.

4.6 CONSIDER PRIOR CONSULTATION WHEN DEVELOPING FURTHER CONSULTATION ON INDICATORS AND TARGETS

To date there has been extensive consultation to produce many of the proposed indicators to be considered as part of this project. This includes many hours of time given by community representatives participating on committees tasked with monitoring the RGS. In order to respect this past work, this project will avoid re-doing work by building on past community feedback that lead to analysis of the suitable indicators. As a result, community consultation will focus on providing opportunities for community members to confirm shortlisted indicators with greater focus on providing feedback on the proposed targets (given that there has been no prior opportunities for discussion on setting targets).

The main method for engaging community members in providing feedback on the proposed indicators and setting targets will be through an online survey (which will also be available in hard copy as needed). The reason for proposing this form of engagement is based upon prior experience of successfully using surveys supported by advertising to reach a wider and more diverse audience than more traditional forms of community engagement (meetings, open houses and workshops). The survey will be promoted through a range of advertising mediums (web-based, social media, newspaper advertisements, earned media etc.). RDN staff will also offer to make presentations to interested community groups to explain the project and encourage participation in the survey.

In addition to the online survey, the RDN will host two events to be held in central locations in the RDN to allow region-wide participation in confirming the proposed indicators and setting targets. Community members will be asked to provide their input on how they wish to see the results of monitoring communicated. This feedback will be used to guide how the results of monitoring are communicated (hard copy documents, websites, social media). In addition to a general invitation, those who have previously expressed interest in RGS implementation and those with specific knowledge on different targets and indicators will also be directly invited to participate.

4.7 GAIN SUPPORT

In order for targets to be met they must have political, staff, external agency and community support. A key way of getting this support is to ensure that each of these groups is engaged at an appropriate level in the selection of indicators and setting of targets.

4.8 SELECT A PRACTICAL NUMBER OF INDICATORS

The last monitoring report of the RGS done in 2006 included an in-depth review of 41 indicators contained in a lengthy report. A key challenge for monitoring the RGS is selecting a practical number of indicators that allow for regular updates to be done and that also convey meaningful information to stakeholders. As has been noted in several studies “a smaller number of indicators are more effective in communicating and mobilizing action”.³

4.9 COMMIT TO A SET OF INDICATORS OVER TIME

A big challenge with past RGS monitoring is a lack of consistency over the indicators measured and the style of reporting since the RGS was adopted. This makes it difficult to track trends over time. This project will seek to select indicators that can be reported regularly in order to understand progress made towards meeting RGS goals and the effectiveness of different actions over time.

4.10 MAKE REPORTING ACCESSIBLE TO DIFFERENT AUDIENCES

Finding effective ways of communicating the results of monitoring is essential for making information accessible and being accountable to community members. This project will involve seeking feedback on ideas and selecting the most appropriate format and technology (for example, use of written reports, versus more interactive web-based tools) to meet the needs of different audiences (staff, external agencies, community members, Board members).

4.11 ACKNOWLEDGE INDICATOR INTERRELATIONSHIPS

The goals of the RGS are highly interrelated around a central theme of growth management. Managing growth and creating complete, compact communities is complimentary to achieving other goals such as food security, environmental protection, efficient transportation, greenhouse gas emissions reduction and economic development. The process for selecting indicators for the RGS should consider that one indicator may be suitable for more than one target and more than one RGS goal.

³ The Sheltair Group: Indicators for Sustainable Communities: A Case Study Scan, March 2007

4.12 MEET NEEDS OF DIFFERENT INTERESTS

The process for selecting indicators and setting targets will recognize varying interests:

- (a) RDN Board – will use indicators to monitor results, track progress towards targets and evaluate the need to adjust policies and implementation priorities. The monitoring program needs to provide information that is detailed enough to guide decisions regarding where to direct resources;
- (b) Community Members – may use indicators and targets to monitor the progress of the RDN and member municipalities in achieving the goals of the RGS. Information for community members needs to be straightforward and meaningful in order to motivate changes in behaviour and to understand the impacts of RDN policies on both communities and individuals;
- (c) External Organizations – may use monitoring data to prioritize their own activities in keeping with the RGS goals. This may include creating their own targets and use of benchmarks to monitor their own progress; and
- (d) RDN Departments – may already have their own indicators and targets that need to be incorporated into the process and/or need to be involved in selecting appropriate indicators and targets related to the areas under their influence.

5. SCOPE OF WORK AND TIMELINES

The following tasks and timelines have been identified as part of the scope of work for this project:

	Task	Proposed Timing
Stage 1 Background Information	1. Terms of Reference – Prepare ToR for RDN Board to consider for Target Setting and Indicator Selection Project	Complete
	2. Monitoring Background Report – Complete report that provides background information on targets, indicators, monitoring and the history of monitoring the RGS.	Complete
	3. Compile list of possible targets – Compile list of potential targets based on those in use by RDN departments, externally by other levels of government and possible new targets.	Complete
	4. Compile list of possible indicators – Compile list of potential indicators based on those currently being used by the RDN, previously considered by the RDN, and possible new indicators including those identified in the RGS.	Complete
	5. Identify potential targets and appropriate indicators for each target Prepare a list of suitable targets and indicators aligned with the RGS goals for meetings with RDN staff and relevant professionals.	Complete
Stage 2 Verify Targets & Indicators	6. Consult RDN Staff and Relevant Professionals – Meetings will be held to review and verify a draft list of targets and indicators related to the RGS goals.	Winter 2014
	7. RDN Board Seminar – Based on feedback from meetings with RDN staff and relevant professionals, a list of proposed targets and indicators will be reviewed by the Board prior to presenting to the wider community for feedback.	Winter 2014

	Task	Proposed Timing
Stage 3 Community Feedback	8. Revise draft list - Based on the outcome of the seminar, revise list of targets and indicators as necessary.	Winter-Spring 2014
	9. Website update – Update RDN website with information on targets and indicator project.	Spring 2014
	10. Prepare online survey to get feedback on proposed targets – Design a survey and graphics appropriate for ‘broad’ public participation.	Spring 2014
	11. Advertisement – Advertise community meetings and the survey through newspapers, transit ads, libraries, RDN regional mailing lists, community notice boards and earned media.	Spring 2014
	12. Community Engagement on RGS Targets and Indicators – Present draft list of targets and indicators to the community for their consideration, confirmation and comment.	Spring 2014
Stage 4 Finalize	13. Compile Results – Close survey and aggregate results.	Spring 2014
	14. Finalize Targets and Indicators – Prepare a report on engagement results and present recommendations to the RDN Board to consider for a final list of targets and indicators.	Summer 2014
Stage 5 Initiate Monitoring	15. Initiate Monitoring Program – Following the adoption by the Board of a list of targets and indicators, initiate monitoring program.	Fall 2014
	16. Develop web based reporting system – Following the adoption by the Board of a list of targets and indicators, a web based reporting system will be established so that all interested parties can track the progress towards the RGS goals.	Fall 2014
	17. Prepare 2014 Annual Report	Winter 2015

6. ANTICIPATED OUTPUTS

The anticipated results of this project include:

- (a) Background research and a list of potential targets based on those in use by RDN departments and externally by other levels of government;
- (b) Background research and a list of potential indicators based on those established in past monitoring reports, those currently in use by the RDN and new ones proposed for new goals of the RDN;
- (c) Evaluation criteria to create a refined list of targets and indicators;
- (d) Web-based and printed educational materials to inform community members about the RGS monitoring process and outcomes;
- (e) Greater community engagement in RGS monitoring and awareness of actions they can take to influence reaching targets or improving indicator performance;
- (f) A monitoring website to provide information on progress towards meeting the RGS goals; and
- (g) Annual RGS monitoring reports for 2014 and beyond using the results of monitoring indicators to show progress towards targets and RGS goals.

7. RESOURCES

RDN Planning Staff

- (a) Research monitoring history, identify potential targets and indicators;
- (b) Prepare for and facilitate meetings and surveys;
- (c) Document feedback from community engagement and other input;
- (d) Develop structure for web based RGS reporting; and
- (e) Prepare the annual monitoring report.

Other RDN staff

- (a) Provide indicator and target information and advice relating to monitoring specific RDN functions. Review information to be included in list of potential targets and indicators; and
- (b) Advise on appropriate level of engagement including suggesting consultation with relevant professionals.

Intergovernmental Advisory Committee / Affected municipalities

- (a) Recommend and/or provide advice on appropriate targets and indicators as they relate to municipalities;
- (b) Recommend and/or provide advice on appropriate targets as they relate to the region; and
- (c) Provide data for indicators as it relates to municipalities.

RDN Board

- (a) Review and provide direction on the use of proposed indicators and targets;
- (b) Attend and participate in meetings/seminars as appropriate; and
- (c) Foster understanding and encourage community involvement in the project and reaching established targets.

Provincial Agencies

- (a) Provide data on indicators or targets collected by the Province; and
- (b) Provide advice on proposed targets and indicators.

8. BUDGET

The Long Range Planning Department budget for 2014 includes funds to cover costs associated with; gathering, researching and evaluating indicators and targets; consulting with RDN staff; getting feedback and direction from the RDN Board; and engaging community members using two meetings and a web-based public consultation approach.

One full-time planning staff equivalent plus GIS staff support (as needed) will be assigned to the project through to completion.

APPENDIX 1 – KEY INDICATORS FROM THE RGS

Climate Change

- Reduction of GHG emissions and energy consumption indicators and targets will be established in the Community Energy and Emissions Plan.

Environmental Protection

- Water quality and quantity (surface and groundwater);
- Air quality;
- Amount of new ESA lands and riparian areas protected.

Coordinate Land Use & Mobility

- Commute to work travel mode share;
- Total length of regional trail network;
- Share of population growth within GCB;
- Share of net new dwellings located within GCB;
- Number of households within GCB that are walking distance of transit;
- Diversity of land uses within designated mixed-use centres served by transit.

Concentrate Housing & Jobs in Growth Centres and Corridors

- Housing densities inside GCB;
- Net new dwellings located in the City of Nanaimo and major urban centres;
- Share of net new dwellings in electoral areas located within rural area GCB;
- Share of new jobs located in the City of Nanaimo and urban centres;
- Share of new jobs in electoral areas located within rural area GCB.

Rural Integrity

- Net change in land area of forestry lands (lands designated Resource Lands and Open Space excluding ALR and designated open space lands);
- Net change in land area of ALR;
- Number of new parcels subdivided in ALR lands;
- ALR range of parcel sizes;
- Gross farm receipts and number of farms by gross farm receipt category;
- Density outside the GCB.

Affordable Housing

- Housing diversity by unit type;
- Number of new affordable housing units constructed;
- Subsidized housing wait lists;
- Level of homelessness.

Resilient Economy

- Number of new jobs in the region;
- Share of jobs by economic sector.

Culture, Arts and Recreation

- Number of inventoried heritage resources;
- Kilometres of public trails and pathways.

Efficient Services

- Per capita disposal of solid waste;
- Average per capita consumption of potable water;
- Per capita length of water and sewer lines in areas with community services;
- Per capita road length.

APPENDIX 2 – PREVIOUS RGS MONITORING EVALUATION CRITERIA

2006 State of Sustainability Indicator Selection Criteria

- *Relevant.* The indicator reflects the sustainability topic of interest.
- *Linked to Action.* The indicator supports change in behaviour or improvement in decisions, goals, or policies in the region.
- *Understandable.* A diverse range of people easily understands the indicator.
- *Sensitive to change.* The indicator reveals change in the social or physical environment.
- *Integrative.* The indicator demonstrates connections among key dimensions of sustainability. This criterion is desirable but not crucial. That is, some excellent indicators pertain only to a single dimension of sustainability.
- *Comparable.* The indicator results can be compared with other regions.
- *Scale.* The indicator reveals conditions and trends at the regional or sub-regional levels.
- *Interpretable.* The indicator is free of extraneous factors that could confound its interpretation (e.g., what else could affect the indicator besides the social or physical topic of interest).

Data qualities

Sustainability indicators can only be used if data are available to support them. A good sustainability indicator is supported by data that meet all or most of the criteria listed below. These criteria were applied in the assessment of data available for candidate RDN indicators for the 2006 monitoring report.

- *Available.* Data exist to support the indicator.
- *Scale.* The data captured are at a scale appropriate for sustainability reporting needs (e.g., regional, municipal, street-level, household).
- *Temporal.* The data have been collected long enough to show trends over time and progress toward targets, and will continue to be collected in the future.
- *Usable.* The data format is compatible with the RDN system, and the RDN can perform data interpretation and presentation needed to support the indicator.
- *Accurate.* The data collection and aggregation method is appropriate for the indicator.
- *Affordable.* The cost of obtaining data to support the indicator is reasonable and within the budget of the RDN.

APPENDIX 3 - POTENTIAL / EXISTING TARGETS AND RELATED INDICATORS FOR EACH RGS GOAL

Goal 1 Prepare for Climate Change and Reduce Energy Consumption

Existing Target:

- ❖ Reduce GHG emissions 33% below 2007 levels by 2020 and 80% by 2050

Baseline:

- Community Energy Inventory – GHG emissions 2010

Possible Indicators:

- Community Energy Inventory – GHG emissions

Possible Target:

- ❖ Reduce per capita energy use (% or number)

Baseline:

- Community Energy Inventory – energy consumption for vehicles and buildings in 2010
- Number of hybrid and electric vehicles in 2011

Possible Indicators:

- Vehicle Ownership (types of vehicles owned)
- Residential energy use – electricity and natural gas
- Number of hybrid and electric vehicles
- Other indicators from the Community Energy Inventory could also be used

Possible Target:

- ❖ Increase the amount of energy obtained from green renewable sources within the region (% or number)

Baseline:

- Energy produced from renewable resources within the region in 2011

Possible Indicator:

- Energy produced from renewable resources within the region

Goal 2 Protect the Environment

Possible Target:

- ❖ Decrease per capita daily total water consumption (% or number)

Baseline:

- Domestic water consumption for 2011

Possible Indicator:

- Domestic water consumption

Possible Target:

- ❖ Increase the amount of land in parks and other forms of protected areas (% or number)

Baseline:

- Amount of land in parks and other forms of protected areas in 2011

Possible Indicator:

- Amount of land in parks and other forms of protected areas.

Goal 3 Coordinate Land Use and Mobility

Possible Target:

- ❖ Increase the number of people living within close proximity to places to work, play, learn and shop

Baseline:

- Number of people living within a set distance (400 m) of employment lands, shopping, schools, transit and recreation facilities in 2011
- Land use diversity within the designated mixed-use centers (served by transit) in 2011

Possible Indicators:

- Number of people living within a set distance (400 m) of employment lands, shopping, schools, transit and recreation facilities
- Land use diversity within designated mixed-use centres (served by transit)

Possible Target:

- ❖ Increase the travel mode share for non-automobile forms of travel

Baseline:

- Travel mode share for 2011
- Number of people using public transit 2011

Possible Indicators:

- Travel mode share
- Number of people using public transit

Goal 4 Concentrate Housing and Jobs in Rural Village and Urban Growth Centres

Possible Target:

- ❖ Increase the proportion of the population living in Rural Village and Urban Growth Centres (by X %)

Baseline:

- Density of population inside the GCB 2011
- Density of dwelling units inside the GCB 2011

Possible Indicators:

- Density of population inside the GCB
- Density of dwelling units inside the GCB

Possible Target:

- ❖ Increase the proportion of jobs located in Rural Village and Urban Growth Centres (by X %)

Baseline:

- Portion of land inside the designated mixed-use centres that permit job producing uses 2011
- Portion of jobs located inside the designated mixed-use centres 2011

Possible Indicators:

- Portion of land inside the designated mixed-use centres that permit job producing uses
- Portion of jobs located inside the designated mixed-use centres

Possible Target:

- ❖ Increase the diversity of housing types within the GCBs (can set targets for each type of housing)

Baseline:

- Diversity of housing types in the designated mixed-use centres 2011
- Density of developed land in the designated mixed-use centres (residential and commercial) 2011

Possible Indicators:

- Diversity of housing types in the designated mixed-use centres
- Density of developed land in the designated mixed-use centres (residential and commercial)

Goal 5 Enhance Rural Integrity

Possible Target:

- ❖ Maintain (or increase) the amount of land available for natural resource uses (farming, forestry, outdoor recreation)

Baseline:

- The amount of land in the ALR in 2011
- The amount of land classified as PMFL in 2011

Possible Indicators:

- The amount of land in the ALR
- The amount of land classified as PMFL
- The total area in shellfish aquaculture licenses

Possible Target:

- ❖ Increase the portion of development inside the GCB

Baseline:

- The proportion of lots/units inside and outside the GCB in 2011

Possible Indicators:

- The number of new lots/units created through subdivision inside and outside the GCB

Goal 6 Facilitate the Provision of Affordable Housing

Possible Target:

- ❖ Increase the portion of households living in suitable, affordable and attainable housing (% or number)

Baseline:

- The portion of households paying 30% or less of household income on housing in 2011
- The number of households in core housing need in 2011
- The number of units of purpose built affordable housing in 2011
- The total and number of rental units affordable to households with income below 50% of the median income for the region in 2011

Possible Indicators:

- The portion of households paying 30% or less of household income on housing
- The number of households in core housing need
- The number of new units of purpose built affordable housing
- The total and number of new rental units affordable to households with income below 50% of the median income for the region

Possible Target:

- ❖ Increase the housing mix inside the GCB (% or number; could have different targets for Urban Areas and RVCs)

Baseline:

- The portion of units in each housing type in 2011

Possible Indicator:

- The portion of units in each housing type

Possible Target:

- ❖ Decrease the level of homelessness in the region (% or number requiring services or emergency shelter)

Baseline:

- The case load number for outreach workers 2011
- The number of people using emergency and extreme weather shelters 2011

Possible Indicator:

- The case load number for outreach workers
- The number of people using emergency and extreme weather shelters

Goal 7 Enhance Economic Resiliency

Possible Target:

- ❖ Increase the number of jobs in the region

Baseline:

- The number of jobs in the region in 2011

Possible Indicator:

- The number of jobs in the region

Possible Target:

- ❖ Increase the diversity of employment in the region

Baseline:

- The proportion of jobs in each labour category in 2011

Possible Indicator:

- The proportion of jobs in each labour category

Goal 8 Enhance Food Security

Possible Target:

- ❖ Increase the amount of food produced in the RDN

Baseline:

- Amount of land in the ALR in 2011
- The total area of land in the RDN being used for food production in 2011
- Number of parcels in the RDN with farm status in 2011
- Value of gross farm receipts in the RDN in 2011

Possible Indicators:

- Amount of land in the ALR
- The total area of land in the RDN being used for food production
- Number of parcels in the RDN with farm status
- Value of gross farm receipts in the RDN

Possible Target:

- ❖ Increase the amount of shellfish grown, harvested and processed in the region

Baseline:

- Area under active shellfish tenure in 2011

Possible Indicators:

- Area under active shellfish tenure

Goal 9 Celebrate Pride of Place

Possible Target:

- ❖ Increase the number of cultural and artistic events

Baseline:

- The number of public events held in the RDN in 2011

Possible Indicator:

- The number of public events held in the RDN each year

Possible Target:

- ❖ Increase the area for parks and other public gathering places

Baseline:

- The amount of land for parks and other public gathering places in 2011

Possible Indicator:

- The amount of land for parks and other public gathering places

Possible Target:

- ❖ Increase the protection of historic places that are valued by the community (% or number of buildings on heritage registrars)

Baseline:

- The number of buildings or places on the historic places registrar 2011

Possible Indicator:

- The number of buildings or places on the historic places registrar

Goal 10 Provide Services Efficiently

Possible Target:

- ❖ Decrease the per capita length of roads (length of paved roads per person)

Baseline:

- Per capita length of roads in 2011

Possible Indicator:

- Per capita length of roads

Possible Target:

- ❖ Decrease the per capita length of water and sewer lines (length of sewer and water mains per person)

Baseline:

- Per capita length of water and sewer lines (length of sewer and water mains per person) in 2011

Possible Indicator:

- Per capita length of water and sewer lines (length of sewer and water mains per person)

Possible Target:

- ❖ Decrease the per capita amount of waste going to the landfill (amount of waste sent to landfill per person)

Baseline:

- The amount of waste diverted from the landfill in 2011
- The amount of material that is recycled, reused or processed for reuse in 2011
- Per capita waste disposal 2011

Possible Indicators:

- The amount of waste diverted from the landfill
- The amount of material that is recycled, reused or processed for reuse
- Per capita waste disposal

Goal 11 Enhance Cooperation Among Jurisdictions

Possible Target:

- ❖ Increase the number of formal agreements/partnerships with the private sector, community groups and First Nations and between different levels of government

Baseline:

- The number of formal agreements/partnerships with the private sector, community groups, First Nations and other government agencies as of 2011

Possible Indicator:

- The number of formal agreements/partnerships with the private sector, community groups, First Nations and other government agencies



CAO APPROVAL		✓
EAP		
COW	✓	
DEC 23 2013		
RHD		
BOARD		

MEMORANDUM

TO: Sean De Pol
Manager, Wastewater Services

DATE: 19 December 2013

FROM: Shelley Norum
Wastewater Coordinator

FILE: 5345-20

SUBJECT: Liquid Waste Management Plan Amendment

PURPOSE

To present the *Liquid Waste Management Plan Amendment, Consultation Summary Report* and *First Nations Engagement Progress Report* for information and to obtain Board support to submit the *Liquid Waste Management Plan Amendment* to the Minister of Environment for approval.

BACKGROUND

RDN Wastewater Services owns and operates four wastewater treatment facilities: Greater Nanaimo Pollution Control Centre (GNPCC), French Creek Pollution Control Centre (FCPCC), Nanoose Bay Pollution Control Centre (NBPCC), and Duke Point Pollution Control Centre (DPPCC). FCPCC and DPPCC provide secondary-level wastewater treatment while GNPCC and NBPCC provide chemically-enhanced primary treatment.

Treatment of municipal wastewater is regulated by the provincial Municipal Wastewater Regulation and federal Wastewater Systems Effluent Regulations. These regulations set minimum effluent quality standards that can be achieved through secondary wastewater treatment or better, while recognizing that it will take time to upgrade some treatment facilities. For that reason, BC's *Environmental Management Act* allows local governments to develop a Liquid Waste Management Plan (LWMP). An LWMP lets local governments establish a reasonable timeframe to meet minimum requirements under the Municipal Wastewater Regulation. It also helps to define how local governments will recover resources from waste; reduce pollution, and manage rainwater.

The Regional District of Nanaimo (RDN) completed its original LWMP in 1997 and that plan was approved by the Minister of Environment, Lands and Parks in 1999. Among other commitments, the original LWMP projected an upgrade from primary to secondary treatment at NBPCC by 2010 (based on projected population growth that did not occur), and GNPCC by 2015.

In 2008, the RDN embarked on a process to amend the Liquid Waste Management Plan (LWMP). LWMPs and amendments must be approved by the Minister of Environment. Meaningful public consultation and First Nations engagement are critical components of an LWMP amendment. Public consultation is essential because, under the Community Charter and *Local Government Act*, the RDN must seek electoral approval to borrow for capital works. However, an LWMP gives the public an opportunity to provide input with respect to the development of the LWMP and financing of the proposed projects. Therefore, the *Environmental Management Act* considers the need for electoral approval to be fulfilled if the RDN demonstrates that the public was adequately consulted and the RDN may borrow money according to the plan without further approval or referendum. There is no mechanism for a public appeal of an LWMP once approved by the Minister of Environment.

The province of British Columbia has a duty to consult with First Nations whenever it proposes a decision that has the potential to affect aboriginal interests or treaty rights. For the LWMP amendment, the province delegated procedural aspects of First Nations consultation to the RDN. Therefore, the RDN must demonstrate adequate public consultation and First Nations engagement in order for the Minister to consider approving the plan.

Liquid Waste Management Plan Amendment

RDN staff produced a draft Liquid Waste Management Plan Amendment in August 2013 (and updated September 2013) to generate public feedback on all ten LWMP programs, with emphasis on the preferred timeline and level of taxation for secondary treatment upgrades at GNPCC and NBPCC.

The ten LWMP Programs included:

- **Public Wastewater Systems Program:** to increase access to sewer services and reduce risks to human health and the environment.
- **Private Onsite Systems Program:** to protect human health and the environment from failing onsite systems through education and awareness.
- **Source Control Program:** to reduce wastewater contaminants at the source.
- **Odour Control Program:** to reduce nuisance odours from our wastewater infrastructure.
- **Rainwater Management / Drinking Water & Watershed Protection Program:** To protect our water resources through an integrated wastewater-rainwater-watershed management approach.
- **Volume Reduction Program:** to reduce wastewater production by promoting water conservation measures.
- **Inflow & Infiltration Program:** to meet provincial standards and reduce the volume of surface and groundwater entering sewer systems to reduce wastewater infrastructure loading and costs.
- **Pollution Control Centres Program:** to meet provincial and federal wastewater treatment standards, recover resources, and protect human health and the environment.
- **Resource Recovery Program:** to economically recover and utilize resources in wastewater.
- **Biosolids Program:** to beneficially utilize biosolids produced during wastewater treatment.

The Pollution Control Centres Program considered three secondary treatment timing options for GNPCC and NBPCC. For GNPCC, the timing options were: 2016, 2018 and 2019. For NBPCC, the timing options were: 2020, 2025 and 2030.

Public Consultation

Adhering to the updated Consultation Plan, RDN staff created a comprehensive public consultation framework. This framework provided the RDN public with a range of opportunities to be informed about, and participate directly in, the LWMP amendment process. Pathways for information distribution and feedback included:

- Engagement through an Advisory Committee
- LWMP Website
- LWMP factsheets
- Distribution of the Draft LWMP Amendment
- Public meetings
- Surveys
- Mail-out to Nanoose Bay Service Area residents

- Meetings with other levels of government
- Email notification to 56 residents and business associations, including the French Creek Residents Association
- Newspaper interview and articles
- Advertising.

The public was invited to offer feedback on all ten LWMP programs. A public evaluation of technical, environmental, social and economic considerations for the secondary treatment timing options was an integral part of public consultation.

As provincial and federal grants are sometimes available to secondary treatment upgrades, three funding scenarios (no grant, 1/3 grant, and 2/3 grant) were also considered during consultation. Financial implications of the three timing options are summarized below in Table 1 and 2. Tables 1 and 2 assume minimal growth to the service areas and constant interest rates. They do not consider inflation.

Table 1. Potential Average Annual Sewer Tax Increase for Residents in the Greater Nanaimo Service Area, Based on Three Timing Options and Three Cost Sharing Scenarios

Cost sharing scenario	2013 Tax (average)	Potential Tax Increase Phased in From 2014-2022					
		Option 1. 2016		Option 2. 2018		Option 3. 2019	
		Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2022
No Grant	\$104	\$18	\$268	\$15	\$238	\$13	\$224
1/3 Grant		\$12	\$213	\$10	\$194	\$9	\$185
2/3 Grant		\$8	\$179	\$7	\$167	\$6	\$161

Note, tax increase is phased in incrementally from 2014-2022. Amounts are based on an average house in Nanaimo, with an assessed value of \$350,000. Cost-sharing (grants) apply only to construction costs and do not cover the costs of operation.

Table 2. Potential Average Annual Sewer Tax Increase for Residents in the Nanoose Bay Service Area, Based on Three Timing Options and Three Cost Sharing Scenarios

Cost sharing scenario	2013 Tax (average)	Potential tax increase phased in from 2014-2031					
		Option 1. 2020		Option 2. 2025		Option 3. 2030	
		Average Annual Increase	Tax in 2031	Average Annual Increase	Tax in 2031	Average Annual Increase	Tax in 2031
No Grant	\$622	\$27	\$1,115	\$20	\$983	\$19	\$966
1/3 Grant		\$20	\$982	\$16	\$916	\$15	\$885
2/3 Grant		\$14	\$863	\$13	\$852	\$12	\$833

Note, tax increase is phased in incrementally from 2014-2031. Cost-sharing (grants) apply only to construction costs and do not cover the costs of operation.

The public was invited to respond in person during public meetings, via phone, and through the survey, email, and via standard mail. To date, 1,036 people participated directly in LWMP events. Staff received feedback on all ten LWMP programs.

Feedback from the consultation process varied in regards to the preferred date for secondary treatment at GNPCC and NBPCC. Among residents who stated a preference, the average preferred date was 2018 for the upgrade at GNPCC and 2023 for the upgrade at NBPCC.

Proceedings of public consultation (including a complete evaluation of technical, environmental, social and economic considerations for secondary treatment) are included in the *Public Consultation Summary Report*, attached in Schedule A.

First Nations Engagement

The RDN wishes to engage First Nations in a respectful and meaningful way by ensuring that there are a range of opportunities to meet, engage, and participate directly in the liquid waste management planning and decision-making process.

The RDN engaged with 22 First Nations Groups, as recommended by province's Consultative Areas Database (CAD) Public Map Service, with a focus on the three resident First Nations: Snuneymuxw First Nation, Snaw-Naw-As First Nation, and Qualicum First Nation. First Nations engagement included:

- Letters to all 22 First Nations groups identified by the CAD query
- Meeting with First Nations, upon request, to share information
- Follow up letters and phone and email conversations
- Invitation to access online information and the community feedback survey

To date, First Nations have not identified specific LWMP-related impacts. Therefore, specific accommodation was not discussed during engagement activities. Snuneymuxw First Nation and the RDN intend to engage in further dialogue related to the Treaty of 1854 and marine resources. The RDN intends to continue engaging with First Nations after the LWMP amendment is complete. If LWMP-related impacts are identified in the future, the RDN intends to address them in a respectful manner.

A detailed summary of First Nations engagement activities is provided in the *First Nations Engagement Progress Report*, attached in Schedule B.

Final Draft Liquid Waste Management Plan Amendment

The LWMP amendment was updated to accommodate feedback from the public. Based on the results of public consultation, and on the technical, environmental, social and economic considerations, RDN staff recommends amending the LWMP to provide secondary treatment at GNPCC by 2018.

This date is recommended because it:

- Was preferred, on average, by those who expressed a preference during consultation
- Provides reasonable time to address technical, environmental, social and economic considerations
- Meets provincial and federal requirements within a reasonable timeframe
- Aligns well with completion of the outfall project
- Provides time to collect funds to complete the project
- Aligns with the timing for major treatment upgrades by Metro Vancouver and the Capital Regional District.

Based on the results of public consultation, and on the technical, environmental, social and economic considerations, RDN staff recommends amending the LWMP to provide secondary treatment at NBPCC by 2023.

This date is recommended because it:

- Was preferred, on average, by those who expressed a preference during consultation
- Provides reasonable time to address technical, environmental, social, and economic considerations
- Meets provincial and federal requirements within a reasonable timeframe
- Aligns well with completion of GNPCC secondary treatment
- Aligns with growth projections
- Provides time to collect funds to complete the project.

The Final Draft *Liquid Waste Management Plan Amendment* is attached in Schedule C.

ALTERNATIVES

1. Receive the *Liquid Waste Management Plan Amendment* (Schedule C), *Consultation Summary Report* (Schedule A) and *First Nations Engagement Progress Report* (Schedule B) for information and direct staff to submit the *Liquid Waste Management Plan Amendment* to the Minister of Environment for approval with secondary treatment completion dates of 2018 for GNPCC and 2023 for NBPCC.
2. Receive the *Liquid Waste Management Plan Amendment* (Schedule C), *Consultation Summary Report* (Schedule A) and *First Nations Engagement Progress Report* (Schedule B) for information and direct staff to submit the *Liquid Waste Management Plan Amendment* to the Minister of Environment for approval with Board directed changes to secondary treatment completion dates for GNPCC and NBCPP and/or other programs.
3. Receive the *Liquid Waste Management Plan Amendment* (Schedule C), *Consultation Summary Report* (Schedule A) and *First Nations Engagement Progress Report* (Schedule B) for information and do not approve the *Liquid Waste Management Plan Amendment*. Without an LWMP amendment, the approved 1997 LWMP remains a legal commitment under the *Environmental Management Act*.

FINANCIAL IMPLICATIONS

An approved LWMP becomes a legal document and gives the local government the authority and responsibility to implement the plan. The plan proposes capital upgrades which necessitate a tax increase in the upcoming years. The proposed tax increases for GNPCC and NBPCC, based on the provision of secondary treatment by 2018 and 2023, respectively, are included in Table 3.

Since the RDN funds services, based on a user pay principle, by establishing service area bylaws, the cost of upgrading and operating the capital projects, such as secondary upgrades, must be born entirely by development and the residents within the service area.

The RDN pursues grant funding when grant programs are available. To date, no grant funds have been allocated to these projects. However, The RDN will continue to pursue federal and provincial grant options to fund secondary treatment at GNPCC and NBPCC.

Table 3. Estimated Average Annual Sewer Tax Increase for Residents in the Greater Nanaimo Service Area and Nanoose Bay Service Area

Cost Sharing Scenario	Greater Nanaimo Service Area (Upgrade by 2018)		Nanoose Bay Service Area (Upgrade by 2023)	
	Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2031
No Grant	\$15	\$238	\$23	\$1,049
1/3 Grant	\$10	\$194	\$18	\$948
2/3 Grant	\$7	\$167	\$13	\$857

Note: The 2013 average household tax was \$104 for residents of the Greater Nanaimo Service Area and \$622 for residents of the Nanoose Bay Service Area.

INTERGOVERNMENTAL IMPLICATIONS

Municipal Governments

Commitments within the amended LWMP have implications for our member municipalities, as most of the ten LWMP programs affect municipal residents. In particular, collection systems owned and operated by the municipalities feed into the RDN's interceptor lines and pollution control centres. Therefore, requirements imposed on the RDN to provide high quality treatment and manage influent (e.g. volume, inflow and infiltration, influent quality) must be managed in collaboration and cooperation with the member municipalities.

The LWMP was updated in consultation with the Regional Liquid Waste Advisory Committee (RLWAC). Municipal utility managers from each municipality sit on the committee and were involved with the LWMP amendment process. As well, four Board members are appointed to the committee. Often, one or more of those Board members represent a municipality. Currently the City of Nanaimo and District of Lantzville have Board representation on the RLWAC. In the past, the Town of Qualicum Beach and the City of Parksville have also had Board representation on this committee.

RDN staff also presented the draft LWMP Amendment to municipal councils during the public consultation period.

Provincial and Federal Governments

The Ministry of Environment (MOE) and Environment Canada also have representation on the RLWAC and were involved with the LWMP amendment process.

RDN staff also met with periodically with MOE staff during the amendment period to discuss recommendations for the LWMP amendment and timeline for wastewater infrastructure upgrades.

As well, RDN staff wrote letters and met with provincial and federal governments to inquire into grant funding and to discuss the LWMP amendment and timeline for wastewater infrastructure upgrades.

First Nations Governments

As mentioned above, the RDN is engaging with Chief and Council of 22 First Nations governments.

STRATEGIC PLAN IMPLICATIONS

The LWMP Amendment is directly aligned with the 2013 – 2015 Board Strategic Plan. Within the Board Strategic Plan, completion of the LWMP amendment is identified as an “action” for Regional and Community Utilities. Completion of the LWMP amendment will help Wastewater Services achieve the other “strategic goals and actions” including:

- Continuing to improve the quality of treated wastewater in the region
- Exploring resource recovery opportunities to maximize the effective reuse of treated wastewater and biosolids.
- Anticipating regulatory changes in required treatment levels.

SUMMARY/CONCLUSIONS

Provincial and federal regulations require that the RDN upgrade Greater Nanaimo Pollution Control Centre (GNPCC) and Nanoose Bay Pollution Control Centre (NBPCC) from the current level of treatment (chemically-enhanced primary treatment) to secondary treatment or better. A Liquid Waste Management Plan (LWMP) establishes a reasonable timeframe to achieve those requirements. The RDN completed its original LWMP in 1997 and that plan was approved by the Minister of Environment, Lands and Parks in 1999. Among other commitments, the original LWMP projected an upgrade from primary to secondary treatment at NBPCC by 2010 (based on projected population growth that did not occur) and at GNPCC by 2015.


Through the LWMP amendment, the RDN proposes to modify the completion dates for secondary treatment at GNPCC and NBPCC. LWMPs and amendments must be approved by the Minister of Environment and the RDN must demonstrate adequate public consultation and First Nations engagement before the Minister will consider approving the LWMP amendment. A draft Liquid Waste Management Plan Amendment was produced in August 2013 (updated in September 2013) to generate public feedback on all ten LWMP programs with emphasis on the selection of a preferred timeline and level of taxation for secondary treatment upgrades at GNPCC and NBPCC. Three secondary treatment timing options for GNPCC and NBPCC were included in the Pollution Control Centres Program. For GNPCC, the timing options for completion of secondary treatment were: 2016, 2018 and 2019. For NBPCC, the timing options for completion of secondary treatment were: 2020, 2025 and 2030.

Based on an evaluation of technical, environmental, social and economic considerations and results of public consultation, RDN staff recommend that we amend the LWMP to provide secondary treatment at GNPCC by 2018 and NBPCC by 2023.

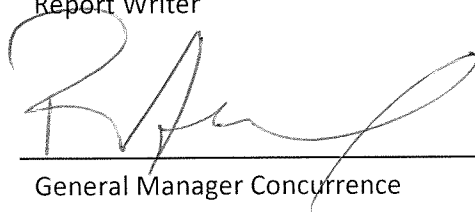
To complete secondary treatment upgrades at GNPCC by 2018, the average household tax for residents in the service area will increase by \$7-15 per year from 2014-2022. To complete secondary treatment upgrades at NBPCC by 2023, the average household tax for residents in the service area will increase by \$13-23 per year from 2014-2031. Provincial and federal cost-sharing is sometimes available to projects such as these. A grant award for these projects would result in the lower range of tax increase noted above.

RECOMMENDATIONS

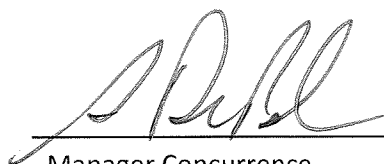
1. That the Board receives the *Liquid Waste Management Plan Amendment, Consultation Summary Report and First Nations Engagement Progress Report* for information.
2. That the Board supports the *Liquid Waste Management Plan Amendment* and recommendation to provide secondary treatment at GNCPP by 2018 and secondary treatment at NBPCC by 2023.
3. That the Board directs staff to submit the *Liquid Waste Management Plan Amendment* to the Minister of Environment for approval.



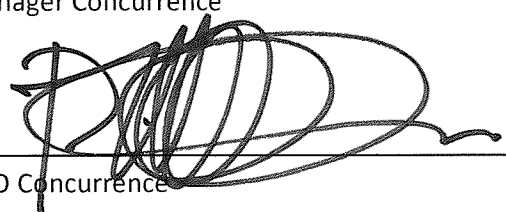
Report Writer



General Manager Concurrence



Manager Concurrence



CAO Concurrence

PUBLIC CONSULTATION SUMMARY REPORT

On the

*Regional District of Nanaimo
Liquid Waste Management Plan Amendment*

*DRAFT – December 2013
File No: 5340-20*



**LIQUID WASTE
MANAGEMENT PLAN**

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Background

New laws governing wastewater management in British Columbia require a standard level of wastewater treatment that can be achieved through secondary wastewater treatment or better. Those laws also recognize that it will take time for some treatment facilities, such as the Greater Nanaimo Pollution Control Centre (GNPCC) and the Nanoose Bay Pollution Control Centre (NBPCC), to provide secondary treatment. For that reason, BC's *Environmental Management Act* allows local governments to develop a Liquid Waste Management Plan (LWMP). The LWMP lets local governments establish a reasonable timeframe to develop affordable community-driven solutions for financing and upgrading infrastructure and to meet requirements under the provincial Municipal Wastewater Regulation (MWR). It also helps to define how local governments will recover resources from waste; reduce pollution, including flow entering wastewater infrastructure; and manage stormwater.

Under the Community Charter and *Local Government Act*, a local government must seek electoral approval (i.e. hold a referendum) to borrow for capital works. However, an LWMP gives the public an opportunity to provide input with respect to the development of the LWMP and financing of the proposed projects. Therefore, the *Environmental Management Act* considers the need for electoral approval to be fulfilled if a local government can demonstrate that the public was adequately consulted. There is no mechanism to appeal an LWMP once approved by the Minister of Environment. For those reasons, adequate public participation during plan development is essential.

The Regional District of Nanaimo (RDN) completed its original LWMP in 1997; that plan was approved by the Minister of Environment, Lands and Parks in 1999. The RDN is proposing to amend the LWMP. Meaningful public consultation is a critical component of the amendment. The following sections summarize the RDN's involvement with the community during development of the LWMP amendment. A separate report summarizes progress towards Engagement with First Nations communities.

LIQUID WASTE MANAGEMENT PLAN AMENDMENT

Liquid Waste Management Plan Amendment

The RDN produced a draft amendment for public consultation in August 2013 (updated in September 2013).

The draft was produced to generate public feedback on all ten LWMP programs with emphasis on the preferred timeline and level of taxation for secondary treatment upgrades at GNPCC and NBPCC.

The ten LWMP Programs included:

- Public Wastewater Systems Program
- Private Onsite Systems Program
- Source Control Program
- Odour Control Program
- Rainwater Management / Drinking Water & Watershed Protection Program
- Volume Reduction Program
- Inflow & Infiltration Program
- Pollution Control Centres Program
- Resource Recovery Program
- Biosolids Program

Secondary treatment timing options for GNPCC and NBPCC were included in the Pollution Control Centres Program. For GNPCC, the RDN proposed three timing options for completion of secondary treatment: 2016, 2018 and 2019. For NBPCC, the RDN also presented three timing options for completion of secondary treatment: 2020, 2025 and 2030. Technical, Social, Environmental and Economic Implications were provided for each timing option.

Public Consultation Strategy

The RDN Board approved the LWMP Public Consultation Plan in March 2008. It then approved an updated Consultation Plan in July 2013 (Appendix A). The current consultation plan was posted on the RDN website throughout the update process.

Using the updated Consultation Plan as a guide, the RDN created a comprehensive framework to provide a range of opportunities for the RDN public to be informed and participate directly in the LWMP amendment process. Pathways for information distribution and feedback included:

- Engagement through an Advisory Committee
- LWMP Website
- LWMP factsheets
- Distribution of the Draft LWMP Amendment
- Public meetings
- Survey
- Mail-out to Nanoose Bay Service Area residents
- Meetings with other levels of government
- Advertising.

The public was invited to respond in person during public meetings, via phone, and through the survey, email, and standard mail.

REGIONAL LIQUID WASTE ADVISORY COMMITTEE

The LWMP was updated in consultation with the Regional Liquid Waste Advisory Committee (RLWAC), a committee that fulfills the roles of the technical, local advisory and monitoring committees as described by the Ministry of Environment (MOE) Interim Guidelines for Preparing Liquid Waste Management Plans. The RLWAC includes individuals representing:

- RDN Board of Directors
- Municipal utility managers
- RDN residents
- Local businesses
- First Nations
- environmental organizations (Georgia Strait Alliance)
- Ministry of Environment

PUBLIC CONSULTATION STRATEGY

- Vancouver Island Health Authority
- Environment Canada.

Fisheries and Oceans Canada declined the invitation to join the committee.

The RLWAC met on 18 occasions between February 2008 and November 2013 to evaluate options and issues related to wastewater management in the RDN. The RLWAC commented on discussion papers, reports, draft LWMP amendments and other issues as they emerged through the review process. Input from the RLWAC was recorded in the minutes and helped shape the LWMP amendment. The RLWAC enhanced public consultation since the committee includes public representatives and representatives of the RDN Board, who represent their constituents. The public also may observe RLWAC meetings and review the minutes, which are posted on the RDN LMWP website.

WEBSITE

The website www.rdnLWMP.ca is a dedicated site to inform the public about the LWMP and amendment process. The website provided copies of the Approved LWMP, Draft Amendment and LWMP Factsheets. It also presented the schedule of public meetings, provided a link to the public survey and contained pages for frequently asked questions and RLWAC agendas, minutes and discussion papers.

FACTSHEETS

RDN staff created a wastewater glossary and LWMP Factsheets to explain the basics of wastewater treatment and to summarize key points of the LWMP Amendment in a user-friendly format. Wastewater Glossary and LWMP Factsheets are included in Appendix B. The Factsheets cover:

- Factsheet 1: Wastewater Services Overview
- Factsheet 2: LWMP Overview
- Factsheet 3: Wastewater Basics for Unsewered Areas
- Factsheet 4: Wastewater Basics for Sewered Areas
- Factsheet 5: What does the LWMP Amendment Mean for Nanaimo and Lantzville Residents with Sewer Service?
- Factsheet 6: What does the LWMP Amendment Mean for Parksville, Qualicum Beach, French Creek and Area Residents with Sewer Service?
- Factsheet 7: What does the LWMP Amendment Mean for Nanoose Residents with Sewer Service?

PUBLIC CONSULTATION STRATEGY

Factsheet 5 and 7 (Appendix B) outlined the three secondary upgrade timing options for Greater Nanaimo Pollution Control Centre and Nanoose Bay Pollution Control Centre, respectively. The Factsheets included a detailed analysis of the technical, environmental, social, and economic implications of each option.

DRAFT AMENDMENT DISTRIBUTION

Hard copies of the Draft LWMP Amendment were:

- Distributed to all 17 RDN Board of Directors
- Made available to RLWAC
- Available at the RDN Administration office
- Available at 7 Vancouver Island Regional Library branches
- Available at 12 LWMP Public Information Meetings
- Available at 5 SepticSmart workshops.
- Additionally, an electronic copy was posted at www.rdnLWMP.ca.

PUBLIC MEETINGS

Public Information Meetings

Twelve public meetings were held from August to October, 2013. At least one public meeting was held in every municipality and electoral area:

- Electoral Area A, Cedar Community Hall – Monday, September 30
- Electoral Area B, Gabriola Island Agricultural Hall – Thursday, September 26
- Electoral Area C, Extension Community Hall – Monday, August 26
- Electoral Area E, Fairwinds Centre – Monday, September 16
- Electoral Area F, Bradley Centre – Thursday, September 5
- Electoral Area G, Little Qualicum Hall – Thursday, August 29
- Electoral Area G (French Creek), St. Columba Church Hall – Tuesday, October 1
- Electoral Area H, Bowser Legion Hall – Wednesday, August 28
- Nanaimo, Oliver Woods Community Centre – Monday, September 9
- Lantzville, Lantzville Legion – Thursday, September 12
- Parksville, Parksville Community & Conference Centre – Monday, September 23
- Qualicum Beach, Qualicum Beach Civic Centre – Wednesday, September 25.

PUBLIC CONSULTATION STRATEGY

These meetings were designed specifically to consult the public on the LWMP Amendment. Meetings lasted two hours on various weeknights and were structured into a half-hour poster review/information session and a 1.5 hour focused question and answer period designed to generate feedback on each of the ten LWMP programs. At least three staff were present at each meeting to answer questions from the public. A total of 116 people attended these meetings. The outline of the question and answer session is summarized in Appendix C.

Open Houses

Annual open houses at the Greater Nanaimo Pollution Control Centre and French Creek Pollution Control Centre during the amendment period provided the public with information on the LWMP and amendment process. More than 640 people attended an Open House between 2008 and 2013.

Other Meetings

The Liquid Waste Management Plan Amendment, Factsheet Series and LWMP surveys were available at five SepticSmart workshops in October and November 2013. A total of 132 people attended the fall 2013 SepticSmart workshops.

RLWAC Meetings

As mentioned above, RLWAC meetings were open to the public and meeting minutes were available on the RDN website.

SURVEY

On August 26, 2013, the RDN launched a community feedback survey. This survey was also made available online on September 5, 2013. The survey was made open to the public until mid-December 2013. In total 122 people responded to the survey. While not statistically significant, online surveys provided a measure of public sentiment. A copy of the survey and survey results are presented in Appendix D.

NANOOSE MAIL-OUT

The Public Information Meeting in Electoral Area E (Nanoose Bay) was held at the Fairwinds Centre on September 16, 2013. Twenty members of the public attended that meeting. A recommendation from that meeting included further communication with residents in the Nanoose Bay Service Area to relay the important issues covered in the LWMP Amendment. On November 8, 2013, the RDN sent a special mail-out to all homes in the Nanoose Bay sewer service area. The mail-out included an informational letter with links to online survey and a request for input as well as Factsheet 7. A copy of the informational letter is included in Appendix E.

PUBLIC CONSULTATION STRATEGY

MEETINGS WITH OTHER LEVELS OF GOVERNMENT

Municipal Councils

RDN staff presented the draft LWMP Amendment to municipal councils during the public consultation period.

Ministry of Environment

Staff met with periodically with MOE staff during the amendment period to discuss recommendations for the LWMP amendment and timeline for wastewater infrastructure upgrades.

RDN Chair and Management Staff also met with the Assistant Deputy Minister of Environment at the Union of British Columbia (UBCM) Convention in September 2013 to discuss the LWMP amendment and timeline for wastewater infrastructure upgrades.

ADVERTISING

To ensure that every household was informed about the LMWP Amendment and Public Consultation, advertising included:

- Information flyers mailed to every household
- 14 paid ads in 8 newspapers
- 4 feature newspaper articles
- Feature articles in the Electoral Area Updates
- Poster distribution
- Website presence
 - RDN Homepage and LWMP Website
 - Inclusion in the RDN Get Involved webpage
 - RDN Events Calendar
 - RDN Public Notice
 - Twitter and Facebook updates
 - Municipal websites (District of Lantzville)
- Email notification to 56 residents / business associations¹

-
- ¹ In particular, the French Creek Residents Association hand delivered 200 flyers and emailed everyone on their email contact list to alert the residents of the public meeting in French Creek on Oct. 1, 2013.

PUBLIC CONSULTATION STRATEGY

In addition, three newspapers featured stories about the LWMP Amendment:

- Nanaimo Daily News, August 26, 2013
- Oceanside Star, September 5, 2013
- Flying Shingle, October 7, 2013.

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Consultation Reach and Participation

Through the widespread advertising and information campaign, the RDN was able to reach every household within regional boundaries at least once to inform residents of the LWMP amendment.

The total number of public who participated in LWMP events include:

- Open Houses: 640
- Public Meetings: 116
- SepticSmart: 132
- Survey: 122
- Calls/emails: 26

To date, 1,036 people participated directly in LWMP events. Feedback trends and general findings are summarized in the next section.

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Trends and General Findings

Feedback trends and general findings are categorized based on which LWMP program they fall under and are summarized below. A detailed summary of feedback is provided in Appendix F.

PUBLIC WASTEWATER SYSTEMS PROGRAM

Program feedback included:

- In areas without sewer, sewer is generally desired where the lots are small. Sewer is not deemed necessary or feasible on large acre properties.
- Costs to connect to sewer, should it become available, should be comparable to replacing a septic system (\$20,000-\$30,000)
- The cost to connect to sewer is too expensive for some residents
- Some residents feel they should not have to connect to sewer if their septic system is working.

PRIVATE ONSITE SYSTEMS PROGRAM

Program feedback included:

- Among residents with onsite systems, there is some concern around neighbours with failing onsite systems and the effects on the environment and groundwater
- There is limited desire for the RDN to adopt a regulatory role regarding onsite systems
- There was some desire for the RDN to regulate and limit properties on pump and haul
- There is a broad perception that VIHA does not respond to complaints made regarding failing onsite systems.

SOURCE CONTROL PROGRAM

Program feedback included:

- There was a long list of recommended partners and pollution prevention targets
- Many residents are interested in receiving more education related to source control. Suggested ways to receive the information included columns in the Regional Perspectives, regular newspaper ads, financial incentives, and mailed information.
- A source control program requires bylaw enforcement to be most effective.

TRENDS AND GENERAL FINDINGS

RAINWATER MANAGEMENT / DRINKING WATER & WATERSHED PROTECTION PROGRAM

Program feedback included:

- There was a strong interest in this topic among public meeting participants. There is particular interest in rainwater harvesting, developing building specifications, and erosion control (particularly for steep areas)
- Many residents are concerned about the effect of upstream land use and development and the potential effects on their groundwater and the quality and quantity of water in nearby watercourses.

ODOUR CONTROL PROGRAM

Program feedback included:

- Greater Nanaimo Pollution Control Centre and Duke Point Pollution Control Centre generally do not emit nuisance odours
- Odours from Nanoose Bay Pollution Control Centre are noticeable, but not a nuisance yet
- Odours from French Creek Pollution Control Centre are a significant nuisance to neighboring residents
- When asked to share ideas about tolerable levels of odours, many residents replied that no amount of odours is acceptable in residential areas. Others recognized that there is a significant cost associated with odour control and there must be a balance between investing in odour-controlling infrastructure and dealing with a moderate amount of odours.

VOLUME REDUCTION PROGRAM

Program feedback included:

- There was support for RDN workshops and educational information
- There was a strong interest in, and support for, greywater reuse as a way to conserve water.

INFLOW AND INFILTRATION PROGRAM

Program feedback included:

- Most people were unaware of what inflow and infiltration are and the problems they cause
- Most people expressed a willingness to reduce private property inflow and infiltration if they were provided enabling tools such as increased education and financial incentives.

TRENDS AND GENERAL FINDINGS

POLLUTION CONTROL CENTRES PROGRAM

Program feedback regarding the secondary treatment upgrades at Greater Nanaimo Pollution Control Centre and Nanoose Bay Pollution Control Centre varied widely. Feedback trends included:

Secondary treatment

- Residents appreciate the value of protecting a “shared environment”
- Many residents support an earlier upgrade timeline because:
 - they felt that costs go up the longer you wait due to inflation and the rising costs of construction
 - it is better for the environment
- Many residents support a later upgrade timeline because:
 - it allows more time to secure provincial and federal grant funding
 - it represents the lowest tax increase

Regardless of the date proposed, many residents felt that the project should be completed as soon as provincial and federal grant funding were secured but that support for early upgrade was contingent upon securing grant funding.

Greater Nanaimo Pollution Control Centre

When the RDN population was asked for their preference for timing options for secondary treatment at GNPCC (based on 103 responses),

- 32% preferred Option 1: 2016
- 30% preferred Option 2: 2018
- 38% preferred Option 3: 2019.

While not statistically significant, the average sentiment among all RDN respondents supports secondary treatment at GNPCC by 2018.

Considering the response of only residents who would pay for the project (GNPCC service area) (based on 33 responses),

- 21% preferred Option 1: 2016
- 30% preferred Option 2: 2018
- 49% preferred Option 3: 2019.

The average sentiment among GNPCC service area respondents also supports secondary treatment at GNPCC by 2018.

TRENDS AND GENERAL FINDINGS

Nanoose Bay Pollution Control Centre

When the RDN population was asked for their preference for timing options for secondary treatment at NBPCC (based on 101 responses),

- 40% preferred Option 1: 2020
- 30% preferred Option 2: 2025
- 30% preferred Option 3: 2030.

While not statistically significant, the average sentiment among respondents supports secondary treatment at NBPCC by 2025.

Considering the response of only residents who would pay for the project (NBPCC service area) (based on 35 responses),

- 60% preferred Option 1: 2020
- 11% preferred Option 2: 2025
- 29% preferred Option 3: 2030.

The average sentiment among NBPCC service area respondents supports secondary treatment at NBPCC by 2023.

French Creek Pollution Control Centre

When discussing the expansion plans for French Creek Pollution Control Centre, there was a general concern from French Creek residents that expansion would increase odour problems.

RESOURCE RECOVERY PROGRAM

Program feedback included:

- Most people strongly supported economically viable resource recovery programs in the RDN
- There was support for the potential Hammond Bay Elementary district heating project and others like it.

BIOSOLIDS PROGRAM

Program feedback included:

- Biosolids reuse is a great idea, so long as storage and application areas were kept away from them due to the concern about potential effects on groundwater quality
- Residents were curious about the possibility to generate revenue from the sale of biosolids.

Incorporation of Public Feedback

The Draft LWMP was updated to accommodate feedback from the public. Accommodations are listed under their corresponding program.

PUBLIC WASTEWATER SYSTEMS PROGRAM

This program was updated to improve public awareness of areas which may connect to RDN sewer systems for health and environmental reasons (failing onsite system) and create a guide which walks homeowners through the sewer connection application process.

PRIVATE ONSITE SYSTEMS PROGRAM

The program as proposed meets public expectations and was not changed.

SOURCE CONTROL PROGRAM

For this program, the RDN will continue as planned to review the Source Control Bylaw and consider mechanisms for bylaw enforcement. The RDN will also develop public education material to support initiatives under this program.

RAINWATER MANAGEMENT / DRINKING WATER & WATERSHED PROTECTION PROGRAM

The RDN will continue to implement water education and incentive programs and programs under the Drinking Water and Watershed Protection Program. The RDN will implement a new Water Conservation Plan and refine the Water Balance Model to assist in land use and development decisions.

ODOUR CONTROL PROGRAM

The program as proposed meets public expectations and was not changed. This program already considers odour controls upgrades during capital projects.

VOLUME REDUCTION PROGRAM

This program was updated to commit the RDN to working with provincial regulators to provide the RDN public with information around opportunities for greywater reuse, as supported by the BC Building code and provincial regulations.

INCORPORATION OF PUBLIC FEEDBACK

INFLOW AND INFILTRATION PROGRAM

This program was updated to develop public education material to increase awareness around inflow and infiltration. The RDN will also consider providing tools (guidebook and incentives) to enable residents to reduce private property inflow and infiltration.

POLLUTION CONTROL CENTRES PROGRAM

For this program, the proposed secondary treatment dates upgrade dates for GNPCC and NBPCC considered input from the public. As well, the Nanoose Bay service area mail-out was done in response to feedback from the public meeting.

RESOURCE RECOVERY PROGRAM

As supported by public feedback, the RDN commits to completing a Resource Recovery Opportunities Study.

BIOSOLIDS PROGRAM

Develop material to increase awareness of precautions taken to prevent impacts to groundwater from the storage and application of biosolids.

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Appendices

APPENDIX A: UPDATED CONSULTATION PLAN

APPENDIX B: WASTEWATER GLOSSARY AND LWMP FACTSHEETS

APPENDIX C: PUBLIC INFORMATION SESSION QUESTION AND ANSWER SESSION OUTLINE

APPENDIX D: PUBLIC SURVEY AND RESULTS

APPENDIX E: NANOOSE MAIL-OUT LETTER

APPENDIX F: DETAILED SUMMARY OF EMAIL AND PHONE CORRESPONDENCE

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Appendix A:

Updated Consultation Plan

**Liquid Waste Management Plan Amendment
Consultation Plan Update
June 2013**

Objective

To provide opportunities for First Nations, the public, stakeholders, and member municipalities to review and provide input on the Liquid Waste Management Plan (LWMP) amendment process.

Methodology

Consultation will be achieved through mechanisms including, but not limited to:

- A Regional Liquid Waste Advisory Committee with representatives from First Nations, the public, stakeholders (business and environment sectors), member municipalities, the RDN Board, Ministry of Environment, Environment Canada, Vancouver Island Health Authority. Meetings appear in the Board Calendar and are open to the public.
- Ensuring a range of opportunities for First Nations to meet, engage, and participate directly with the RDN and others in the liquid waste management planning process.
- A website with information on the review, existing LWMP, discussion papers, committee agendas and minutes, and mechanisms for providing input.
- Mail-out(s) and newspaper notice(s) with information on the LWMP amendment process and ways to get involved and provide feedback.
- Pollution control centre open houses and public meetings during the review process to discuss key components of the LWMP Amendment with the public.
- Meetings with municipal officials and councils.

Wastewater Services will obtain feedback from parties through Regional Liquid Waste Advisory Committee meetings, and through mail, phone, email, and one-on-one conversations with the public.

Outcomes and Products

The proceedings and results of consultation activities will be documented and available to the public at the conclusion of the consultation process. The LWMP Amendment will be revised to address consultation feedback and will include a Consultation Report.

Schedule

The amended LWMP will be submitted to the RDN Board for their consideration for submission to the Minister of Environment. Subject to the outcome of the consultation process and Board consideration, the target for completion of the amendment process, including consultation, is December 31, 2013.

Resources

The RDN Wastewater Program Coordinator will coordinate and facilitate the public consultation activities under the supervision of the Manager of Wastewater Services.

Budget

Consultation activities are considered in the approved 2013 Wastewater Services Liquid Waste Management Planning budget.

Appendix B:

Wastewater Glossary and LWMP Factsheets

WASTEWATER MINI GLOSSARY

WASTEWATER SERVICES GLOSSARY

As you read the Wastewater Services and Liquid Waste Management Plan Factsheets, you may come across some technical terms. Some of these terms are explained below.

Benchmarking: An ongoing process of sharing ideas and comparing products, services and practices with those of similar organizations to improve quality and optimize performance. Through benchmarking, the RDN can improve performance and reduce costs.

Biogas: Biogas refers to the methane and carbon dioxide produced as a by-product of anaerobic digestion. Biogas is a sustainable fuel source used as fuel for heat or to create electricity.

Biosolids: Stabilized municipal sewage sludge resulting from a municipal wastewater or septage treatment process or septage that meets quality criteria for beneficial use under the Organic Matter Recycling Regulation.

Carbonaceous 5-day biochemical oxygen demand (BOD₅): is the rate at which aerobic biological organisms use the oxygen in water or wastewater over a five day incubation period.

Chemically-enhanced primary treatment: Chemically-enhanced primary treatment is the same as primary treatment, except a polymer is added to make the settling process more efficient. Primary wastewater treatment essentially uses gravity to treat the wastewater in large settling tanks. The tanks allow the lighter fats, oils, and grease to rise to the surface while the heavier materials settle to the bottom to form sludge. Fats, oil, and grease are skimmed off and sent to the landfill. The sludge is treated further, to become biosolids. Primary treatment produces an effluent quality with a carbonaceous 5-day biochemical oxygen demand (BOD₅) not exceeding 130 mg/L and total suspended solids (TSS) concentration not exceeding 130 mg/L.

Cogeneration: A form of resource recovery which refers to the use of biogas (methane and carbon dioxide by-products) to generate both electricity and heat.

Development cost charge: Funds collected to offset that portion of the costs related to services that are incurred as a direct result of this new development. DCCs are applied as one-time charges and are usually collected from developers at the time of subdivision approval or at the time of issuing a building permit.

Digester: Wastewater treatment infrastructure which stabilizes sludge in the process to produce biosolids.

Effluent: Liquid resulting from the treatment of wastewater

Environmental Management System: An Environmental Management System is a tool used to evaluate and improve environmental performance. The RDN Wastewater Service's EMS is ISO 14001 certified. >



LIQUID WASTE MANAGEMENT PLAN



Forcemain: Large sewer lines that control the flow of wastewater to the treatment plant. This type of pipe is similar to an interceptor, except that it is typically located in low-lying areas and wastewater must pass through a pumping station, rather than be transported by gravity.

Inflow and infiltration: Inflow and infiltration is relatively clean water that enters the sanitary sewer system, mainly as a result of a rainfall event or snow melt. Inflow enters the system from the top – for example roof leaders that drain into the sewer system. Infiltration enters the system from below the ground, for example through leaky pipes or house sump pumps.

Interceptors: Large sewer lines that control the flow of wastewater to the treatment plant. These pipes generally follow the natural slope of land allowing gravity to transport wastewater. This type of pipe is similar to a forcemain, except that it is typically gravity-fed, not pressurized by pump stations.

Ministry of Environment: The approving authority for the Liquid Waste Management Plan.

Municipal Wastewater Regulation: Provides guidance on meeting the current standards and requirements for the treatment, reuse and disposal of sewage. It applies to all discharges of domestic wastewater except those regulated under the Public Health Act Sewerage System Regulation and discharges from single or multi-family dwellings. Also applies to any discharges of sewage to water bodies.

Official Community Plans: A statement of objectives and policies to guide decisions on planning and land use management, within the area covered by the plan, respecting the purposes of local government.

Outfall: The pipe which transports treated wastewater effluent to its discharge location (in the RDN, the discharge locations are in the Strait of Georgia).

Private laterals: privately owned pipelines which deliver wastewater from private property to the municipal collection system (owned by a municipality or the RDN).

Reclaimed water: Municipal wastewater that is treated and suitable for use in accordance with the Municipal Wastewater Regulation.

Resource recovery: the recovery of value from waste resources (e.g. energy generation, water reuse, and nutrient recovery).

Secondary treatment: Wastewater treatment (usually biological or physical-chemical) to remove organics which consistently produces an effluent quality with a carbonaceous 5-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) concentrations not more than 45 mg/L, as defined by the Municipal Wastewater Regulation.

Sludge: the materials that settle in a primary settling tank (primary sludge) and secondary clarifier (secondary sludge). Sludge in the RDN is treated further to become biosolids.

Trickling Filter: secondary treatment technology at French Creek Pollution Control Centre

Wastewater Systems Effluent Regulations: Regulations under the federal Fisheries Act designed to harmonize wastewater management in Canada. They include minimum effluent quality standards that can be achieved through secondary wastewater treatment

Wastewater: “used” water and the wastes that it carries. Basically, they are terms for what is flushed down the toilet or washed down the drain. Wastewater can also include rain water, groundwater, or snow melt (inflow and infiltration) that make their way into sanitary wastewater pipes.

Watershed: an area of land that catches rain and snow and where water flows downward into a specific river, stream, lake, or aquifer.

Vancouver Island Health Authority (VIHA): The provincial government agency that provides health care services to people on Vancouver Island, the islands of the Georgia Strait, and the mainland communities between Powell River and Rivers Inlet.



For more information, visit the RDN Wastewater Services website at www.rdn.bc.ca or contact Wastewater Services at (250) 390-6560, (250) 954-3792, or 1-877-607-4111. Alternately, you may email rcu@rdn.bc.ca.



Wastewater Services Overview

WASTEWATER SERVICES FACTSHEET

1

WASTEWATER SERVICES

Wastewater management is a key service provided by the Wastewater Services department of the Regional District of Nanaimo (RDN). The RDN treats wastewater from approximately 113,500 people between Qualicum Beach and Duke Point. To provide this service, RDN Wastewater Services owns and operates four wastewater treatment facilities. Two treatment facilities provide secondary treatment and two provide chemically-enhanced primary treatment.

RDN wastewater is managed according to the **Liquid Waste Management Plan (LWMP)**, Operational Certificates, and Waste Discharge Permits. RDN Wastewater Services uses an Environmental Management System and participates in benchmarking to continually improve service and environmental performance. RDN Wastewater Services also has comprehensive, long term programs to manage wastewater, produce biosolids, use waste as a resource, and prevent pollution in the region. >

WHY DOES THE RDN HAVE A LIQUID WASTE MANAGEMENT PLAN (LWMP)?

Laws governing wastewater management in British Columbia require us to protect public health and, over time, achieve a standard level of wastewater treatment. They also encourage us to recover resources from waste. Our LWMP authorizes the RDN to find community-driven and cost-effective solutions to achieve these goals.

A public LWMP amendment process is now underway.

The result will guide our wastewater strategy into the future, which includes upgrading treatment levels.



LIQUID WASTE
MANAGEMENT PLAN



Wastewater
SERVICES



www.rdn.bc.ca

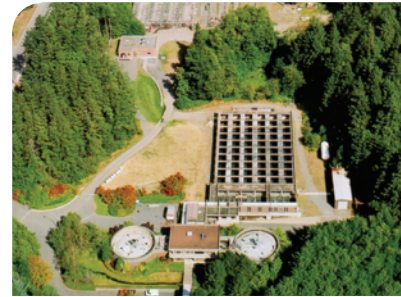


REGIONAL
DISTRICT
OF NANAIMO

FAST FACTS Pollution Control Centres

Greater Nanaimo Pollution Control Centre

Plant location: 4600 Hammond Bay Road, Nanaimo
Outfall Terminus: 49° 14' 14.0985"N; 123°56' 17.7600"W
Estimated population served: 86,068
Current treatment: chemically-enhanced primary treatment



French Creek Pollution Control Centre

Plant location: 957 Lee Road, Parksville
Outfall Terminus: 49°22'8.2566"N; 124°20' 47.8771"W
Estimated population served: 26,047
Current treatment: secondary treatment



Nanoose Bay Pollution control centre

Plant location: 3260 Schooner Cover Drive, Nanoose Bay
Outfall Terminus: 49° 17'27.2202"N; 123°7'40.1987"W
Estimated population served: 1,350
Current treatment: chemically-enhanced primary treatment



Duke Point Pollution Control Centre

Plant location: 625 Jackson Road, Nanaimo
Outfall Terminus: 49°8'41.3917"N; 123°52' 10.2921"W
Number of Connections: 30
Current treatment: secondary treatment with UV disinfection



For more information, visit the RDN Wastewater Services website at www.rdn.bc.ca or contact Wastewater Services at (250) 390-6560, (250) 954-3792, or 1-877-607-4111. Alternately, you may email us at rcu@rdn.bc.ca.

Last updated August 2013



LIQUID WASTE MANAGEMENT PLAN

The Regional District of Nanaimo (RDN) has a Liquid Waste Management Plan (LWMP). The LWMP is a 20-year plan to support sustainable wastewater management in the RDN.

This plan authorizes the RDN to find community-driven and cost-effective solutions to protect public health and achieve a standard level of wastewater treatment over a reasonable timeframe.

LWMP AMENDMENT

A public LWMP Amendment process is now underway. An amendment is necessary because:

- The Ministry of Environment requires a LWMP review every five to ten years to determine if an amendment or update is required.
- Most of the key regulations and guidelines governing wastewater management in BC were revised or developed after the original LWMP was approved.
- The RDN met most of the original LWMP program commitments in the last ten years.
- The RDN is requesting an amendment to the timeline for secondary treatment upgrades at Greater Nanaimo Pollution Control Centre (GNPCC) and Nanoose Bay Pollution Control Centre (NBPCC).

PROVINCIAL AND FEDERAL LAWS REQUIRE SECONDARY WASTEWATER TREATMENT OR BETTER

Municipal wastewater treatment is governed by the provincial Municipal Wastewater Regulation and federal Wastewater Systems Effluent Regulations. These regulations include mandatory minimum effluent quality standards that can be achieved through secondary wastewater treatment or better. They also include requirements for monitoring, record-keeping, reporting and toxicity testing.

WHY IS THE PUBLIC BEING CONSULTED ON THE LWMP AMENDMENT?

The consultation process is important because an approved LWMP lets a local government borrow money without going to referendum and there is no mechanism to publicly appeal an approved LWMP. Because public consultation and First Nations engagement are key components of the LWMP process, an LWMP lets a community be involved with the decision-making process and develop local wastewater management solutions. >



LIQUID WASTE MANAGEMENT PLAN



Ten programs make up the core of the amended LWMP and provide the tools to implement the plan.

Public Wastewater Systems Program

This program supports the provision of sewer services in RDN growth containment areas, as identified in Official Community Plans (OCPs). It also supports the provision of sewer service to properties adjacent to growth containment areas with failing private onsite systems. Through the Public Wastewater Systems Program, the RDN proposes to:

1. Establish a strategy to achieve wastewater servicing in growth containment areas:

- i. Complete a study identifying Village Centres with the development potential to warrant an investment in wastewater infrastructure (completed)
- ii. Coordinate with Development Services through the OCP review process to identify property owners in growth containment boundaries who are interested in establishing public wastewater services.

2. Establish a strategy to achieve wastewater servicing for properties with failing private onsite systems:

- i. Draft a bylaw to allow properties with failing onsite systems to connect to sewer services, where available
- ii. Work with property owners, as needed, in locations where there are known onsite system failures, to establish connections to public wastewater infrastructure
- iii. Continue to look into servicing options for Madrona/ Wall Beach, Beachcomber, Delanice Way, Dolphin Drive, Garry Oaks, and Red Gap.

Private Onsite Systems Program

This program aims to protect the public and environment from failing onsite systems. SepticSmart is offered through this program. Through the Private Onsite Systems Program, the RDN proposes to:

1. Enhance SepticSmart education program content:

- i. Annually review the SepticSmart education program; update where necessary
- ii. Enhance the source control component of the SepticSmart program
- iii. Work with VIHA and Water Services to develop area-specific communications or newsletters for areas at high risk for groundwater contamination
- iv. Host at least four SepticSmart education workshops annually
- v. Evaluate the potential for a mandatory onsite system maintenance program in the RDN (complete).

2. Work with Development Services to adopt draft changes to Land Use and Subdivision Bylaw (No. 500) which would enable the RDN to acquire privately-owned onsite systems serving at least 60 parcels, if petitioned.

3. Limit holding tanks in the RDN:

- i. Review and revise the Pump & Haul Local Service Establishment Bylaw (No. 975) and the Sewage Disposal Regulation Bylaw (No. 1224) so only grandfathered properties and properties with failed onsite systems qualify for the septage receiving rate reduction
- ii. Work with VIHA and Building Inspection Services to limit holding tanks on new developments.



Odour Control Program

This program aims to reduce nuisance odours from RDN wastewater infrastructure. Through the Odour Control Program, the RDN proposes to:

1. Maintain and upgrade equipment:

- i. Continue using current odour control measures and consider new control technologies as required
- ii. Address odour at Bay Ave Pump Station (completed)
- iii. Replace biofilter media at GNPCC and French Creek Pollution Control Centre (FCPCC) (completed)
- iv. Reverse the air flow through the trickling filter at FCPCC (completed)
- v. Install ion generators at Hall Road and Chase River Pump Stations (completed)
- vi. Review the odour management system at GNPCC to identify potential improvements (completed)
- vii. Complete improvements to the odour management system at the NBPCC outfall manhole
- viii. Incorporate odour controls into the design phase of future capital works projects
- ix. Seek resident input before upgrading or expanding facilities

2. Investigate, document, and respond to odour complaints within 24 hours.

Rainwater Management / Drinking Water & Watershed Protection (DWWP) Program

This program aims to improve practices affecting rainwater, drinking water, and stormwater. Through the Rainwater Management / Drinking Water & Watershed Protection (DWWP) Program, the RDN proposes to:

1. Develop a regional strategy on rainwater management

- i. Collaborate with Development Services, Water Services, Energy & Sustainability Services, and member municipalities to create a Rainwater Management Plan
- ii. Liaise with other local governments to share rainwater management strategies
- iii. When developing the plan, consider subdivision development standards (i.e. low impact development principles, green infrastructure policies, erosion and control standards, onsite rainwater management, watercourse protection, and wetland protection) and non-point source control (i.e. runoff pollution)
- iv. Support Building Code changes that remove barriers to rainwater harvesting
- v. Subject to Board approval of the Rainwater Management Plan, Wastewater Services will coordinate the plan, administer the budget, and oversee collaboration with other departments and jurisdictions.



Volume Reduction Program

This program aims to reduce potable water consumption in the RDN. Through the Volume Reduction Program, the RDN proposes to:

1. Reduce per capita water consumption:

- i. Promote water conservation incentives like low-flow toilet rebates (as funding permits)
- ii. Educate the public through free workshops and online information
- iii. Hold semi-annual meetings with the City of Nanaimo, District of Lantzville, City of , and Town of Qualicum Beach to develop a regional volume reduction strategy

2. Reduce water consumption used in RDN buildings and wastewater treatment operations

- i. Install low-flow or dual flush toilets and other water-saving devices in RDN buildings
- ii. Consider water efficient technology when designing infrastructure upgrades and expansion
- iii. Promote the use of reclaimed water when practicable.

Inflow and Infiltration Program

Inflow and infiltration (I&I) is relatively clean water that enters the sanitary sewer system, mainly as a result of a rainfall event or snow melt. Inflow enters the system from the top (e.g., roof leaders that drain into the sewer system). Infiltration enters the system from below the ground, (e.g., through leaky pipes or house sump pumps). The Inflow and Infiltration Program aims to reduce I&I entering the wastewater collection and treatment system in accordance with provincial standards. Through the Inflow and Infiltration Program, the RDN proposes to:

1. Monitor I&I entering RDN infrastructure:

- i. Set up an I&I monitoring function for GNPCC and FCPC

- ii. Evaluate flow data to understand system reaction to rainfall and high flow events
- iii. Use closed-circuit TV to inspect GNPCC and FCPC interceptors on a 5-year cycle
- iv. Maintain and install flow meters and rainfall gauges as needed

2. Reduce I&I into RDN owned infrastructure:

- i. Repair manholes as needed; perform regular maintenance of interceptors
- ii. Investigate grant funding opportunities (e.g. Gas Tax Fund) for infrastructure rehabilitation

3. Design upgrades to RDN infrastructure so flows up to 2 times Average Dry Weather Flow will receive secondary treatment and all flows in excess of this amount will receive primary treatment

4. Develop a regional strategy on I&I management:

- i. Hold semi-annual meetings with the municipalities to develop regional monitoring and reduction targets for inflow and infiltration
- ii. Share flow and rainfall data with municipalities
- iii. Consider requiring replacement or disconnection of private laterals when granting demolition permits
- iv. Consider providing municipal or regional staff to witness or perform service connections
- v. Work with the municipalities to monitor the extent of I&I in the collection system

5. Enhance the Source Control Program to encourage landowners to:

- i. Check gutters and outside drains for connection to the sewer system. Residents may contact their municipalities to find out how this is done
- ii. Avoid planting trees and shrubs over sewer laterals
- iii. Ensure basement drains and sump pumps are not connected to the sanitary sewer
- iv. Replace broken or leaky pipes located on private property.



Pollution Control Centres Program

This program aims to manage capital upgrade and expansion projects associated with the four RDN-operated pollution control centres. Through the Pollution Control Centres Program, the RDN proposes to:

1. Comply with permit or operational certificate:

- i. Manage wastewater collection and treatment using the RDN's EMS to meet permit requirements
- ii. Work with Ministry of Environment staff to establish reasonable timelines and scope of any required environmental monitoring programs

2. Maintain existing infrastructure:

- i. Update and evaluate asset management and preventative maintenance plans
- ii. Systematically inspect, detect, and correct incipient failures
- iii. Replace the GNPCC effluent outfall line in 2015
- iv. Monitor the condition of the Departure Bay forcemain
- v. Improve the odour management system at the NBPCC outfall manhole

3. Expand and provide secondary treatment at GNPCC:

- i. Commission a third digester (complete)
- ii. Construct a fourth primary sedimentation tank (underway)
- iii. Upgrade the facility to provide secondary treatment by a target date of 2016, 2018, or 2019. Three timelines are presented for discussion.
- iv. Explore federal and provincial grant options to fund secondary treatment

4. Provide secondary treatment at NBPCC:

- i. Upgrade the facility to provide secondary treatment by 2020, 2025 or 2030. Three timelines are presented for discussion.
- ii. Explore federal and provincial grant options to fund secondary treatment

5. Expand capacity at FCPC:

- i. Expand the treatment plant capacity

6. Work with Development Services to complete a sewer servicing strategy for Nanoose Bay:

- i. Coordinate with Development Services through the OCP review process to identify property owners in growth containment boundaries who are interested in establishing public wastewater services
- ii. Consider resource recovery, visual, and olfactory buffers and the number of pump stations required
- iii. Review and update the Fairwinds sewer servicing agreement and Development Cost Charge (DCC) bylaw for the Nanoose Bay area

7. DCC Bylaws:

- i. Develop a DCC bylaw to allow properties in the growth containment area to purchase capacity at Duke Point Pollution Control Centre (DPPCC)

8. Review DCC plan every year and revise bylaws when necessary to adequately fund growth-related projects

- i. Revise DCC bylaws at GNPCC, NBPCC, and FCPC.



Resource Recovery Program

This program aims to maximize the value recovered from wastewater resources. Through the Resource Recovery Program, the RDN proposes to:

1. Reduce resource consumption at wastewater treatment facilities:

- i. Evaluate wastewater treatment operations which require energy, water, chemicals or fuel and identify activities that can be run more efficiently, if any

2. Recover resources from wastewater:

- i. Commission a cogeneration facility for biogas recovery and energy generation at GNPCC (complete)
- ii. Continue to beneficially use biosolids according to the Biosolids Program
- iii. Reclaim water for use onsite in compliance with Ministry of Environment guidelines
- iv. Discuss future opportunities for reclaimed water use with Morningstar Golf Course
- v. Consider potential resource recovery options for new projects, particularly through process selection
- vi. Examine opportunities for using reclaimed water for the Fairwinds Golf Course.

Biosolids Program

This program aims to manage the beneficial use of biosolids. Through the Biosolids Program, the RDN proposes to:

1. Produce, at minimum, 'Class B' biosolids:

- i. Develop a Biosolids Management Plan to assess options for the beneficial use of RDN biosolids, including land application, energy generation, and other possible resource recovery strategies (completed)
- ii. Improve the quality of biosolids through upgrades to wastewater treatment infrastructure and innovative technologies and techniques (i.e. decrease volatile solids content and pathogen concentrations)
- iii. Monitor and report biosolids quality according to operational certificate/discharge permit and the Organic Matter Recycling Regulation
- iv. Establish a contingency plan for temporary storage or application of biosolids if the VIU site is not useable

2. Expand biosolids-based education and outreach activities targeted at RDN residents:

- i. Develop and distribute communication information on source control in order to improve biosolids quality
- ii. Provide educational material and outreach at open houses and other events.



**I DON'T HAVE SEWER SERVICE...
HOW DOES THE LWMP AMENDMENT
AFFECT ME?**

Four LWMP programs directly address issues for residents without sewer service:

- Public Wastewater Systems Program
- Private Onsite Systems Program, through which we offer SepticSmart
- Source Control Program
- Rainwater Management / Drinking Water & Watershed Protection Program

The LWMP Amendment does not propose to make any changes to the funds collected for programs which affect unsewered properties.

For more information, refer to Factsheet 3: Wastewater Basics for Unsewered Areas.

**I HAVE SEWER SERVICE...
HOW DOES THE LWMP AMENDMENT
AFFECT ME?**

If you have sewer service in the RDN, this amendment will affect your sewer user rates. It will also affect the timeline to upgrade Greater Nanaimo Pollution Control Centre and Nanoose Bay Pollution Control Centre to provide secondary wastewater treatment.

For more information, refer to Factsheet 4: Wastewater Basics for Sewered Areas. Factsheets 5, 6, and 7 may apply to you also.



**WHO WILL PAY FOR THE COSTS OF CAPITAL
PROJECTS AND UPGRADING TREATMENT TO
SECONDARY?**

The RDN funds services, based on a user pay principle, by establishing service area bylaws. The capital and operating costs associated with a service cannot be charged to RDN ratepayers living outside of the established service area. For that reason, the cost of upgrading and operating the capital projects, such as secondary upgrades, must be born entirely by the residents living within the service area.



**LIQUID WASTE
MANAGEMENT PLAN**

**HOW DO I GET INVOLVED IN THE LWMP
AMENDMENT PROCESS?**

If you have any questions or comments, you may contact the RDN Wastewater Services at (250) 390-6560, (250) 954-3792, or 1-877-607-4111. Alternately, you may email us at rcu@rdn.bc.ca.

As well, the RDN will hold special public meetings to provide the opportunity to review, ask questions about, and provide feedback on the proposed Amendment.

For more information, visit the RDN's Liquid Waste Management Plan website at www.rdnlwmp.ca.



Last updated August 2013



Wastewater Basics for Unsewered Areas

WASTEWATER TREATMENT

In the Regional District of Nanaimo (RDN), most rural properties, as well as some neighbourhoods within the municipalities, are unsewered. Wastewater from unsewered properties is typically treated with privately owned Type 1, 2, or 3 onsite systems (i.e. septic systems, private packaged treatment plants, and advanced package treatment plants). There are an estimated 12,000 properties in the RDN with onsite sewage treatment, representing roughly one fifth of the RDN population. A small number of rural properties are authorized by the Vancouver Island Health Authority (VIHA) to install a holding tank and use pump and haul services.

The management, in accordance with the maintenance plan, and eventual replacement of onsite systems and holding tanks is the responsibility of the property owner.

WHAT DOES THE LWMP AMENDMENT MEAN FOR YOU?

The Liquid Waste Management Plan has a number of programs which apply to unsewered areas. Specifically, these are:

Public Wastewater Systems Program

Source Control Program

Private Onsite Systems Program

Rainwater Management / Drinking Water & Watershed Protection Program



Refer to Factsheet 2 for more detailed information on these programs.



LIQUID WASTE
MANAGEMENT PLAN

The RDN offers free workshops, online material, and printed SepticSmart kits for RDN residents with onsite systems. SepticSmart aims to provide information to empower homeowners to properly use and maintain their onsite system. See www.SepticSmart.ca for more information.



SepticSmart

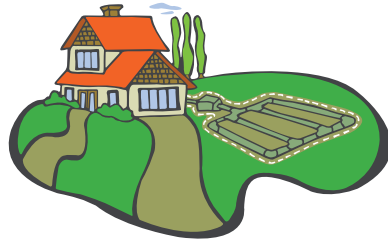


Financial Implications

Many of the LWMP programs which apply to unsewered areas are funded by the Liquid Waste Management Planning Service Establishment Bylaw (No. 1543). Annual revenue from this bylaw is relatively constant and costs the average household about \$2/year.

SepticSmart is funded by \$0.02/gallon of the septage receiving fees collected at the two RDN septage receiving fees. The annual revenue generated from septage receiving fees, and therefore for this service, is variable but estimated at \$30,000. The SepticSmart program falls under the Private Onsite Systems Program.

Some initiatives within the scope of the LWMP (under the Source Control and Rainwater Management / Drinking Water & Watershed Protection) are funded by the Action for Water program. This revenue source funds many projects outside the scope of the LWMP but should be noted.



SepticSmart

Sustainable Decision-making

All decision-making and actions undertaken by the RDN are founded on sustainability principles outlined in the Regional Growth Strategy (RGS). Fundamentally, sustainability means that the interrelationships between the environment, society and economic activity are recognized, understood and respected. As a result, decisions will move the region towards a more sustainable way of life.



Water is key to a healthy and resilient region for residents and the ecosystem that supports us all.

Through community outreach, collection and compilation of water resource data, well testing, water quality monitoring, and watershed planning, the Rainwater Management / Drinking Water & Watershed Protection Program is taking action to help protect our water resources.

The LWMP Amendment does not propose to make any changes to the funds collected for programs which affect unsewered properties.



For more information, visit the RDN's LWMP Amendment website at www.rdnlwmp.ca or contact Wastewater Services at (250) 390-6560, (250) 954-3792, or 1-877-607-4111. Alternately, you may email rcu@rdn.bc.ca.

Last updated August 2013



Wastewater Basics for Sewered Areas

WASTEWATER SERVICES FACTSHEET 4

WASTEWATER TREATMENT

Regional District of Nanaimo (RDN) wastewater treatment facilities provide either chemically-enhanced primary treatment or secondary treatment. Chemically-enhanced primary treatment is the same as primary treatment, except a polymer is added to make the settling process more efficient.

Primary wastewater treatment essentially uses gravity to treat the wastewater. Wastewater is screened (preliminary treatment) to remove larger objects. The remaining liquid moves slowly through large settling tanks. The tanks allow the lighter fats, oils, and grease to rise to the surface while the heavier materials settle to the bottom to form sludge. Fats, oil, and grease are skimmed off and sent to the landfill. The sludge is treated further, to become biosolids. The liquid in the “middle” is discharged to the Strait of Georgia as primary treated effluent.

Secondary treatment takes primary treatment a step further. This additional step uses bacteria to digest some of the material remaining in the “middle” liquid. As the bacteria eat soluble material, they produce “floc” which settles to become sludge, which is treated into biosolids. Meanwhile, the bacteria grow heavy and settle out. Since the secondary treatment process can produce more odours, foul air scrubbers and ultraviolet light may be used during the process to reduce the odours. In addition to being using to reduce odours, ultraviolet light can be used to disinfect the effluent. The RDN's secondary treated effluent is discharged to the Strait of Georgia. >

Biosolids are a useful resource with a compost-like texture. RDN biosolids meet provincial standards for quality and are beneficially used to fertilize trees in the Vancouver Island University Forest Fertilization Project.



BOTTOM SAMPLE AFTER BIOSOLIDS APPLICATION



FOUL AIR SCRUBBERS AT FRENCH CREEK POLLUTION CONTROL CENTRE



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MANAGEMENT PLAN


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WHY DO WE NEED TO PROVIDE SECONDARY WASTEWATER TREATMENT?

Secondary treatment facilities cost more to build and operate, and can produce more odours. However, secondary treatment produces a higher quality effluent than that produced by primary treatment. There are also more opportunities to recover resources from wastewater treated with secondary technology. As well, federal and provincial laws set mandatory minimum effluent quality standards that can be achieved only through secondary wastewater treatment or better.

Greater Nanaimo Pollution Control Centre

If you live in Nanaimo, Lantzville, or Snuneymuxw IR#1, and have sewer service, then your wastewater is treated at the Greater Nanaimo Pollution Control Centre (GNPCC), at 4600 Hammond Bay Road in Nanaimo. GNPCC provides chemically-enhanced primary treatment to an estimated population of 86,068 people.

If you are one of these people, refer to Factsheet 5 for more information.

French Creek Pollution Control Centre

If you live in Parksville, Qualicum Beach, French Creek, Surfside, Barclay Crescent or Pacific Shores; and have sewer service; then your wastewater is treated at the French Creek Pollution Control Centre (FCPCC), at 957 Lee Road in Parksville. FCPCC provides secondary treatment to an estimated population of 26,047 people.

If you are one of these people, refer to Factsheet 6 for more information.

Nanoose Bay Pollution Control Centre

If you live in Fairwinds, or are one of a few neighbouring properties with sewer service, then your wastewater is treated at the Nanoose Bay Pollution Control Centre (NBPCC), at 3260 Schooner Cove Drive in Nanoose Bay. NBPCC provides chemically-enhanced primary treatment to an estimated population of 1,350 people.

If you are one of these people, refer to Factsheet 7 for more information.

Duke Point Pollution Control Centre

If you are one of a few properties in Cedar Village with sewer service, then your wastewater is treated at the Duke Point Pollution Control Centre (DPPCC), at 625 Jackson Road in Nanaimo. DPPCC is a very small facility which also treats wastewater from the Duke Point Industrial Park and BC Ferries. No major changes are proposed for DPPCC at this time.



VIEW FROM INSIDE THE CHASE RIVER PUMP STATION



CONSTRUCTION OF THE DIGESTERS AT THE GREATER NANAIMO POLLUTION CONTROL CENTRE



For more information, visit the RDN Wastewater Services website at www.rdn.bc.ca or contact Wastewater Services at (250) 390-6560, (250) 954-3792, or 1-877-607-4111. Alternately, you may email rcu@rdn.bc.ca.



Last updated August 2013



What does the LWMP Amendment Mean for Nanaimo and Lantzville Residents with Sewer Service?

WASTEWATER SERVICES FACTSHEET 5

The Regional District of Nanaimo (RDN) Liquid Waste Management Plan (LWMP) has a number of programs which apply to seweraged areas in Nanaimo and Lantzville. Specifically, these are:

- Source Control Program
- Rainwater Management / Drinking Water & Watershed Protection Program
- Volume Reduction
- Inflow and Infiltration Program
- **Pollution Control Centres Program**
- Odour Control Program
- Resource Recovery Program
- Biosolids Program.

Refer to Factsheet 2 for detailed information on these programs.

GREATER NANAIMO POLLUTION CONTROL CENTRE

If you live in Lantzville, Nanaimo, or Snuneymuxw IR#1 and have sewer service, then your wastewater is treated at the Greater Nanaimo Pollution Control Centre (GNPCC). GNPCC currently provides chemically-enhanced primary wastewater treatment to an estimated population of approximately 86,068 people.

The LWMP Pollution Control Centre Program identifies two major projects at the GNPCC which will have an impact on users in this service area. 1) GNPCC Outfall Replacement and 2) Required Secondary Treatment Upgrades. The LWMP Amendment proposes to increase the revenue collected to fund these two projects. >

Provincial and Federal Laws Require Secondary Wastewater Treatment or Better

Municipal wastewater treatment is governed by the provincial Municipal Wastewater Regulation (MWR) and federal Wastewater Systems Effluent Regulations (WSER). These regulations include mandatory minimum effluent quality standards that can be achieved through secondary wastewater treatment or better. They also include requirements for monitoring, record-keeping, reporting and toxicity testing.



LIQUID WASTE
MANAGEMENT PLAN



INSTALLATION OF THE ORIGINAL GREATER NANAIMO POLLUTION CONTROL CENTRE OUTFALL IN 1974.


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Outfall Replacement

The GNPCC outfall that discharges treated effluent to the Strait of Georgia was designed to last until 2040. However, the pipe has corroded and must be replaced in the near future. The RDN recently committed \$18 million to replace the GNPCC effluent outfall by 2015. The RDN has secured \$2 million in Gas Tax funds for this project. The RDN has also established significant reserve and Development Cost Charge (DCC) funds to support capital projects. Still, those funds will be largely depleted with the completion of the outfall replacement project and borrowing will be necessary for the secondary treatment upgrade.

Secondary Treatment Upgrades

The original LWMP (1997) projected that GNPCC would be upgraded to provide secondary treatment by 2015. The provision of secondary treatment at GNPCC will cost those in the Greater Nanaimo Sewer Service Area an estimated \$61.8 million (2012 dollars). The tax burden on individual taxpayers would be extremely high if both outfall replacement and secondary upgrades were completed by 2015. For that reason, the RDN is requesting an amendment to the timeline for secondary treatment upgrades at GNPCC.

The RDN has considered a number of timing options for secondary treatment. The RDN presents three feasible timing options for discussion and to solicit feedback during the consultation process. These options include upgrading GNPCC by 2016, 2018, or 2019. All options meet the timeline required under the new Wastewater Systems Effluent Regulations (WSER). As well, all options are in line with recent precedent set by the 2011 Environment Minister's approval of the Metro Vancouver LWMP Amendment, requiring upgrade of the Lions Gate Wastewater Treatment Plant by 2020.

The following rationale supports the proposed 2016 date:

- 2016 is the closest scenario to 2015, the date proposed in the 1997 LWMP.

The following rationale supports the proposed 2018 date:

- 2018 allows for a realistic project timeline to complete engineering and construction activities
- Tax implications are similar to the scenario with completion in 2019.

The following rationale supports the proposed 2019 date:

- 2019 allows for the lowest tax increase.

Each option has technical, social, environmental and economic implications. These Implications are considered on the following pages. >

Sustainable Decision-making

All decision-making and actions undertaken by the RDN are founded on sustainability principles outlined in the Regional Growth Strategy (RGS). Fundamentally, sustainability means that the interrelationships between the environment, society and economic activity are recognized, understood and respected. As a result, decisions will move the region towards a more sustainable way of life.



SEBASTIAN BEACH, LANTZVILLE.

Last updated August 2013



Technical Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Feasibility of engineering/construction schedule	Feasibility of target date when compared to established average project timelines for design, procurement and construction of similar projects	Fast track, timelines present significant challenges that limit feasibility and likely result in cost premiums and reduced functionality	Adequate timeframe for project completion	Adequate timeframe for project completion
Opportunities for innovation, optimization	Innovation in the areas of process optimization, resource recovery, reduced energy consumption, flexibility, better performance require time and consideration at the design phase	Fast track timelines limit opportunities for design consideration of potential opportunities	Adequate timeline for consideration of innovation opportunities	Adequate timeline for consideration of innovation opportunities
Mitigate potential climate change impacts on facility	Consideration of potential climate change impacts to infrastructure	Adequate timeline to consider infrastructure impacts	Adequate timeline to consider infrastructure impacts	Adequate timeline to consider infrastructure impacts
Opportunities for future expandability	Analysis of opportunities for future population increases and climate change related capacity impacts required at design phase	Fast track timelines limit opportunities for consideration of expandability	Adequate timeline for consideration of expansion opportunities	Adequate timeline for consideration of expansion opportunities

Environmental Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Meet Provincial MWR Standards	All options meet these criteria	Achieved earliest	Achieved 2 years after Option 1	Achieved 3 years after Option 1
Meet Federal WSER standards	All options meet these criteria within WSER deadlines	Achieved earliest	Achieved 2 years after Option 1	Achieved 3 years after Option 1
Protect the environment	Implementation of secondary treatment will reduce the potential for impacts to human health and the receiving environment	Achieved earliest	Achieved 2 years after Option 1	Achieved 3 years after Option 1
Improved effluent quality	Secondary treatment will reduce TSS and BOD discharge concentrations	Achieved earliest	Extends primary discharge by 2 years relative to Option 1	Extends primary discharge by 3 years relative to Option 1
Minimize carbon footprint	Related in large part to resource recovery opportunities	Fast track schedule limits opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria

Environmental Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Identify resource recovery opportunities	Possible opportunities include: heat recovery; bio-solids management; biogas generation	Fast track schedule limits opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria
Flexibility for future resource recovery opportunities	Design in flexibility for potential future opportunities	Fast track schedule limits opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria
Reduce treatment plant site impacts	Potential impacts include habitat disruption, site ecological sensitivity	Existing developed site, minimal impact anticipated	Existing developed site, minimal impact anticipated	Existing developed site, minimal impact anticipated
Minimize geotechnical concerns	Includes site suitability, stability	Existing developed site	Existing developed site	Existing developed site

Social Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Construction disruption	Construction activities will create potential disruption and inconvenience for local residents. Appropriate mitigation measures are required for noise, odours, dust, and traffic	Earliest completion of construction activities. Fast track schedule may impact ability to effectively mitigate impacts	Schedule may allow design for better mitigation	Schedule may allow design for better mitigation
Disruption from ongoing operations (noise, odours, dust, traffic)	Require design for proper mitigation of potential impacts during ongoing operations	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design
Facility/site Aesthetics	Aesthetics include proper screening and integration with neighbourhood	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design
Archaeological/cultural Resources	Construction activities will require proper consideration and procedures to mitigate potential impacts to cultural artifacts	Adequate timeframe for mitigation of risks	Adequate timeframe for mitigation of risks	Adequate timeframe for mitigation of risks
Property values	Facility expansion could affect local property values. Design and construction needs to minimize potential impacts	Similar impact potential for all options	Similar impact potential for all options	Similar impact potential for all options

Social Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Public perception	Extending timeframe for achieving secondary treatment may negatively impact public perceptions. Potential tourism, recreation and related economic impacts	Minimizes potential	Extends potential impacts by 2 years relative to Option 1	Extends potential impacts by 3 years relative to Option 1
Loss of beneficial site uses	Existing facility is located adjacent to Neck Point Park. Integration with the park has provided reciprocal benefits	Minimal impacts anticipated	Minimal impacts anticipated	Minimal impacts anticipated
Compatibility with land use zoning	Existing facility is located in an area surrounded by park, school and residential	Established compatibility with existing facility	Established compatibility with existing facility	Established compatibility with existing facility

Economic Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Capital Cost Optimization	Minimizing capital cost is most effectively carried out during the design phase	Fast track project reduces ability to consider capital cost optimization opportunities	Adequate timeline for capital cost optimization	Adequate timeline for capital cost optimization
Operating cost Optimization	Minimizing operating cost is most effectively carried out during the design phase. Fast tracking may result in increased capital costs	Fast track project reduces ability to consider operating cost optimization opportunities	Adequate timeline for operating cost optimization	Adequate timeline for operating cost optimization
Tax rate impacts	Timing of project expenditure has a significant impact on tax burden resulting from the project	Highest tax burden imposed on taxpayers	Tax burden significantly lower than Option 1	Tax burden significantly lower than Option 1
Revenue Opportunities	Revenue opportunities flow primarily from resource recovery opportunities	Fast track schedule limits opportunities	Adequate timeline to consider revenue generating opportunities	Adequate timeline to consider revenue generating opportunities
Opportunities to secure grants and funding	Currently no funding opportunities have been identified from provincial or federal sources	Shortest timeline to secure funding opportunities	Better timeline to explore funding opportunities	Best timeline to explore funding opportunities
Synergies with other large treatment projects	Metro Van and CRD are undertaking large secondary treatment projects as well. There may be opportunities to reduce costs for all parties through effective coordination	Fast track timeline limits opportunities	Adequate timeline to explore opportunities	Adequate timeline to explore opportunities

Outfall replacement will benefit existing and future users, therefore RDN plans to finance both project with Development Cost Charges (DCCs), reserves, tax requisitions, and debt (amortized over 20 years). There is an expected DCC shortfall and the remainder of the costs will be funded by general reserves and long term debt. However, the RDN will continue to collect DCCs which will cover a portion of the debt.

Provincial and federal cost-sharing is sometimes available to projects such as these. The RDN will continue to pursue federal and provincial grant options to fund secondary treatment at GNPCC. For

that reason, three funding scenarios (no grant, 1/3 grant and 2/3 grant) are provided and each scenario has implications on potential tax increases.

The current average tax is \$104 per year, based on an average house in Nanaimo with an assessed value of \$350,000. To fund the secondary treatment upgrade at GNPCC, sewer taxes could increase over 2013 taxes by an average of \$6-19/year from 2014 to 2022 for a total increase of \$57-164 after nine years (see table below). This means that the average household tax may be \$161-\$268 in 2022.

Potential Average Sewer Tax Increase for GNPCC Secondary Treatment Upgrade by 2016, 2018, or 2019, with Three Cost Sharing Scenarios.

Cost sharing scenario	2013 Tax (average)	Potential tax increase phased in from 2014-2022					
		Option 1. 2016		Option 2. 2018		Option 3. 2019	
		Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2022
No Grant	\$104	\$18	\$268	\$15	\$238	\$13	\$224
1/3 Grant		\$12	\$213	\$10	\$194	\$9	\$185
2/3 Grant		\$8	\$179	\$7	\$167	\$6	\$161

Note, tax increase is phased incrementally in from 2014-2022. Amounts are based on an average house in Nanaimo with an assessed value of \$350,000. Cost-sharing (grants) apply only to construction costs and do not cover the costs of operation.



i For more information, visit the RDN Wastewater Services website at www.rdn.bc.ca or contact Wastewater Services at (250) 390-6560, (250) 954-3792, or 1-877-607-4111. Alternately, you may email rcu@rdn.bc.ca.



What does the LWMP Amendment Mean for Parksville, Qualicum Beach, French Creek and Area Residents with Sewer?

WASTEWATER SERVICES FACTSHEET 6

If you live in Parksville, Qualicum Beach, French Creek, Surfside, Barclay Crescent or Pacific Shores; and have sewer service; then your wastewater is treated at the French Creek Pollution Control Centre (FCPCC), at 957 Lee Road in Parksville. FCPCC provides secondary treatment to an estimated population of 26,047 people.

The Regional District of Nanaimo (RDN) Liquid Waste Management Plan (LWMP) has a number of programs which apply to sewered areas in Parksville, Qualicum Beach, French Creek, Surfside, Barclay Crescent, and Pacific Shores. Specifically, these are:

- Source Control Program
- Rainwater Management / Drinking Water & Watershed Protection Program
- Volume Reduction
- Inflow and Infiltration Program
- **Pollution Control Centres Program**
- Odour Control Program
- Resource Recovery Program
- Biosolids Program.

Refer to Factsheet 2 for detailed information on these programs.

Sustainable Decision-making

All decision-making and actions undertaken by the RDN are founded on sustainability principles outlined in the Regional Growth Strategy (RGS). Fundamentally, sustainability means that the interrelationships between the environment, society and economic activity are recognized, understood and respected. As a result, decisions will move the region towards a more sustainable way of life.



LIQUID WASTE
MANAGEMENT PLAN



FRENCH CREEK CONTROL CENTRE

Odour Control

Since 1997, the RDN has implemented extensive odour control measures at wastewater treatment facilities. For example, the RDN established a hydrogen sulphide monitoring program and established "odour procedures" in the Environmental Management System to ensure that staff eliminate or reduce odours during routine duties and respond within 24 hours to odour complaints. To further control odour >




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at FCPCC, the RDN installed chemical scrubbers and added ferrous chloride and biological scrubbers to neutralize hydrogen sulphide and installed ion generators and enclosed odour-generating areas at Bay Avenue, Lee Road, and Hall Road Pump Stations. As a result, the number of complaints received for odours at FCPCC dropped from 227 in 1999 to none in 2011.

Resource Recovery

During the summer months, FCPCC sends up to 1,370 cubic metres per day (m³/day) of its treated effluent to Morningstar Golf Course for irrigation. Reclaimed water is also used at FCPCC during operations in place of potable water. Beneficial effluent reuse lessens the demand on the potable water supply and reduces the volume discharged to the ocean.

FCPCC produces high quality biosolids which are beneficially used at the Vancouver Island University woodlot to fertilize trees in the Forest Fertilization Project. Biosolids application can increase tree growth from 50% to 400%. Trees treated with biosolids also appear greener and have longer needles and buds.

Capital Projects

Capital projects planned for FCPCC include the replacement of some ageing infrastructure as well as the expansion of the plant to accommodate population growth.

Economic Implications

These replacement and expansion projects will cost an estimated \$32 million and are scheduled for 2018-2025. Based on current population estimates, 85% of the expansion will accommodate new population growth and 15% will benefit existing users. FCPCC expansion and upgrades will be financed by a combination of development cost charges (DCCs), accumulated capital reserves, long term debt, and property taxes. Due to low growth in the past four years, DCC collection was considerably lower than expected. As well, \$2 million in DCC have been applied to projects at FCPCC since 2008. As a result, a DCC shortfall is expected and the remainder of the costs will be funded by general reserves and long term debt. DCCs will continue to be collected after borrowing and may be used to cover a portion of the debt. Additionally, DCC rates are reviewed approximately every five years to ensure they reflect the most recent project estimates as well as changes in growth projections.

To fund the major capital projects at FCPCC, sewer taxes may increase over the next nine years, by \$11 to 14 per year, starting in 2014, for a total of \$99-126 over nine years, shown below. This means that the average household sewer tax may be \$345-372 in 2022. Currently, provincial and federal grant funding is not applicable to expansion projects.

Potential Average Sewer Tax Increase for FCPCC Infrastructure Replacement and Expansion

Grant Funding	2013 Tax (average)	Potential tax increase phased in incrementally from 2014-2022		
		Average Annual Increase	Total 9-year Increase	Tax in 2022
Not applicable	\$246	\$11-14	\$99-126	\$345-372

Note, rates listed are approximations based on an average of City of Parksville and Town of Qualicum Beach average household rates and an average assessed value of \$350,000. Estimates assume debt is amortized over 20 years.



For more information, visit the RDN Wastewater Services website at www.rdn.bc.ca or contact Wastewater Services at (250) 390-6560, (250) 954-3792, or 1-877-607-4111. Alternately, you may email rcu@rdn.bc.ca.



What does the LWMP Amendment Mean for Nanoose Residents with Sewer Service?

The Regional District of Nanaimo (RDN) Liquid Waste Management Plan (LWMP) has a number of programs which apply to sewered areas in Nanoose. Specifically, these are:

- Source Control Program
- Rainwater Management / Drinking Water & Watershed Protection Program
- Volume Reduction
- Inflow and Infiltration Program
- **Pollution Control Centres Program**
- Odour Control Program
- Resource Recovery Program
- Biosolids Program.

Refer to Factsheet 2 for detailed information on these programs.

NANOOSE BAY POLLUTION CONTROL CENTRE

If you live in Nanoose Bay (including Fairwinds) and have sewer service, then your wastewater is treated at the Nanoose Bay Pollution Control Centre (NBPCC). NBPCC currently provides chemically-enhanced primary wastewater treatment to a population of approximately 1,350 people.

The LWMP Pollution Control Centre Program identifies capital upgrade and expansion projects associated with RDN wastewater treatment facilities, including secondary treatment upgrades at NBPCC.

Secondary Treatment Upgrades

The original LWMP (1997) projected an upgrade from primary to secondary treatment by 2010. Funding for the upgrade was based on projected growth and service area expansion which did not occur. Since services are based on a user pay principle, through the existing service area bylaw, the cost of upgrading and operating the NBPCC must be born entirely by Nanoose residents living within the service area. >

Provincial and Federal Laws Require Secondary Wastewater Treatment or Better

Municipal wastewater treatment is governed by the provincial Municipal Wastewater Regulation (MWR) and federal Wastewater Systems Effluent Regulations (WSER). These regulations include mandatory minimum effluent quality standards that can be achieved through secondary wastewater treatment or better. They also include requirements for monitoring, record-keeping, reporting and toxicity testing.



LIQUID WASTE
MANAGEMENT PLAN



Without the population base, the project cannot proceed as planned in 1997. For that reason, the LWMP Amendment is requesting changes to the timeline for secondary treatment upgrades at NBPCC.

The RDN has considered a number of timing options for secondary treatment. The LWMP Amendment presents three feasible timing options for discussion and to solicit feedback during the consultation process. These options include upgrading NBPCC by 2020, 2025, or 2030.

2020 is proposed because it is the nearest feasible scenario. 2025 is proposed because it is a moderate option between 2020 and 2030. The following rationale supports the proposed 2030 date:

- 2030 allows for the lowest tax increase, particularly in the long-term
- 2030 is well within federal WSER requirements
- 2030 is in line with recent precedent set when the 2011 Environment Minister's approved Metro Vancouver LWMP amendment, requiring upgrade of their Iona Island Wastewater Treatment Plant by 2030 (for comparison, NBPCC represents less than 0.05 % of the flow of the Iona Island facility).

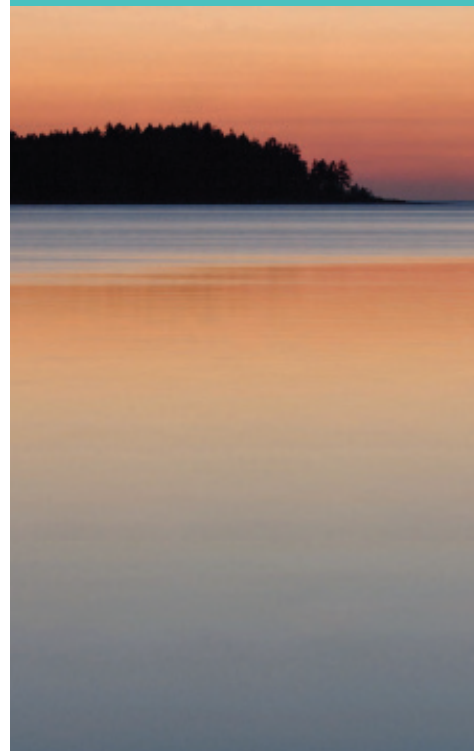
Each option has technical, social, environmental and economic implications. These Implications are considered on the following pages. >



NANOOSE BAY POLLUTION CONTROL CENTRE

Sustainable Decision-making

All decision-making and actions undertaken by the RDN are founded on sustainability principles outlined in the Regional Growth Strategy (RGS). Fundamentally, sustainability means that the interrelationships between the environment, society and economic activity are recognized, understood and respected. As a result, decisions will move the region towards a more sustainable way of life.



Last updated August 2013



Technical Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Feasibility of engineering/construction schedule	Feasibility of target date when compared to established average project timelines for design, procurement and construction of similar projects	Adequate timeframe for project completion	Adequate timeframe for project completion	Adequate timeframe for project completion
Opportunities for innovation, optimization	Innovation in the areas of process optimization, resource recovery, reduced energy consumption, flexibility, better performance require time and consideration at the design phase	Adequate timeline for consideration of innovation opportunities	Adequate timeline for consideration of innovation opportunities	Adequate timeline for consideration of innovation opportunities
Mitigate potential climate change impacts on facility	Consideration of potential climate change impacts to infrastructure	Adequate timeline to consider infrastructure impacts	Adequate timeline to consider infrastructure impacts	Adequate timeline to consider infrastructure impacts
Opportunities for future expandability	Design needs to consider potential provision of sewage treatment for new developments (i.e. Fairwinds, and expanding service area to existing neighbourhoods.	Adequate timeline for consideration of expansion opportunities	Adequate timeline for consideration of expansion opportunities	Adequate timeline for consideration of expansion opportunities

Environmental Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Meet Provincial MWR Standards	All options meet these criteria, although with significant timing differences	Achieved earliest	Achieved 5 years after Option 1	Achieved 10 years after Option 1
Meet Federal WSER standards	All options meet these criteria within WSER deadlines	Achieved earliest	Achieved 5 years after Option 1	Achieved 10 years after Option 1
Protect the environment	Implementation of secondary treatment will reduce potential for impacts to organisms in the receiving environment	Achieved in shortest time	Extends potential impacts by 5 years relative to Option 1	Extends potential impacts by 10 years relative to Option 1
Improved effluent quality	Secondary treatment will reduce TSS and BOD discharge concentrations. Significant timing differences between options	Achieved in shortest time	Extends primary discharge by 5 years relative to Option 1	Extends primary discharge by 10 years relative to Option 1
Minimize Carbon footprint	Related in large part to resource recovery opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria

Environmental Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Identify resource recovery opportunities	Possible opportunities include: heat recovery; bio-solids management; biogas generation	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria
Flexibility for future Resource Recovery opportunities	Design and construct with consideration of possible future resource recovery opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria
Reduce treatment plant site impacts	Potential impacts include habitat disruption, site ecological sensitivity	Existing developed site, minimal impact anticipated	Existing developed site, minimal impact anticipated	Existing developed site, minimal impact anticipated
Minimize geotechnical concerns	Includes site suitability, stability	Existing developed site	Existing developed site	Existing developed site

Social Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Construction disruption	Construction activities will create potential disruption and inconvenience for local residents. Appropriate mitigation measures are required for noise, odours, dust, and traffic	Schedule will allow design for minimal disruption. Need to consider potential impacts on future Fairwinds	Schedule will allow design for minimal disruption. Need to consider potential impacts on future Fairwinds	Schedule will allow design for minimal disruption. Need to consider potential impacts on future Fairwinds
Disruption from ongoing operations (noise, odours, dust, traffic)	Require design for proper mitigation of potential impacts during ongoing operations	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design
Facility/site Aesthetics	Aesthetics include proper screening and integration with neighbourhood	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design
Archaeological/cultural Resources	Construction activities will require proper consideration and procedures for potential impacts to cultural artifacts	Adequate timeframe to mitigate risks	Adequate timeframe to mitigate risks	Adequate timeframe to mitigate risks
Property values	Facility expansion could affect local property values. Design and construction needs to minimize potential impacts	Similar impact potential for all options	Similar impact potential for all options	Similar impact potential for all options

Social Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Public perception	Extending timeframe for achieving secondary treatment may negatively impact public perceptions. Potential tourism, recreation and related economic impacts	Minimizes potential	Extends potential impacts by 5 years relative to Option 1	Extends potential impacts by 10 years relative to Option 1
Loss of beneficial site uses	Existing facility is located adjacent to land designated as park	Minimal impacts anticipated	Minimal impacts anticipated	Minimal impacts anticipated
Compatibility with land use zoning	Existing facility is located in an area surrounded by park and residential	Established compatibility with existing facility	Established compatibility with existing facility	Established compatibility with existing facility

Economic Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Capital Cost Optimization	Minimizing capital cost is most effectively carried out during the design phase	Adequate timeline for capital cost optimization	Adequate timeline for capital cost optimization	Adequate timeline for capital cost optimization
Operating cost Optimization	Minimizing operating cost is most effectively carried out during the design phase. Fast tracking may result in increased capital costs	Adequate timeline for operating cost optimization	Adequate timeline for operating cost optimization	Adequate timeline for operating cost optimization
Tax rate impacts	Timing of project expenditure has a significant impact on tax burden resulting from the project	Highest tax burden imposed on taxpayers	Tax burden significantly lower than Option 1, but higher than Option 3	Tax burden significantly lower than Options 1 + 2
Revenue Opportunities	Revenue opportunities flow primarily from resource recovery opportunities	Adequate timeline to consider revenue generating opportunities	Adequate timeline to consider revenue generating opportunities	Adequate timeline to consider revenue generating opportunities
Opportunities to secure grants and funding	Currently no funding opportunities have been identified from provincial or federal sources	Option with shortest timeline to secure funding opportunities	Adequate timeline to explore funding opportunities	Best timeline to explore funding opportunities

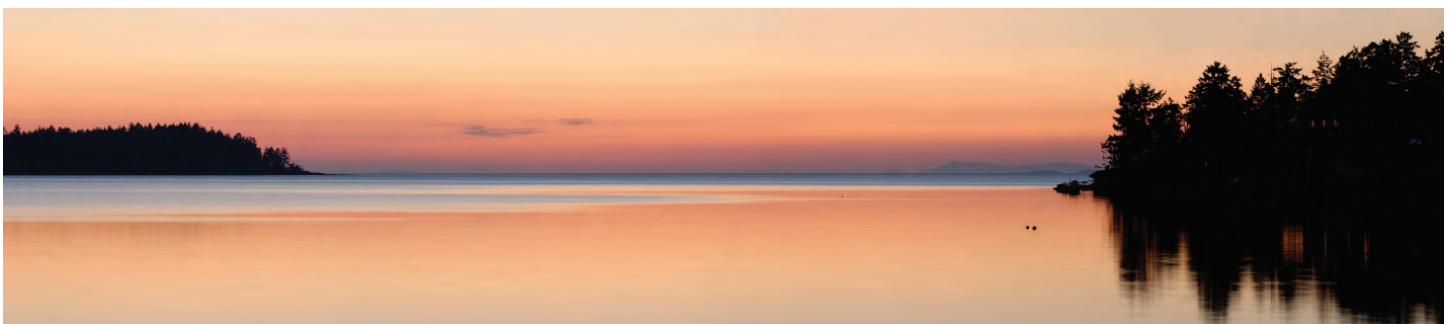
The provision of secondary treatment at NBPCC will cost those in the Nanoose Bay Sewer Service Area an estimated \$4.1 million (2012 dollars). Provincial and federal cost-sharing is sometimes available to projects such as these. The RDN will continue to pursue federal and provincial grant options to fund secondary treatment at GNPCC. For that reason, three funding scenarios (no grant, 1/3 grant and 2/3 grant) are provided.

The current average tax. To fund the secondary treatment upgrade at NBPCC, sewer taxes could increase over 2013 rates by an average of \$12-27/ year from 2014-2031 for a total increase of \$211-493 after 18 years (see table below). This means that the average household taxes may be \$833-\$1,115 in 2031.

Potential Average Sewer Tax Increase for NBPCC Secondary Treatment Upgrade by 2020, 2025, or 2030, with Three Cost Sharing Scenarios.

Cost sharing scenario	2013 Tax (average)	Potential tax increase phased in incrementally from 2014-2031					
		Option 1. 2020		Option 2. 2025		Option 3. 2030	
		Average Annual Increase	Tax in 2031	Average Annual Increase	Tax in 2031	Average Annual Increase	Tax in 2031
No Grant	\$622	\$27	\$1,115	\$20	\$983	\$19	\$966
1/3 Grant		\$20	\$982	\$15	\$885	\$16	\$916
2/3 Grant		\$14	\$863	\$13	\$852	\$12	\$833

Note, tax increase is phased incrementally in from 2014-2031. Cost-sharing (grants) apply only to construction costs and do not cover the costs of operation.



For more information, visit the RDN Wastewater Services website at www.rdn.bc.ca or contact Wastewater Services at (250) 390-6560, (250) 954-3792, or 1-877-607-4111. Alternately, you may email rcu@rdn.bc.ca.



Appendix C:

Public Information Meeting Question and Answer Session Outline

LWMP Amendment Public Meetings Question and Answer Session

Public Wastewater Systems Program

Background:

This program supports the Official Community Plans for the potential provision of community sewer systems. This means that, sewer services can only be considered for communities within the Growth Containment Area of an Official Community Plan, or for properties adjacent to sewer with a failing onsite system.

Sewer is a user paid service which means that new sewer services must be paid for by the residents in the new service area.

Questions:

- 1) For unsewered areas, is sewer generally desired?
- 2) What is a reasonable cost per household for the provision of sewer where it does not currently exist? (collection system and connection to private property)

Private Onsite Systems Program

Background:

Currently, the RDN has no jurisdiction in the management of onsite systems. Ministry of Health, Island Health (formerly Vancouver Island Health Authority) and “Authorized Persons” under the Sewerage System Regulation are responsible for the management of onsite systems. The role played by the RDN is strictly educational through the provision of SepticSmart.

Questions:

- 1) Are you aware that the RDN offers a free workshop to promote the proper care of private onsite systems?
- 2) Have you ever attended a SepticSmart workshop?
- 3) Do you have any concerns about how well your, or your neighbour’s, onsite system works or the quality of treatment it provides?
- 4) Are there any issues you regarding onsite systems which would like the RDN to address?

Source Control Program

Background:

Source control is essentially pollution prevention. By limiting what pollutants get put down the drain, we improve the quality of wastewater entering the system, and subsequently improve the quality of effluent and biosolids produced after treatment.

The Regional Liquid Waste Advisory Committee decided that the RDN should continue the Source Control Program and promote it through more partnerships (RDN departments, municipalities, non-government jurisdictions).

Questions:

- 1) Can you recommend any community groups who may like to partner with the RDN to promote source control and what type of contaminant they would target?
- 2) What other source control initiatives would assist homeowners?

Rainwater Management Program

Background:

The Ministry of Environment requires that the RDN prepare a Rainwater Management Plan in the upcoming years. This plan will establish a regional strategy to use rain as a resource, promote the maintenance of hydrologic function and protect the quality of water.

Question:

- 1) Are there any specific rainwater management, stormwater management, drinking water protection or watershed protection topics in your community that you would like the RDN to consider when developing the Rainwater Management Plan?

Odour Control Program

Background:

The RDN manages a number of wastewater manholes, pump stations, and treatment facilities and RDN takes odour control seriously.

Questions:

- 1) Do wastewater-related odours affect you (at home, on your commute, where you recreate)?
- 2) What is an acceptable level of odours? (frequency / duration / proximity)?

Volume Reduction Program

Background:

Volume reduction is important because the more water we use, the more wastewater we create. As well, higher volumes require that infrastructure be expanded sooner. By conserving water, we prevent pollution and can postpone costly expansion projects.

Questions:

- 1) Are you aware that the RDN offers free water conservation workshops? (e.g. Rainwater Harvesting, Gardening Tips, Lawn Alternatives, Xeriscaping, Irrigation Tips)
- 2) Are there other workshop topics you are interested in?

Inflow and Infiltration Program

Background:

Inflow and infiltration (I&I) are terms for relatively clean water that enters the sanitary sewer system, mainly as a result of a rainfall event or snow melt. A certain amount of I&I is unavoidable and is accounted for in routine sewer design. However, when I&I exceeds design allowances, sewer capacity is consumed there is the risk of sewer overflows. Reduction of I&I in the system lowers the risk of sanitary sewer overflows and can decrease the costs of conveying and treating wastewater.

As much as 70% of the I&I can come from private property.

Question:

1) What should the RDN do, if anything, to promote the reduction of I&I on private property?

Pollution Control Centres Program

Part 1: GNPCC

Background:

The RDN's original 1997 LWMP anticipated that secondary treatment would be in place at Greater Nanaimo Pollution Control Centre by 2015. However, the outfall which discharges treated wastewater to the Strait of Georgia must be replaced by 2015. A 2015 completion date for both projects requires a high tax burden. As well, there are technical feasibility concerns with completing both the outfall and secondary upgrade projects by 2015.

The LWMP amendment is requesting an alternative timeline for the secondary treatment upgrade. Three completion dates are proposed (2016, 2018, and 2019); each with technical, social, environmental, and economic implications.

The outfall project will cost an estimated \$18 million. Secondary treatment upgrades will cost an estimated \$61.8 million.

Potential Average Sewer Tax Increase for GNPCC Secondary Treatment Upgrade by 2016, 2018, or 2019, with Three Cost Sharing Scenarios.

Cost sharing scenario	2013 Tax (average)	Potential tax increase phased in from 2014-2022					
		Option 1. 2016		Option 2. 2018		Option 3. 2019	
		Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2022
No Grant	\$104	\$18	\$268	\$15	\$238	\$13	\$224
1/3 Grant		\$12	\$213	\$10	\$194	\$9	\$185
2/3 Grant		\$8	\$179	\$7	\$167	\$6	\$161

Question:

Based on the technical, social, environmental, and economic implications, which option do you prefer? 2016, 2018, or 2019?

Part 2: NBPCC

Background:

The RDN’s original LWMP anticipated that secondary treatment would be in place at Nanoose Bay Pollution Control Centre by 2010. However, funding for the upgrade was based on projected growth and service area expansion which did not occur. For that reason, the LWMP amendment is requesting an alternative timeline. Three completion dates are proposed; each with technical, social, environmental, and economic implications. This project will cost an estimated \$4.1 million.

Potential Average Annual Sewer Tax Increase for Residents in the Nanoose Bay Service Area, Based on Three Timing Options and Three Cost Sharing Scenarios

Cost sharing scenario	2013 Tax (average)	Potential tax increase phased in from 2014-2031					
		Option 1. 2020		Option 2. 2025		Option 3. 2030	
		Average Annual Increase	Tax in 2031	Average Annual Increase	Tax in 2031	Average Annual Increase	Tax in 2031
No Grant	\$622	\$27	\$1,115	\$20	\$983	\$19	\$966
1/3 Grant		\$20	\$982	\$16	\$916	\$15	\$885
2/3 Grant		\$14	\$863	\$13	\$852	\$12	\$833

Question:

Based on the technical, social, environmental, and economic implications, which option do you prefer? 2020, 2025, or 2030?

Part 3: FCPCC

Background:

The original 1997 LWMP and LWMP amendment make commitments to expand FCPCC to meet the demands of a growing population. The LWMP amendment estimates that the expansion will be necessary between 2018 and 2025, at a cost of \$32 million.

Potential Average Sewer Tax Increase for FCPCC Infrastructure Replacement and Expansion

Grant Funding	2013 Tax (average)	Potential tax increase phased in incrementally from 2014-2022		
		Average Annual Increase	Total 9-year Increase	Tax in 2022
Not applicable	\$246	\$11-14	\$99-126	\$345-372

Question:

Do you have any comment for the RDN regarding the expansion of FCPCC?

Biosolids Program

Background:

Biosolids are a useful resource with a compost-like texture. The RDN, in partnership with Vancouver Island University and SYLVIS Environmental, produces, stores and applies biosolids that conform to standards set by the Organic Matter Recycling Regulation.

Question:

Do you have any comments regarding biosolids management in the RDN?

Resource Recovery Program

Background:

The RDN considers resource recovery options at the planning and design phase for all upgrades and expansions. Current Resource Recovery in the RDN is summarized below.

By-Product	Recovered Resource	GNPCC	FCPCC	NBPCC	DPPCC
Sludge	Biosolids	✓	✓	✓	✓
Methane, CO ₂ (biogas)	Heat	✓	–	–	–
Methane, CO ₂ (biogas)	Electricity (cogeneration)	✓	–	–	–
Effluent	Reclaimed Water	✓	✓	–	–
Effluent	District Heating	Potential	–	–	–

Question:

What opportunities for resource recovery in the RDN would you like to see explored?

Appendix D:

Public Survey and Results



working
together.

Liquid Waste Management Plan Amendment Community Survey

The Liquid Waste Management Plan (LWMP) is a 20-year plan to support sustainable wastewater management in the Regional District of Nanaimo (RDN). The RDN is currently amending its LWMP. A Regional Liquid Waste Advisory Committee consisting of members of the community and First Nations as well as Board members, municipal staff, technical experts, and regulatory representatives has guided the LWMP amendment process. It is important that community members understand the LWMP amendment process, what solutions are being proposed, and the associated costs to ratepayers. Community input is a critical part of the LWMP amendment process. Once approved by the RDN Board and the BC Minister of Environment, the LWMP becomes a legal document under the BC *Environmental Management Act* and can be implemented without further approvals.

Survey Objectives:

This survey is voluntary and a response is encouraged, not required. The purpose of this survey is to:

- Identify the wastewater planning issues important to community members; and
- Identify potential solutions community members would like to see become part of the LWMP amendment.

You can fill out the survey one of two ways:

1. If you have access to the internet, you may complete this survey online. The online version can be accessed and completed by visiting the RDN's LWMP website at www.rdnlwmp.ca.
2. Paper copies can be given to RDN staff or dropped off / mailed to Wastewater Services at the Regional District of Nanaimo office at 6300 Hammond Bay Road, Nanaimo, BC V9T 6N2.

Thank you for taking the time to complete this LWMP Amendment Community Survey. We encourage you, if you have not already done so, to read the LWMP Factsheets before you begin.

Nanaimo Area: (250) 390-6560
Parksville/Qualicum Beach Area: (250) 954-3792
Toll Free in BC: 1-877-607-4111
Fax: (250) 390-1542 E-mail: rcu@rdn.bc.ca
www.rdnlwmp.ca



1. In which area do you live?

- Electoral Area A (Cedar, South Wellington, Cassidy)
- Electoral Area B (Gabriola, Decourcy, Mudge Islands)
- Electoral Area C (Extension, Nanaimo Lakes, East Wellington, Pleasant Valley)
- Electoral Area E (Nanoose Bay)
- Electoral Area F (Coombs, Hilliers, Errington)
- Electoral Area G (French Creek, San Pareil, Little Qualicum)
- Electoral Area H (Bowser, Qualicum Bay, Deep Bay)
- Nanaimo
- Lantzville
- Parksville
- Qualicum Beach
- Other (please state which location) _____

2. Do you know how your household wastewater is treated (i.e. where it goes after you flush)?

- Yes
- No

3. If you answered “yes” to Question 2, how is your household wastewater collected and treated?

- Sewer and treatment facility
- Private onsite system (e.g. septic system, package treatment system)
- Pump and Haul
- Other (please indicate below)

Please comment:

4. If you answered “Private onsite system” to Question 3, are you aware that the RDN offers a free SepticSmart kit and free workshops on how to properly care for and maintain your residential onsite system?

- Yes, I have attended one in the past
- Yes, but I have not attend one yet
- No

Please comment:

5. **The Greater Nanaimo Pollution Control Centre and Nanoose Bay Pollution Control Centre currently provide primary-level wastewater treatment. Are you aware that provincial and federal laws require that the RDN upgrade them to provide secondary-level wastewater treatment?**

- Yes
- No

6. **The RDN's original LWMP anticipated that secondary treatment would be in place at Greater Nanaimo Pollution Control Centre by 2015. However, the outfall which discharges treated wastewater to the Strait of Georgia must be replaced by 2015. There are technical feasibility concerns with completing both the outfall and secondary upgrade projects by 2015. As well, the tax burden on individual taxpayers would be very high if both the outfall replacement and secondary upgrades were completed by 2015. For that reason, the LWMP amendment is requesting an alternative timeline for the secondary treatment upgrade. Three completion dates are proposed; each with social, environmental, and economic implications which are discussed in Factsheet 5. Based on your review of Factsheet 5, which option do you prefer?**

- 2016 (highest rate increase; achieves regulatory standards soonest)
- 2018
- 2019 (lowest rate increase; achieves regulatory standards latest)
- Other (please comment below)

Please comment:

7. **The RDN's original LWMP anticipated that secondary treatment would be in place at Nanoose Bay Pollution Control Centre by 2010. However, funding for the upgrade was based on projected growth and service area expansion which did not occur. For that reason, the LWMP amendment is requesting an alternative timeline. Three completion dates are proposed; each with technical, social, environmental, and economic implications which are discussed in Factsheet 7. Based on your review of Factsheet 7, which option do you prefer?**

- 2020 (highest rate increase; achieves regulatory standards soonest)
- 2025
- 2030 (lowest rate increase; achieves regulatory standards latest)
- Other (please comment below)

Please comment:

8. **Are you aware that the French Creek Pollution Control Centre is nearing its capacity and that expansion is necessary, at a cost to ratepayers in that service area, in the next 5-12 years?**

Yes

No

Please comment:

9. **Are you aware that the Regional District of Nanaimo experiences high flows to the community sewer system as a result of inflow and infiltration?**

Inflow and infiltration are terms for relatively clean water that enters the sanitary sewer system, mainly as a result of a rainfall event or snow melt. Inflow enters the system from the top – for example roof leaders that drain into the sewer system. Infiltration enters the system from below the ground, for example through leaky pipes or house sump pumps.

Yes

No

Please comment:

10. **The Draft LWMP Amendment commits the RDN to developing a Rainwater Management Plan in the upcoming years to develop a regional approach to the management of rainwater and stormwater. Do you have any recommendations or are there any issues related to rainwater that you would like to bring to the attention of the Regional District of Nanaimo?**

Yes (if yes, please comment below)

No

Please comment:

11. Please indicate the level of importance you attach to each of the following wastewater management planning issues:

Issue	Not important.....Very Important					Don't know
	1	2	3	4	5	
a) Addressing areas that are not connected to the community sewer system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Managing biosolids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Minimizing costs to ratepayers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Minimizing pollution that enters the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Protecting watershed health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Recovering resources from waste (reusing treated wastewater, biosolids, cogeneration, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Reducing odours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Reducing the number of failing onsite systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Meeting provincial and federal requirements to provide secondary wastewater treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Reducing water usage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Environmental monitoring and reporting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Reducing inflow and infiltration entering the community sewer system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Strategic investment in critical infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Preparing for and adapting to climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Spending on the operation and maintenance of wastewater facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Managing contaminants of emerging concern (e.g. medications) in wastewater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Are there any liquid waste management planning issues, not addressed above, that you would like to raise regarding the LWMP Amendment?

Please comment:

13. Please identify any potential solutions to the above noted issues:

Please comment:

14. Do you have any further comments or recommendations regarding the LWMP Amendment?

Please comment:

Thank you for completing this survey. Your feedback helps to ensure that the Liquid Waste Management Plan Amendment meets our community's unique needs.

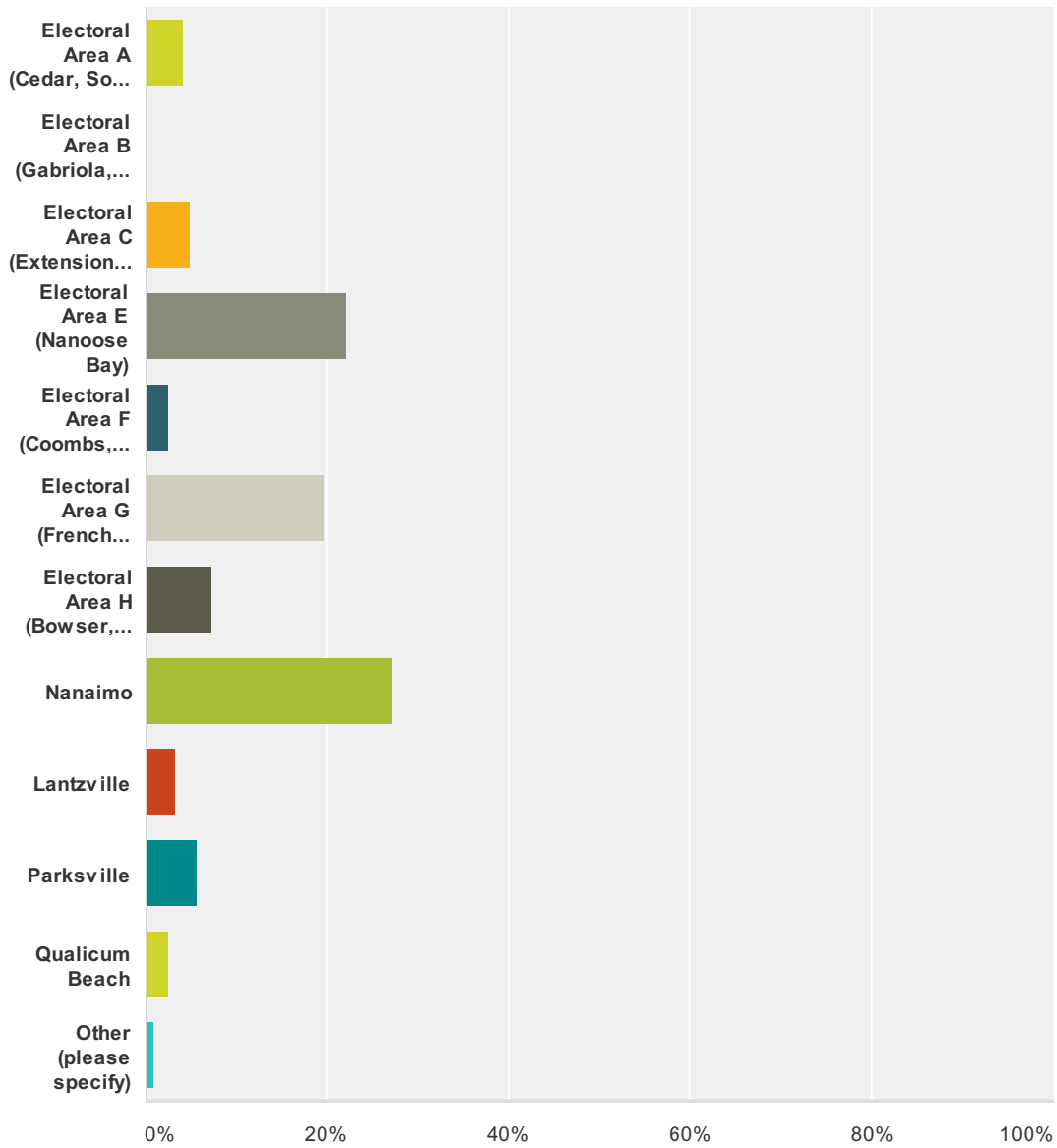


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Fax: (250) 390-1542 E-mail: rcu@rdn.bc.ca
www.rdnlwmp.ca



Q1 In which area do you live?

Answered: 122 Skipped: 0



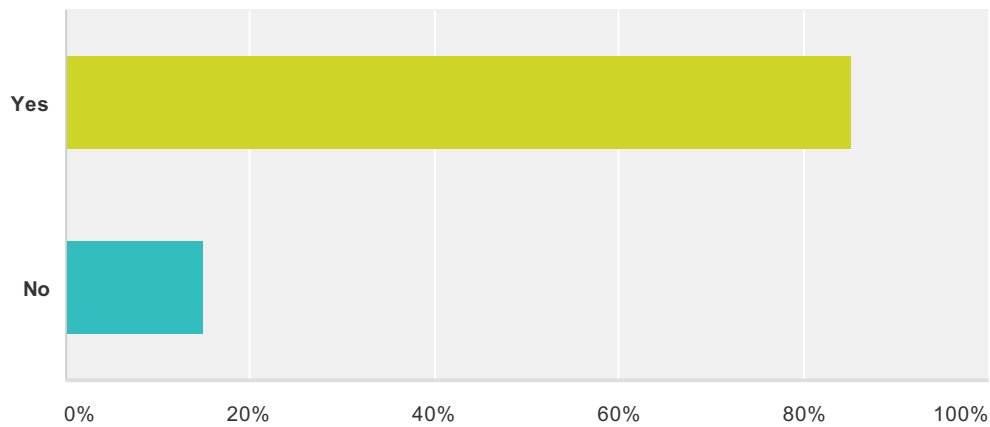
Answer Choices	Responses
Electoral Area A (Cedar, South Wellington, Cassidy)	4.10% 5
Electoral Area B (Gabriola, Decourcy, Mudge Islands)	0% 0
Electoral Area C (Extension, Nanaimo Lakes, East Wellington, Pleasant Valley)	4.92% 6
Electoral Area E (Nanoose Bay)	22.13% 27
Electoral Area F (Coombs, Hilliers, Errington)	2.46% 3
Electoral Area G (French Creek, San Pareil, Little Qualicum)	19.67% 24
Electoral Area H (Bowser, Qualicum Bay, Deep Bay)	7.38% 9
Nanaimo	27.05% 33
Lantzville	3.28% 4

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Parksville	5.74%	7
Qualicum Beach	2.46%	3
Other (please specify)	0.82%	1
Total		122

Q2 Do you know how your household wastewater is treated (i.e. where it goes after you flush)?

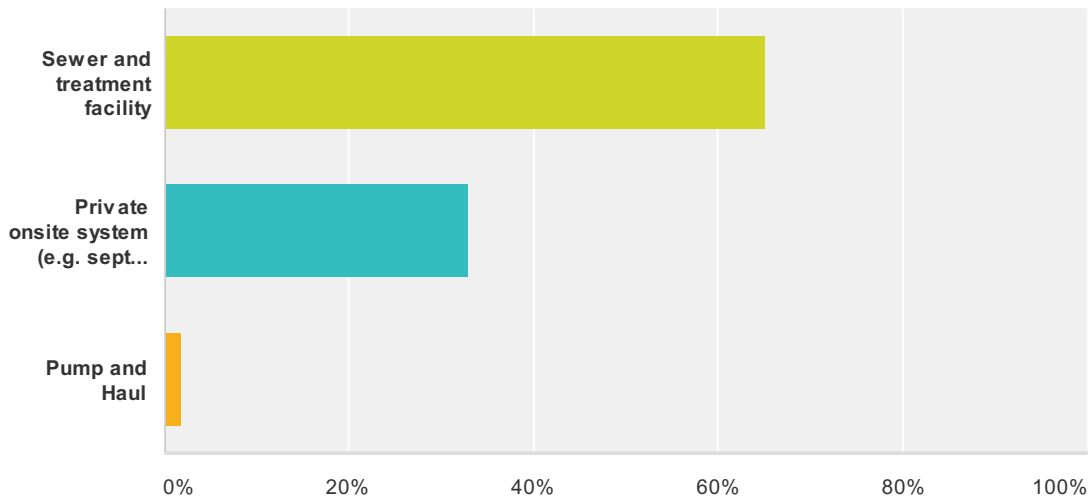
Answered: 121 Skipped: 1



Answer Choices	Responses
Yes	85.12% 103
No	14.88% 18
Total	121

Q3 How is your household wastewater collected and treated?

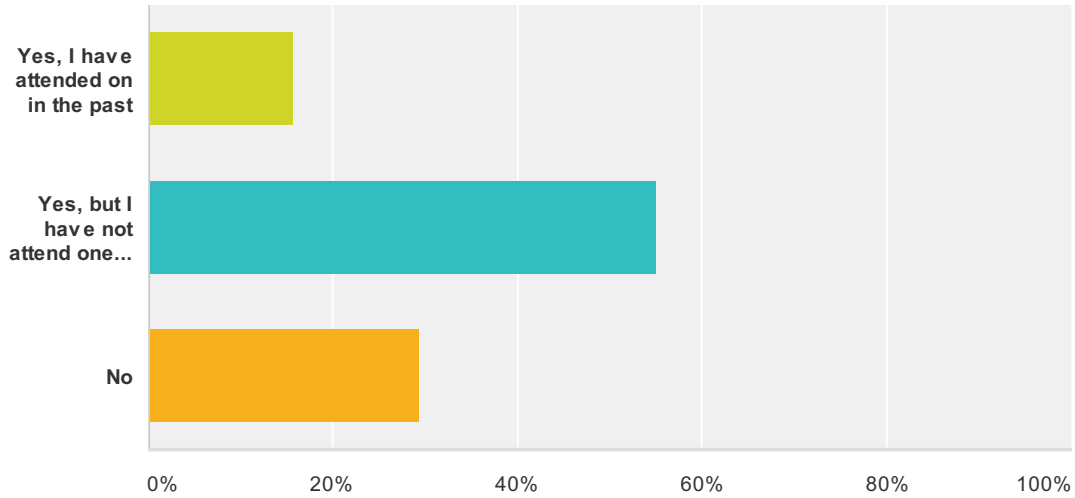
Answered: 103 Skipped: 19



Answer Choices	Responses
Sewer and treatment facility	65.05% 67
Private onsite system (e.g. septic system, package treatment system)	33.01% 34
Pump and Haul	1.94% 2
Total	103

Q4 Are you aware that the RDN offers free SepticSmart workshops on how to properly care for and maintain your residential onsite system?

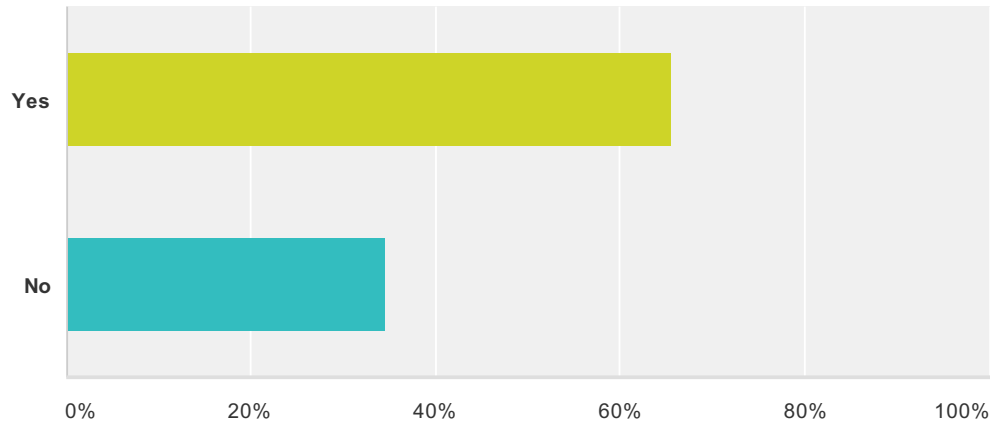
Answered: 51 Skipped: 71



Answer Choices	Responses
Yes, I have attended on in the past	15.69% 8
Yes, but I have not attend one yet	54.90% 28
No	29.41% 15
Total	51

Q5 The Greater Nanaimo Pollution Control Centre and Nanoose Bay Pollution Control Centre currently provide primary-level wastewater treatment. Are you aware that provincial and federal laws require that the RDN upgrade them to provide secondary-level wastewater treatment?

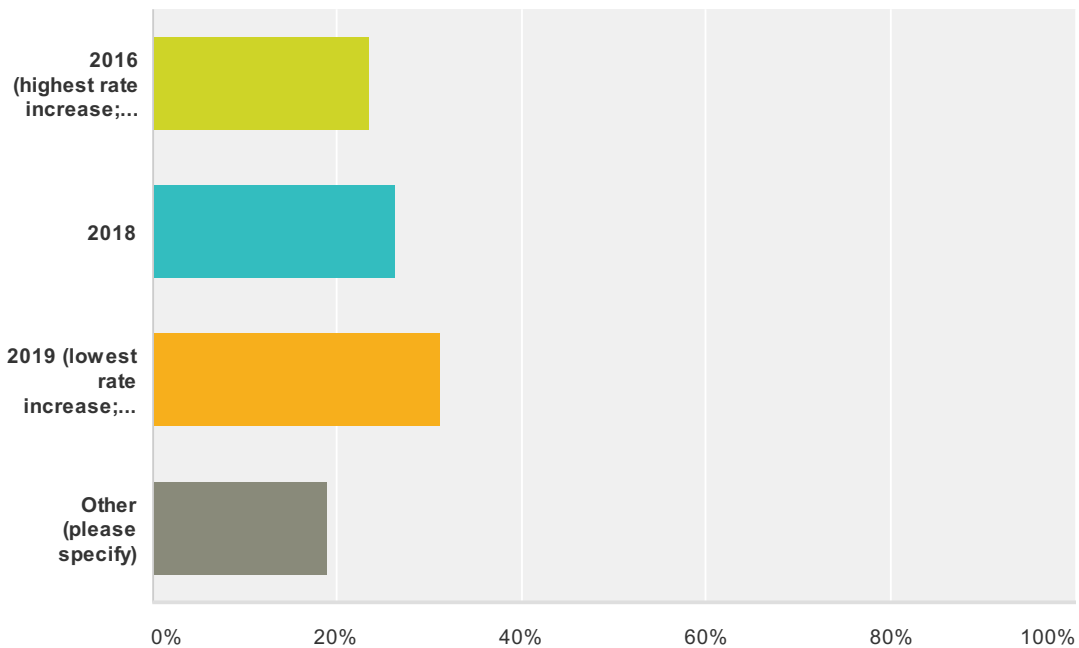
Answered: 116 Skipped: 6



Answer Choices	Responses
Yes	65.52% 76
No	34.48% 40
Total	116

Q6 The RDN’s original LWMP anticipated that secondary treatment would be in place at Greater Nanaimo Pollution Control Centre by 2015. However, the outfall which discharges treated wastewater to the Strait of Georgia must be replaced by 2015. There are technical feasibility concerns with completing both the outfall and secondary upgrade projects by 2015. As well, the tax burden on individual taxpayers would be very high if both the outfall replacement and secondary upgrades were completed by 2015. For that reason, the LWMP amendment is requesting an alternative timeline for the secondary treatment upgrade. Three completion dates are proposed (2016, 2018, and 2019); each with social, environmental, and economic implications which are discussed in Factsheet 5. Based on your review of Factsheet 5, which option do you prefer?

Answered: 106 Skipped: 16



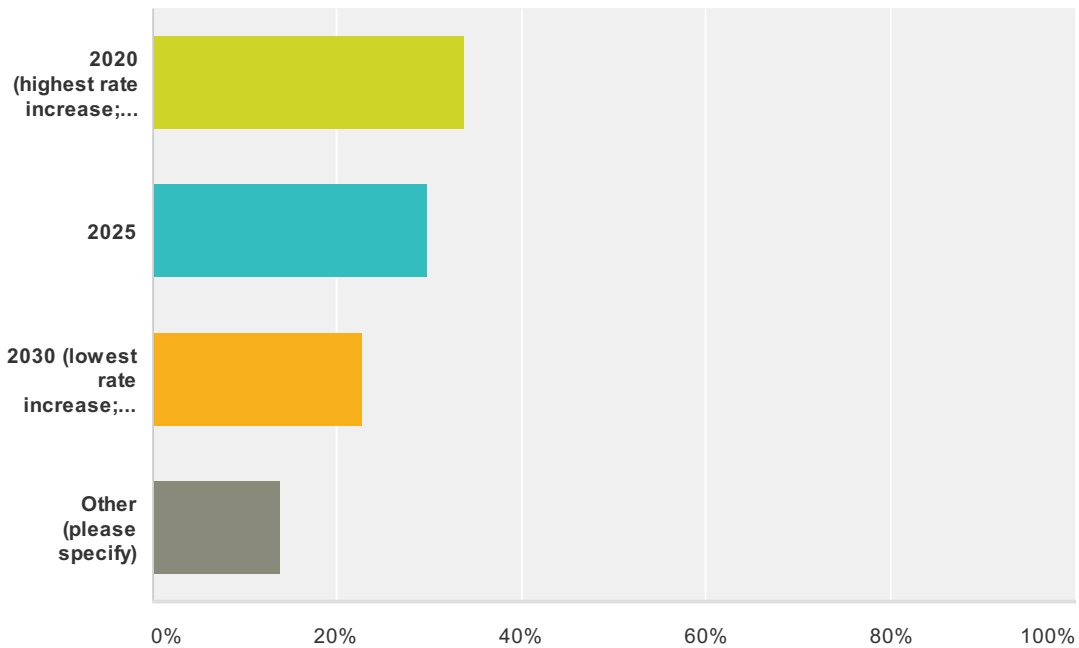
Answer Choices	Responses
2016 (highest rate increase; achieves regulatory standards soonest)	23.58% 25
2018	26.42% 28

Liquid Waste Management Plan Amendment Community Survey

2019 (lowest rate increase; achieves regulatory standards latest)	31.13%	33
Other (please specify)	18.87%	20
Total		106

Q7 The RDN’s original LWMP anticipated that secondary treatment would be in place at Nanoose Bay Pollution Control Centre by 2010. However, funding for the upgrade was based on projected growth and service area expansion which did not occur. For that reason, the LWMP amendment is requesting an alternative timeline. Three completion dates are proposed (2020, 2025, and 2030); each with technical, social, environmental, and economic implications which are discussed in Factsheet 7. Based on your review of Factsheet 7, which option do you prefer?

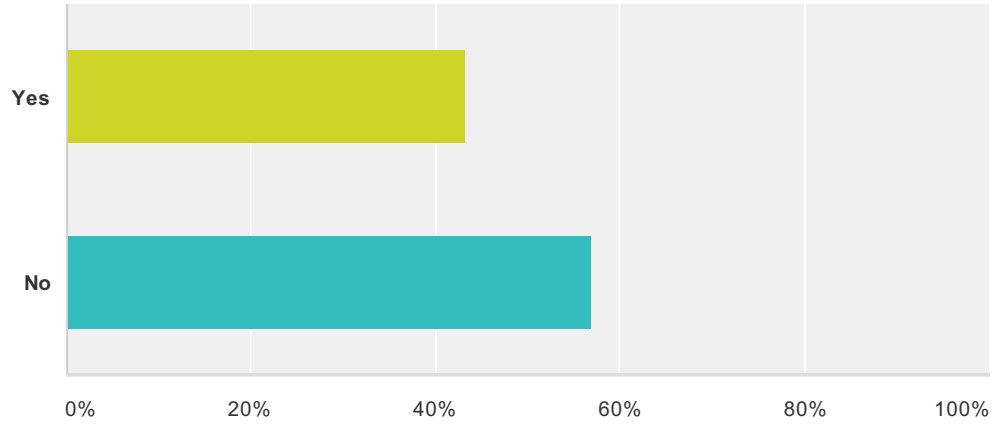
Answered: 101 Skipped: 21



Answer Choices	Responses
2020 (highest rate increase; achieves regulatory standards soonest)	33.66% 34
2025	29.70% 30
2030 (lowest rate increase; achieves regulatory standards latest)	22.77% 23
Other (please specify)	13.86% 14
Total	101

Q8 Are you aware that the French Creek Pollution Control Centre is nearing its capacity and that expansion is necessary, at a cost to ratepayers in that service area, in the next 5-12 years?

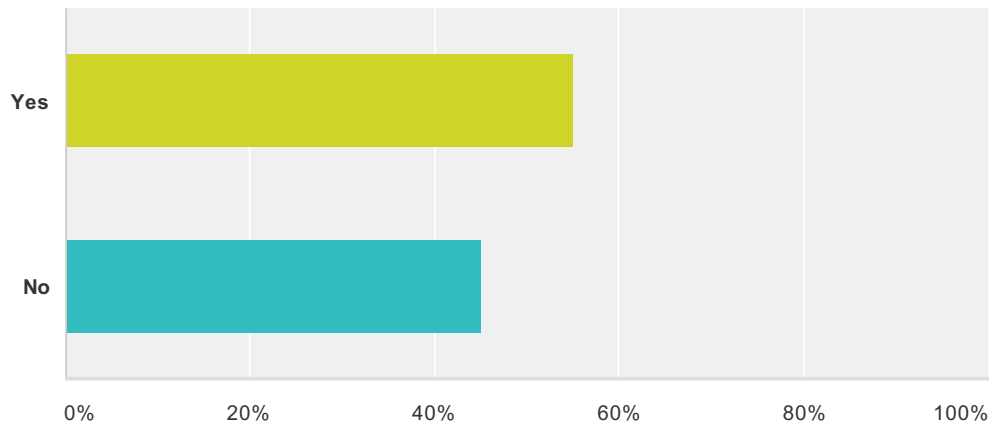
Answered: 111 Skipped: 11



Answer Choices	Responses	
Yes	43.24%	48
No	56.76%	63
Total		111

Q9 Are you aware that the Regional District of Nanaimo experiences high flows to the community sewer system as a result of inflow and infiltration? Inflow and infiltration are terms for relatively clean water that enters the sanitary sewer system, mainly as a result of a rainfall event or snow melt. Inflow enters the system from the top – for example roof leaders that drain into the sewer system. Infiltration enters the system from below the ground, for example through leaky pipes or house sump pumps.

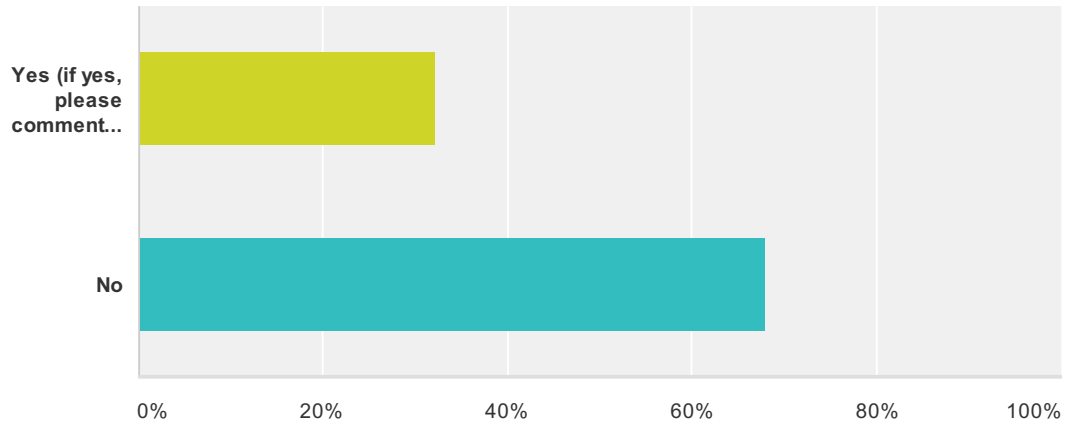
Answered: 109 Skipped: 13



Answer Choices	Responses	Count
Yes	55.05%	60
No	44.95%	49
Total		109

Q10 The Draft LWMP Amendment commits the RDN to developing a Rainwater Management Plan in the upcoming years to develop a regional approach to the management of rainwater and stormwater. Do you have any recommendations or are there any issues related to rainwater that you would like to bring to the attention of the Regional District of Nanaimo?

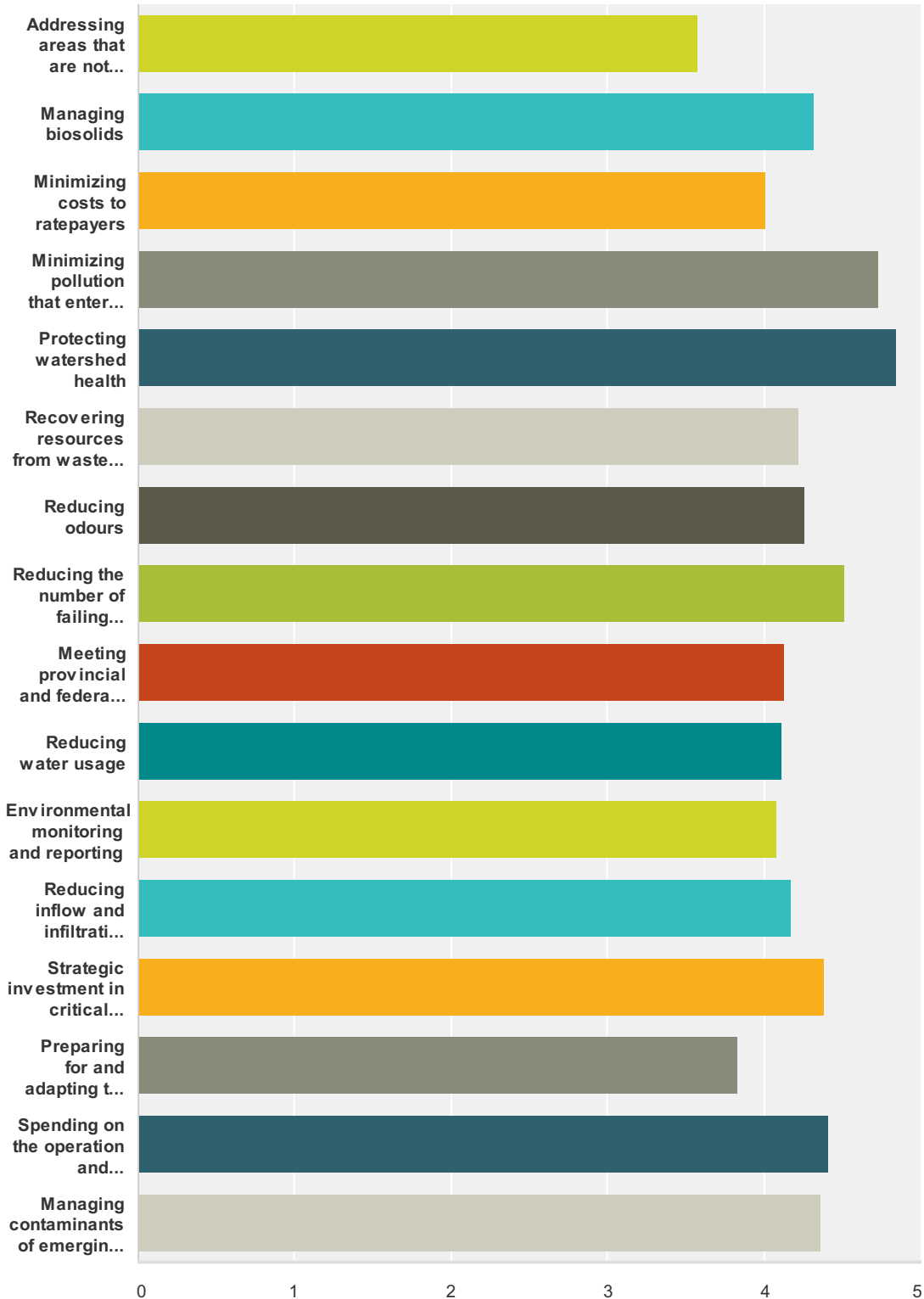
Answered: 106 Skipped: 16



Answer Choices	Responses
Yes (if yes, please comment below)	32.08% 34
No	67.92% 72
Total	106

Q11 Please indicate the level of importance you attach to each of the following wastewater management planning issues:

Answered: 108 Skipped: 14



Liquid Waste Management Plan Amendment Community Survey

	Not Important at All	Not a Priority	Neutral	Somewhat Important	Very Important	N/A	Total	Average Rating
Addressing areas that are not connected to the community sewer system	8.41% 9	13.08% 14	19.63% 21	27.10% 29	28.97% 31	2.80% 3	107	3.57
Managing biosolids	0% 0	1.90% 2	13.33% 14	36.19% 38	48.57% 51	0% 0	105	4.31
Minimizing costs to ratepayers	0.93% 1	7.48% 8	23.36% 25	25.23% 27	41.12% 44	1.87% 2	107	4.00
Minimizing pollution that enters the environment	0% 0	3.74% 4	1.87% 2	12.15% 13	80.37% 86	1.87% 2	107	4.72
Protecting watershed health	0% 0	0.94% 1	1.89% 2	9.43% 10	83.02% 88	4.72% 5	106	4.83
Recovering resources from waste (reusing treated wastewater, biosolids, cogeneration, etc.)	1.87% 2	3.74% 4	12.15% 13	35.51% 38	45.79% 49	0.93% 1	107	4.21
Reducing odours	1.89% 2	5.66% 6	5.66% 6	37.74% 40	47.17% 50	1.89% 2	106	4.25
Reducing the number of failing onsite systems	0% 0	1.85% 2	6.48% 7	28.70% 31	57.41% 62	5.56% 6	108	4.50
Meeting provincial and federal requirements to provide secondary wastewater treatment	2.78% 3	2.78% 3	18.52% 20	28.70% 31	44.44% 48	2.78% 3	108	4.12
Reducing water usage	2.80% 3	7.48% 8	13.08% 14	26.17% 28	45.79% 49	4.67% 5	107	4.10
Environmental monitoring and reporting	2.83% 3	4.72% 5	16.04% 17	32.08% 34	40.57% 43	3.77% 4	106	4.07
Reducing inflow and infiltration entering the community sewer system	0% 0	3.74% 4	14.02% 15	42.06% 45	37.38% 40	2.80% 3	107	4.16
Strategic investment in critical infrastructure	0.93% 1	2.80% 3	8.41% 9	32.71% 35	53.27% 57	1.87% 2	107	4.37
Preparing for and adapting to climate change	4.67% 5	9.35% 10	18.69% 20	29.91% 32	33.64% 36	3.74% 4	107	3.82
Spending on the operation and maintenance of wastewater facilities	0.94% 1	0% 0	6.60% 7	42.45% 45	49.06% 52	0.94% 1	106	4.40
Managing contaminants of emerging concern (e.g. medications) in wastewater	1.90% 2	4.76% 5	5.71% 6	29.52% 31	54.29% 57	3.81% 4	105	4.35

Q12 Are there any liquid waste management planning issues, not addressed above, that you would like to raise regarding the LWMP Amendment?

Answered: 23 Skipped: 99

Q13 Please identify any potential solutions to the above noted issues.

Answered: 21 Skipped: 101

Q14 Do you have any further comments or recommendations regarding the LWMP Amendment?

Answered: 28 Skipped: 94

Question 1. In which area do you live?

Other: Ladysmith
10/8/2013 12:59 PM

Question 2. Do you know how your household wastewater is treated (i.e. where it goes after you flush)?

This question did not prompt for comments

Question 3. How is your household wastewater collected and treated?

I live in Fairwinds and hooked to the Nanoose Bay Treatment Center. 9/24/2013 11:32 AM

at time of building our house in 2004 we could only go with pump & haul (no natural soil on the area lot) Since then many homes in the area have new septic fields using hauled in soil 9/10/2013 10:20 AM

Onsite 3 step system settings, filtering, septic field 9/9/2013 10:19 AM

Question 4. Are you aware that the RDN offers free SepticSmart workshops on how to properly care for and maintain your residential onsite system?

This question did not prompt for comments

Question 5. The Greater Nanaimo Pollution Control Centre and Nanoose Bay Pollution Control Centre currently provide primary-level wastewater treatment. Are you aware that provincial and federal laws require that the RDN upgrade them to provide secondary-level wastewater treatment?

This question did not prompt for comments

Question 6. The RDN's original LWMP anticipated that secondary treatment would be in place at Greater Nanaimo Pollution Control Centre by 2015. However, the outfall which discharges treated wastewater to the Strait of Georgia must be replaced by 2015. There are technical feasibility concerns with completing both the outfall and secondary upgrade projects by 2015. As well, the tax burden on individual taxpayers would be very high if both the outfall replacement and secondary upgrades were completed by 2015. For that reason, the LWMP amendment is requesting an alternative timeline for the secondary treatment upgrade. Three completion dates are proposed (2016, 2018, and 2019); each with social, environmental, and economic implications which are discussed in Factsheet 5. Based on your review of Factsheet 5, which option do you prefer?

Based on the recent lack of progress regarding the Fairwinds development process the latter dates are most appropriate
12/9/2013 9:44 AM

See 6
11/15/2013 3:09 PM

This is not applicable to Electoral area E, so I have no comment other than to say I favour treatment, especially to remove household toxins, at the earliest possible date (see below)
11/13/2013 11:24 AM

Are there any incentives/ opportunities to do this work in conjunction with the secondary treatment plan below?
11/12/2013 4:17 PM

I would recommend that the RDN monitor what Capital RD is doing to achieve sewage treatment on the south Island and aim to upgrade the Nanaimo plant on the same schedule.
10/13/2013 9:42 PM

2019, unless Federal or Provincial funding allows for an earlier completion date at 2019 rate increase levels.
10/8/2013 10:27 AM

Question 6. Continued

Where do i find factsheet 5?

10/8/2013 10:05 AM

2016 would be best but I wonder why this was not identified sooner... if it's a 20 year plan why wouldn't amendments be made sooner to offset the rate increase over a longer period of time?

10/8/2013 10:04 AM

2016 Highest, the longer you wait the more it will cost.

10/2/2013 11:36 AM

No Opinion 10/2/2013 11:20 AM

You should have stuck with septic tanks! They are the best is distribution of waste and a limited impact on the environment. Plants, grass, and other shrubs benefit from the waste. Silly to simply expect the solution to pollution is by dumping it into the Strait of Georgia for dilution! We have seen the effects of this waste dumping while sailing in the area. Really quite disgusting. Residents that use this inadequate system should be required to pay for this system upgrade to at least tertiary treatment, an equivalent to modern septic tanks.

9/26/2013 4:49 PM

The residents of Area E are NOT by and large financially challenged; therefore, the sooner the regulations are met the better for all concerned.

9/18/2013 9:15 AM

Would like to see plans for expansion to areas not yet served

9/18/2013 8:42 AM

Why is this page of the survey not mentioning the French Creek Facility? It was asked previously what Area we are in ?

9/16/2013 8:14 AM

I think that 2018 would be okay; however, I think that we should be looking ahead of what Provincial standards currently are and think to the future. If we are going to be completing a large scale project we should consider tertiary treatment so that the least harmful effluent is being released into the Strait of Georgia.

9/10/2013 10:04 AM

i believe that a watershed for Nanaimo makes sense. As priority and objective is to not run a defectit

9/10/2013 9:58 AM

2019 put priority to buying the watershed

9/10/2013 9:51 AM

N/A

9/9/2013 10:28 AM

2016 - would Secondary Treatment lower the costs of the outfall?

9/9/2013 10:23 AM

2018. I would do the 2nd treatment first and leave the outfall till later

9/9/2013 10:20 AM

Question 7. The RDN's original LWMP anticipated that secondary treatment would be in place at Nanoose Bay Pollution Control Centre by 2010. However, funding for the upgrade was based on projected growth and service area expansion which did not occur. For that reason, the LWMP amendment is requesting an alternative timeline. Three completion dates are proposed (2020, 2025, and 2030); each with technical, social, environmental, and economic implications which are discussed in Factsheet 7. Based on your review of Factsheet 7, which option do you prefer?

See above

12/9/2013 9:44 AM

Question 7. Continued

I prefer Option 3. 2030 for the NBPCC Secondary Treatment Upgrade. However, if the proposed Expansion to Fairwinds and Schooner Cove does go ahead, I appreciate that it could well affect the cost projections on the Factsheet. If that were the case, my preference of options could well change. I think that the Expansion is The White Elephant in the Room, and I suggest that you decide asap about this development.

11/15/2013 3:09 PM

I prefer the earliest possible date for upgrade. I note that in the 10 years we have lived here, odours from the plant have become much more prevalent and detectable from increased distances. As well, there is now a permanent ban on shellfish harvesting in the area of the outfall. Given the demographic of the Fairwinds area, I am especially concerned at the level of toxins from medicines taken by area residents that must be getting discharged into the strait. Given the above. I have very serious concerns regarding the impact of the proposed Fairwinds development plan on the NBPCC. I strongly believe that that the upgrades should be scheduled and funded before any phase of the proposed development is approved. I especially oppose any concept that approval for the developments be made without specifically ensuring that they incorporate the costs of upgrade. Otherwise, I can envision that the discussion on upgrade will only become more divisive as time passes. I strongly favour any approval for the currently proposed developments carrying a levy to be used to fund the capital cost of necessary upgrades. These levies should be assessed on a per dwelling unit basis and should be required to be paid by the developer before other area infrastructure development is completed. As the current proposal, as I understand it, includes the construction of a roadway extending past the NBPCC, I think it essential that the upgrade work be included in this effort in order to avoid the wasteful & disruptive requirement for multiple projects. Having some background in water and sanitation, I have been distressed at how poorly the initial system was built, especially with respect to the use low quality materials which from observation during area repairs appear to be at or past their serviceable life. I am most afraid that once this project commences, the magnitude of work necessary will increase substantially.

11/13/2013 11:24 AM

Agree with early start (2020) but this option should be contingent on getting prov/ fed grants.....this provides governments with a basis/ incentive to advance funds

11/12/2013 4:17 PM

I would recommend that Nanoose Plant be upgraded and operational let's say 3 years after the start up of the Greater Victoria Treatment system. Keep in mind that this community is also facing absolutely brutal cost increases for the supply of drinking water.

10/13/2013 9:42 PM

Where is factsheet ??

10/8/2013 10:05 AM

No Opinion

10/2/2013 11:20 AM

High density requiring this expensive method of treatment should not be allowed unless the required treatment is in place. If the costs are too high, then stop the unsustainable high density growth or have developers cover these expenses.

9/26/2013 4:49 PM

French Creek?

9/16/2013 8:14 AM

Is it possible to implement tertiary treatment earlier (i.e. 2020) and then expand the facility later (i.e. 2030)? If it is not possible to implement tertiary treatment then 2025 as it is a middle ground. Yet, I wonder if the inflation rate increase over the next 17 years will in actuality make 2030 the highest rate increase.

9/10/2013 10:04 AM

I am not convinced 4 million seems very high for the Nanoose project

9/10/2013 9:58 AM

2025 Small service area will require senior govt financial assistance to make this happen

9/10/2013 9:56 AM

I am a Nanaimo resident, this is up to Nanoose residents

9/10/2013 9:45 AM

N/A

9/9/2013 10:28 AM

Question 8. Are you aware that the French Creek Pollution Control Centre is nearing its capacity and that expansion is necessary, at a cost to ratepayers in that service area, in the next 5-12 years?

Could the facility be better utilized instead of rebuilt? The existing plant is only near capacity for short periods during the day, could an equalization tank smooth out the flow rates over a 24 hr period thus increasing the expected life of the plant. Also, how does the inflow and infiltration from Parksville/ Qualicum effect the plant flows from summer to winter?

12/3/2013 6:37 PM

Growth in demand has not matched forecasts. Water consumption is dropping because of increased prices for water and a greater conservation ethic. Can this not be pursued further? Has a survey been done to see how many conventional toilets still exist in the community? Could users be encouraged in some way to complete the conversion of all conventional toilets by 2016? This might cause a huge drop in demand on the plant. Are there other water saving ideas that could be adopted in the homes - running taps until hot water arrives over a "long distance" from the HWT? Should waterworks crews be spilling the water flushed from hydrants/mains into the sanitary sewer?

10/13/2013 9:51 PM

No, I wasn't aware, but I'm not surprised. Again, implement a plan sooner so that rates will increase over a period of time to bet support the system in the long-run.

10/8/2013 10:41 AM

Odour control must be the 1st priority when considering expansion. Odour control must be a priority during expansion.

10/2/2013 11:44 AM

I oppose this method of sewage treatment in rural areas. If it is nearing its capacity then it is the responsibility of new development to pay for a larger service. Residents living there have already paid their share. New developments pay the costs of the expansion!

9/26/2013 4:52 PM

I am sure if Victoria can get away without a sewer plant all these years a few more years at French Creek will not hurt !

9/26/2013 3:09 PM

There is an enormous amount of new housing in the area which seems strange to me as we are always restricted to water use and the sewage control is near capacity. Is there no liaison between the two?

9/26/2013 11:57 AM

I did not know until I looked into this more that the new infrastructure and buildings will actually be on the other side of the creek that the current plant sits on. It would be good to have information about this new site more readily available.

9/10/2013 10:07 AM

we do what we have to do

9/9/2013 10:20 AM

Question 9. Are you aware that the Regional District of Nanaimo experiences high flows to the community sewer system as a result of inflow and infiltration? Inflow and infiltration are terms for relatively clean water that enters the sanitary sewer system, mainly as a result of a rainfall event or snow melt. Inflow enters the system from the top – for example roof leaders that drain into the sewer system. Infiltration enters the system from below the ground, for example through leaky pipes or house sump pumps.

I wasn't aware of this, but, given that we live in a rain forest, it makes sense.

11/15/2013 3:12 PM

Having moved from Alberta I was surprised to see that eavestrough are permitted to drain into the sewer system .

11/14/2013 8:27 AM

Perhaps it would make sense to change the building codes to ensure new builds don't use the sewer system, but rather rely on surface runoff or a storage system to preserve this water for irrigation uses in the summer. There seems to be some surface runoff containment in Boddington area (near Naval base)would expect the golf course surface runoff is also managed so, it would appear not all surface runoff would ends up in the sewer system as your headline query #8 might suggest.

11/12/2013 5:03 PM

Question 9. Continued

The phrase "high flows" is very worrisome. Does this occur when there are high flows from normal usage or do the "high flows" occur when residential/tourist usage is lower than normal? Inflow of course is very undesirable and theoretically shouldn't happen or be allowed to happen. Is it something that the RDN building inspectors look out for in the construction of new dwellings?

10/13/2013 10:16 PM

Why is that a question? Seems more like a statement, or information item.

10/9/2013 4:02 PM

Upgrading municipal infrastructure is a must even without a regulatory mandate and often not prioritized/reserve-allocated in budgets for political purposes. None of this can be a surprise (quite like BC Hydro). No one wants to do anything until it's imperative/urgent when the planning for such upgrades should have been done over 10 years ago.

10/8/2013 10:14 AM

How many roof leaders from homes serviced by the French Creek Pollution Control Center drain into the sewer system? I am sure that very few homeowners have any idea where rain water from roofs go and that in many cases diversion of this water could very easily be changed to stop sewer system usage.

10/2/2013 1:35 PM

Was not aware of "high" flows

10/2/2013 11:20 AM

If this is a problem now, then it is the result of incompetent planning. This is not rocket science. This problem has been known for many, many decades. Double drainage systems should have been built 40 years ago. Is the RDN requiring double drainage systems for all new developments now?

9/26/2013 5:00 PM

Now isn't that a real waste of the sewer plant , all that extra water

9/26/2013 3:13 PM

Why is there not more promotion for water barrels from eaves and also grey water preservation?

9/26/2013 12:00 PM

Took the Open house tours twice in the last three years and were informed of the problem with excessive inflow and also there was a shortage of inflow to assist in the treatment process. We do not have inflow to the storm or sewer systems at our residence in Sandpiper as we are below grade and have to pump up to the sewer system intake only.

9/16/2013 8:43 AM

Increased education and incentives for rain barrels in City of Nanaimo and RDN as there was in the past for compost bins

9/11/2013 2:58 PM

Needs bylaws to correct - allow time to complete - no grandfathering

9/10/2013 10:18 AM

An inspection and grant program for private residents to repair leaky and corroded pipes may increase the awareness and decrease the amount of inflow and infiltration into the system, which in the end would cost tax payers and service providers less. 9/10/2013 10:13 AM

I & I reduction programs are important 9/10/2013 9:56 AM

I'm partially aware of this and believe this issue could be addressed with a grey water reuse plan 9/10/2013 9:52 AM

is code & bylaws requirement into storm system, if not happening it lack of administration 9/10/2013 9:47 AM

Question 10. The Draft LWMP Amendment commits the RDN to developing a Rainwater Management Plan in the upcoming years to develop a regional approach to the management of rainwater and stormwater. Do you have any recommendations or are there any issues related to rainwater that you would like to bring to the attention of the Regional District of Nanaimo?

Minimize use of storm sewers to deal with rainwater instead use systems which redirect the water back into the aquifer instead of discharging into the ocean.

12/2/2013 3:50 PM

Question 10. Continued

This is a universal problem associated with towns and cities the world over. We need to spend the money and engineer a system that meets current and planned future requirements... let's move forward with this.

12/1/2013 12:10 PM

Rainwater should be collected separately, kept out of the sewers, and used for domestic watering; toilet flushing purposes etc. I suggest you check out the approach to this adopted throughout New Zealand

11/22/2013 12:38 PM

I believe every new house built in the RDN should be required to have it's own rainwater collection system and underground rainwater storage tanks installed onsite. This would: a) reduce demands on the RDN water system by allowing households to water gardens, wash cars, fill pools, etc from rainwater collected from their rooftops; b) by reducing demands on the RDN water system it would off-load some of the costs of rainwater management from RDN to developers, builders, & homeowners; c) minimize the impact of summer droughts, which will be all the more important as climate change progresses; d) make the RDN a world leader in rainwater management; e) reduce the need for the RDN to treat rainwater & stormwater runoff, since much of the runoff water would be stored in underground tanks onsite at each household. The cost of making rainwater collection and storage mandatory for all new houses would be small, especially if it was shared by developers, builders, & homeowners, as well as supported by some sort of incentive grant system by the RDN.

11/16/2013 9:45 AM

Obviously we should be collecting as much rain water as possible in cisterns, rain barrels, etc.

11/15/2013 3:12 PM

Try to make rainwater management a "popular" thing. Here in Fairwinds I suspect anyone who buys a lot and builds, they automatically go into irrigated lawns. Maybe consider assisting in a homeowner participating in a pilot project or a show home showing a home with rainwater being used to irrigate the lawns and gardens. Get the real estate industry to participate in the costs - over the years they have drawn millions out of Fairwinds in the form of commissions (paid for by the home seller). It's payback time long overdue by the real estate industry.

11/14/2013 5:37 PM

incentives (e.g. tax reduction) should be available to households with rainwater collection systems. i.e. utilizing rainwater for toilet flushing and irrigation.

11/14/2013 3:19 PM

Going forward eaves troughs should drain onto the ground away from the house

11/14/2013 8:27 AM

I believe a rainwater management plan is essential. The plan should be constructed in a way that ensures that rainwater is collected such that natural filtration occurs before the water reaches local water bodies or the sea, As I live in Fairwinds, I am especially concerned at the impact on Enos lake and the beaver ponds areas (I consider Dolphin Lake, which is essentially a man made lake) to be a fundamental component of an area plan). I also think that the plan should include incentives / penalties to help mitigate the impact of rainwater runoff and pollution. Examples include supporting driveway and access road surfaces which are not landscaped and requirements that building lots retain some percentage of the existing vegetative cover when properties are developed.

11/13/2013 11:32 AM

I have always scratched my head when I see the amount of water runoff during the winter/ spring period flowing towards the ocean and then see the situation of water restrictions in the summer. Why can't we utilize Enos Lake to conserve water in the nearby watershed and as a possible water source instead of relying on drilling costly and unpredictable water wells....80% of Canada's cities rely on surface water, yet we seem to have a mindset that rural areas need to rely on unpredictable water wells. Some suggest we need to protect the Stickleback in our lakes based on a Government decision someone made many years ago....perhaps we need to relook at some of these assumptions to provide more balance when we review the Rainwater Management plan?

11/12/2013 5:03 PM

Rainwater is a resource and should not be labeled as liquid waste. It possibly should not be considered in this document. If the provincial government requires that the subject be reviewed then the LWMP should refer to a separate document with a "better" title for rainwater or stormwater management. The goal should be to manage rainwater on developed properties to mimic the predevelopment runoff. If that can't be done then the property is ineligible for development.

10/13/2013 10:16 PM

The current drinking and washing water of the French Creek area is abominal. The levels of lime scale are destroying fistures, ruin car finishes and so what is that doing to us who drink it? Rainwater would be softer and more beneficial. How about issuing rain barrels for individual use to gather rain water for watering lawns, gardens,e tc.

10/8/2013 10:47 AM

Question 10. Continued

Require rainwater to be managed onsite.

10/8/2013 10:28 AM

I am interested in rainwater harvesting and missed the workshops. Will there be more in the near future?

10/8/2013 10:22 AM

Parksville flooded during a recent event. Stormwater management also needs improvement. Can you tie sumps/rainleaders into a stormline or direct away from the sani? It would reduce the amount of clean water heading for treatment. Also impound areas or stormwater management ponds can be created to collect/settle re-directed over-land flow from asphalt areas/sub-divisions.

10/8/2013 10:14 AM

This work is of critical importance to ensuring sustainable management of our water resources. It should be considered an integral and key component of the liquid waste management plan

10/8/2013 9:03 AM

Let homeowners know what happens to rainwater collected on their roofs and give them options and incentives to possibly change the system in use at present.

10/2/2013 1:35 PM

Rainwater shouldn't be part of the LWMP

10/2/2013 11:44 AM

As per discussed and on workshop sheet, rain gardens etc....

10/2/2013 11:37 AM

Consider golf courses & community parks and see if its feasible to have them on rain collection and harvest systems (large capacity systems). They occupy large areas for surface run off and may contribute large volumes to l&l

10/2/2013 11:27 AM

We notice a great many small bits of plastic in the gutters that will find their way into storm sewers and then into the ocean and then being ingested by marine birds and animals. There should be a way to prevent this plastic from reaching the ocean. The bylaw against washing cars on the street should be enforced so the waste water does not go into the sewers.

We see cars being washed on the street frequently.

9/26/2013 7:54 PM

We live in an area that has wet winters. Rainwater Management plans were developed back in the 60's. That was more than 50 years ago! Where do planners go to school? Who is responsible for not having this integrated into development years ago?

9/26/2013 5:00 PM

The rain water can just run into the ground from houses in urban areas

9/26/2013 3:13 PM

See comment to #8 above

9/26/2013 12:00 PM

All rainwater ends up in various forms of receiving water - creeks, lakes, ocean, groundwater, etc. - sensitive receiving water bodies should have pre-established water quality objectives and an ongoing monitoring plan. Remedial adaptive management responses should be well defined, with trigger points for action, for when variances to the water quality objectives are encountered.

9/18/2013 9:28 AM

It is a progressive move to include a rainwater management plan in the LWMP, one area that should be approached cautiously is the move towards "treatment" of stormwater (often rainwater runoff from roadways) making use of ditches and non engineered planting may be most effective

9/16/2013 2:32 PM

This is a large undertaking that will require significant consultation. A significant complexity is that the municipalities manage their own stormwater and the Ministry of Transportation manages stormwater in rural areas. One would think that committing to undertake Regional stormwater management with so many different parties currently overseeing stormwater to be a significant undertaking (if not impossible) to get consensus.

9/16/2013 9:42 AM

Question 10. Continued

Increased use of cisterns for all areas that have drinking water problems and education re sterilization of same as potable water wells are not being found in some areas or wells dry up in summer
9/11/2013 2:58 PM

Is there any potential for storage for fire protection
9/10/2013 10:18 AM

It would be great if we could have a goal of implementing a number of rain gardens within in the community by a certain date. Or any program that increases awareness of how impermeable surfaces block infiltration, increase stormwater run-off, increase erosion and degradation of our waterways, and decrease the amount of water that is entering our aquifers would be greatly beneficial to all residents in the RDN. This should be implemented at the planning level and promoted through outreach and education.
9/10/2013 10:13 AM

Lobby the provincial govt to change regs so that rainwater can be used for toilet flushing laundry etc. Any new housing should be required to build with rainwater catchment
9/10/2013 10:07 AM

Please allow the people to control their water supply by buying the watershed
9/10/2013 9:52 AM

for City of Nanaimo engage competent City Planners
9/10/2013 9:47 AM

we get a lot of rain, there must be a use for it
9/9/2013 10:35 AM

maybe providing tax incentives for installing rainwater collection which reduces infiltration
9/9/2013 10:21 AM

I would like to see the plan address erosion control during property development
9/5/2013 8:33 AM

Question 11. Please indicate the level of importance you attach to each of the following wastewater management planning issues

This question did not prompt for comments

Question 12. Are there any liquid waste management planning issues, not addressed above, that you would like to raise regarding the LWMP Amendment?

With a shift to secondary treatment will the amount of bio solids waste increase? If so, how will the extra solids be dealt with?
12/3/2013 6:23 PM

Integration of water course damage caused by forest and mining practices into a 'global plan' that provides a more viable eco-system for wildlife and fisheries sustainability.
12/1/2013 12:25 PM

no
11/26/2013 7:37 PM

Apart from the air we breathe, the water we drink is critical for life and ought to matter more than the development which affects the watersheds, etc.
11/15/2013 3:16 PM

At this point in the discussions, it should be clear what the provincial and federal involvement will be.
11/14/2013 3:27 PM

Is the plant in the correct location considering the space needed for future expansions, secondary treatment or future tertiary requirements, Fairwinds population shift towards the Marina, and current proximity to Dolphin Lake residents and park?
11/12/2013 5:15 PM

Question 12. Continued

We seem to have too many "do overs", accidents and premature aging of facilities.

10/13/2013 10:49 PM

No.

10/9/2013 4:05 PM

No

10/8/2013 11:00 AM

We have a septic system but sewage treatment is available, we jsut have to connect. We do not have the funds or the knowledge of what is needed to connect. Tather than jsut sending us notices that we have to connect, possibly send more information on what the steps are to connect and waivet eh fees for connection. We bought the house AFTER the sewage system was installed.

10/8/2013 10:51 AM

No

10/8/2013 10:41 AM

Support innovation and Partnerships with the private sector (Harmac for example). Other places like Powell River are doing this.

10/8/2013 10:30 AM

I would like to know when sewer will be heading up Hemer Rd in Cedar

10/8/2013 10:25 AM

Curious about hte monitoirng of treated effluent, what criteria it must meet prior to discharge and if that includes medications or radionuclides (cancer treatments).

10/8/2013 10:22 AM

No

10/2/2013 11:22 AM

none

9/26/2013 8:00 PM

High density development should only occur where the developer pays to connect to the system. If the system needs to be expanded because of new development, then the developer pay the full shot, not current ratepayers!

9/26/2013 5:11 PM

If they want to reduce water use, turn off the city lawn watering on the park way that run all over the highway in the summer.

9/26/2013 3:20 PM

No

9/26/2013 12:03 PM

Development Permits should help pay for the cost of the upgrades.

9/18/2013 9:22 AM

We need to look forward and incorporate areas that are not yet hooked up.

9/18/2013 8:46 AM

Has consideration been given to adding another treatment location rather than expanding the existing French Creek which is in close proximity to residential developments.

9/16/2013 9:10 AM

As previously stated, looking beyond the minimal Provincial standards and thinking and planning for all future generations.

9/10/2013 10:19 AM

Question 13. Please identify any potential solutions to the above noted issues.

You could compress the solids into bricks and burn it with coal.
12/3/2013 6:23 PM

Limit new developement to areas that are serviced to 'future' standards.
12/1/2013 12:25 PM

cisterns, rain barrels, retention of trees, roof gardens, less pavement
11/15/2013 3:16 PM

The RDN should be making a concerted effort to ensure the provincial and federal representatives are aware of their responsibility to all citizens concerning public utilities. The budget burden should be shared.
11/14/2013 3:27 PM

see my earlier comments on linking future development permissions to the upgrade of infrastructure as part of the approval process.
11/13/2013 11:34 AM

Has the RDN looked at possible synergies or an area wide solution with others in in close proximity? Lantzville/Nanaimo Parksville/ Navel Base?
11/12/2013 5:15 PM

Independent peer review of all major capital projects. Consider value engineering of major projects. All finished designs to be analyzed to determine and enumerate potential failure modes.
10/13/2013 10:49 PM

N/A
10/9/2013 4:05 PM

If the province and federal govt set requirements, they should provide funding as well.
10/8/2013 8:15 PM

Forecast well in advance and allocate for the future, keep that \$\$ set-aside.
10/8/2013 10:22 AM

adust development charges to cover increase increase in costs for sewer treatment
10/4/2013 4:37 PM

None
10/2/2013 11:22 AM

none
9/26/2013 8:00 PM

Developer pays -- see item 12.
9/26/2013 5:11 PM

The builders of the NBPCC were allowed to build a system that was only primary treatment. Then the operator, RDN, was given this legacy. Now the rate payers are on the hook for the upgrade. Please DO NOT REPEAT THIS!
9/18/2013 9:22 AM

Provide alternative solutions in the LWMP planning presentation so all the cost benefits can be compared by all your users. ie expansion of existing facilities, new plants in new locations, new treatment methods using Victoria as an example
9/16/2013 9:10 AM

For updating and expanding our infrastructure and facilities look to the best possible options that produce the least harmful effluent, such as Singapore's NEWater system.
9/10/2013 10:19 AM

concerned about high costs nanaimo should have its own watershed. stop bottled water and utilize our own resources to avoid high cost water is to remain free
9/10/2013 10:04 AM

Question 13. Continued

change legislation to allow the reuse of grey water and use of rain water
9/10/2013 9:52 AM

Storm Water Management
9/9/2013 10:26 AM

Look for ways to reduce cost and/or generate revenue from resource recovery. Look at construction standards that require separating grey water and black water
9/9/2013 10:22 AM

Question 14. Do you have any further comments or recommendations regarding the LWMP Amendment?

"Polluter pays" is a term I hear from different levels of government and should include households. The amount of waste water being generated by a property should be the basis for sewer levies not what the property is worth.
12/3/2013 6:23 PM

Let's move forward with this... get a plan in place and spend the money. Using 2030 as a target completion date is ridiculous in that costs will only increase over time and interim developments, if allowed to go proceed at current (ie 'old') standards, will only add to the problem.
12/1/2013 12:25 PM

no
11/26/2013 7:37 PM

Water quality and the environment are the essence of all life and cannot trump economics...the sooner these issues are addressed, the better.
11/25/2013 5:54 AM

I believe developers, builders and homeowners need to take more responsibility and shoulder more of the costs of water management. The government, and consequently the taxpayers, always seem to end up paying more to implement services so that developers can make profits. This isn't fair. Existing taxpayers shouldn't have to shoulder improvements so that developers can make money. Developers should be required to pay more for their share
11/16/2013 9:50 AM

Please decide on the Fairwinds expansion asap.
11/15/2013 3:16 PM

the RDN factsheet No. 7 was well written, easy to understand and gave home owners clear choices.
11/14/2013 5:41 PM

The public consultation does not address the possible scenario of significant Fairwinds development in the coming years.
11/14/2013 3:27 PM

I believe there is merit in having a public workshop to discuss the situation and look for options beyond the timing ones provided. I disagree with your suggestion the biggest efficiencies are achieved in the design phase...based on my lifelong experience with projects the big breakthroughs occur at the conceptual engineering stage, long before a design is even considered.
11/12/2013 5:15 PM

All waste disposal should be based on the carrying capacity of the receiving environment. This should be one of the first considerations in the design of any treatment plant or area of planned human settlement. All construction plans for new facilities should be thoroughly discussed with neighbors especially to identify destruction of natural terrestrial habitat and intrusion on the community's normal activities.
10/13/2013 10:49 PM

No, thanks for opportunity to participate.
10/9/2013 4:05 PM

Environmental health should come first, many local livelihoods depend on it.
10/8/2013 10:22 AM

Question 14. Continued

Does the RDN receive complaints regarding failing septic? or what does the RDN do with these complaints?

10/2/2013 11:47 AM

Interesting discussion. Thank You

10/2/2013 11:38 AM

No

10/2/2013 11:22 AM

The other day there was an article in the Globe and Mail "???" could increase if drinking water was charged separately. Is this part of your planning?

10/2/2013 11:13 AM

Get on with it ASAP - thanks

9/26/2013 8:00 PM

New high density development should only occur in municipalities that have the facilities to accommodate waste treatment. High density should never be allowed in rural areas or in areas outside the urban containment boundaries of municipalities.

9/26/2013 5:11 PM

Stop wasting the tax payers money Please

9/26/2013 3:20 PM

No

9/26/2013 12:03 PM

Established households should not be financially responsible for new facilities. They have already paid for the current system. Construction of new waste water systems should be financed by those developers/households that make the new systems necessary.

9/26/2013 9:48 AM

Please push any economically feasible resource recovery options!

9/18/2013 9:22 AM

Not impressed with our association having to request a presentation in the French Creek area with the treatment plant located in our neighbourhood. Da Is the LWMP amendment committee looking into the Victoria plant resolution rather than re-inventing the wheel for new technologies/methods.

9/16/2013 9:10 AM

Failing onsite septic systems should be looked after by Ministry of Health (VIHA) not RDN. We need to get away from NANNY STATE CONTROLS and downloading from Provincial Government.

9/11/2013 3:01 PM

I think the Province is asking the minimum of us, and as the RDN has done before, we should be a leader and an example to other areas in B.C. (i.e. Victoria) and the world when it comes to managing our waste.

9/10/2013 10:19 AM

Stop the sale of bottled water Nestle!! in Abbotsford unfair practises.

9/10/2013 10:04 AM

Thanks. Good discussion.

9/9/2013 10:29 AM

Clean oceans is a basis to island living and therefore should be protected and maintained by any means possible

9/4/2013 3:12 PM

Appendix E:

Nanoose Mail-out Letter

REGIONAL DISTRICT OF NANAIMO LIQUID WASTE MANAGEMENT PLAN PUBLIC CONSULTATION



This letter is part of the Liquid Waste Management Plan Amendment public consultation process. **The RDN needs your feedback** regarding the required upgrade of the Nanoose Bay Pollution Control Centre. Please review the attached material and provide your comments to the RDN.



LIQUID WASTE
MANAGEMENT PLAN

REQUIRED UPGRADE TO NANOOSE BAY POLLUTION CONTROL CENTRE

If you live in Fairwinds, or have sewer service in Nanoose Bay, then your wastewater is treated at the Nanoose Bay Pollution Control Centre (NBPCC), at 3260 Schooner Cove Drive. NBPCC provides chemically-enhanced primary treatment to an estimated population of 1,350 people. Provincial and Federal Laws require that NBPCC must be upgraded to Secondary Treatment Standards or better.

LIQUID WASTE MANAGEMENT PLAN

The RDN manages wastewater according to the Municipal Wastewater Regulation, a **Liquid Waste Management Plan (LWMP)**, Operational Certificates, and Waste Discharge Permits. **A public LWMP amendment process is now underway.** The RDN, through the LWMP amendment, is working with the public to define the timeline for secondary treatment upgrades.

PUBLIC MEETINGS

The RDN held a public meeting at Fairwinds Centre on September 16, 2013 as part of the Public Consultation Process of the LWMP Amendment. Twenty members of the public attended that meeting. A recommendation from that meeting included further communication with Fairwinds residents to relay the important issues covered in the LWMP to a broader group. This newsletter is sent in response to that recommendation.

PROPOSED ALTERNATIVES FOR SECONDARY TREATMENT

The LWMP authorizes the RDN to find community-driven and cost-effective solutions to protect public health and achieve the required level of wastewater treatment over a reasonable timeframe. The original LWMP (1997) projected the upgrade from primary to secondary treatment by 2010. The RDN is currently consulting on a LWMP Amendment that will request changes to the timeline for secondary treatment upgrades at NBPCC. >



www.rdnlwmp.ca




Wastewater
SERVICES


REGIONAL
DISTRICT
OF NANAIMO



Options being considered for completion of upgrading to Secondary Treatment are: 2020; 2025; 2030. An overview of the Technical, Environmental, Social and Economic implications of the options are provided on pages 3-5 of the attached Factsheet 7.

More information is available at www.rdnlwmp.ca.

ENVIRONMENTAL IMPLICATIONS

Upgrading to secondary treatment will:



Bring our wastewater discharges into **compliance** with Provincial and Federal regulations.



Reduce toxins entering the marine environment.



Reduce potential **health and environmental** risks.



Help **protect fishery** resources.



Provide potential opportunities to **economically recover** resources.

ECONOMIC IMPLICATIONS

The provision of secondary treatment at NBPCC will cost those in the Nanoose Bay Sewer Service Area an estimated \$4.1 million (2012 dollars). This represents the costs associated with upgrading the existing facility to secondary standards. Factsheet 7, page 6 provides a comparison of anticipated tax increases to Nanoose Sewer Service Area ratepayers required to fund the proposed upgrade to secondary treatment. The comparisons are based on proposed completion options (2020, 2025, or 2030) and funding scenarios (no Provincial or Federal grant funding, 1/3 grant or 2/3 grant) as Provincial and Federal cost-sharing is sometimes available to projects such as these.



A public LWMP Amendment process is now underway.

Please review these options and contact RDN Wastewater Services with your feedback. The RDN can be contacted at 250-390-6560 or 1-877-607-4111 (within BC) or by emailing rcu@rdn.bc.ca.

More information is available at www.rdnLWMP.ca.

be
heard

Complete our Online
Feedback Survey at
www.RDNLWMP.ca



Appendix F:

Detailed Summary of Email and Phone Correspondence

Table 1. Phone Conversations in Response to the LWMP Amendment

Date, Community and Question	Response
<p>Caller from Protection Island on August 19, 2013:</p> <ul style="list-style-type: none"> ▪ Expressed concerns about how Protection Island is often left out of the planning process ▪ Asked how the LWMP Process may affect/consider Protection Island ▪ Asked for information explaining the LWMP amendment process. 	<ul style="list-style-type: none"> ▪ Comment Received. Mentioned that the RDN can hold a public meeting on Protection Island if there is sufficient interest ▪ Sewer services on Protection Island are jurisdiction of the City of Nanaimo (CoN) so any changes to the level of service must be discussed with the City. Currently, the solid stream is captured in holding tanks on the property and homeowners arrange for a company pump it out and dispose of it at an RDN receiving facility. The liquid stream of wastewater goes to the CoN collection system, which feeds to RDN interceptor line and is treated at GNPCC, which provides primary treatment must be upgraded to provide secondary treatment (which will increase taxes) ▪ Emailed Factsheets and links to the website and online survey.
<p>Caller from Extension on August 19 and 21, 2013</p> <ul style="list-style-type: none"> ▪ Extension resident wanted more information on how the LWMP Amendment would be relevant to her because she is not on sewer or close to sewer ▪ Asked why there was a Public Meeting in Extension if it is not on sewer and why we don't have a Public Meeting in South Wellington, Cinnibar Valley, etc. ▪ Recommended we be in touch with the Extension Recreation Commission ▪ Mentioned that she would like to see more information in the newspaper article, and that the newspaper should run a story on the LWMP Amendment so that it saves taxpayers money. 	<ul style="list-style-type: none"> ▪ The LWMP has 10 programs and that 4 programs cover topics that apply to unsewered areas. Explained that if she does not have sewer service, that her taxes will not be affected by the improvements to GNPCC, NBPCC or FCPCC. Explained that we have supplementary information available online are developing Factsheets that specifically address the relevance to the LWMP and unsewered areas (she declined) ▪ There is one Public Meeting planned for every municipality and electoral area. We have alerted a number of community and neighbourhood associations about the LWMP Amendment process and will meet individually with these groups if there is sufficient interest ▪ Requested contact information for the Extension Parks and Recreation Commission and followed up with her recommendation ▪ Our Communications Coordinator contacted the media to let them know about our public notice, in case they wish to write a story on the issue.
<p>Caller representing the Horne Lake Strata Association on August 20, 2013 wanted to know what the LWMP Amendment would mean for residents on Horne Lake Pump and Haul and if any changes were proposed for the Pump and Haul system at Horne Lake.</p>	<p>Explained that two of the ten LWMP programs (Source Control and Rainwater Management) would apply to Horne Lake Residents and that there were no proposed changes to the way they are funded (no change in taxes). Explained that while there are proposed changes to the way pump and haul works, that there would be no changes for grandfathered or Horne Lake residents. Sent relevant Factsheets and a link to our online survey on September 9, 2013.</p>
<p>Caller from Deep Bay resident on August 21, 2013 was interested in</p>	<p>Provided a brief background on what the LWMP covers and why we have it;</p>

Date, Community and Question	Response
more information to determine if he should attend a Public Meeting.	that we are doing an amendment and that a broad Public Consultation is an essential component of the amendment. Explained that the largest focus of the LWMP is on provision of secondary treatment for sewer areas in Nanaimo, Lantzville and Nanoose. However there are four programs in the LWMP which apply to unsewered areas.
Caller left a message on August 22, 2013 requested more information.	Left a message with direct phone number for further information
Caller on August 22, 2013 from a rural area with an advanced package treatment system wanted to know about the LWMP.	Explained that we have an LWMP primarily to establish a timeline for the provision of secondary wastewater treatment at the pollution control centres. Still, four of the ten programs apply to rural areas. Discussed SepticSmart, Rainwater Management Plan, how LWMP supports the OCPs in regards for the plan to provide eventual sewer services or not.
Caller from Nanaimo on August 26, 2013 received flyer and requested more information. Was thankful for the very precise info.	Explained what the LWMP was for and the proposed amendment for GNPCC and NBPCC. Provided the estimated tax increase after nine years as well as the average annual increase, assuming there is no grant funding.
Caller from Meadowood-Corcan on August 9, 2013 wanted to know if the LWMP Amendment would directly affect residents in her area who are not within a sewer service area but area serviced by septic fields.	There are no changes proposed for those who are outside of sewer service areas. The main changes proposed relate to a potential tax increase for those on sewer to fund upgrades required by provincial and federal governments. Factsheets are accessible at www.rdnlwmp.ca . Hard copies are also available. Mentioned that the LWMP does include programs that are available to rural areas, such as our educational SepticSmart program and provided her with a link to www.SepticSmart.ca . Mentioned our online survey which can be completed at www.rdnlwmp.ca .
Caller from Nanoose Bay (Anchor Way) on September 16, 2013 is on a strata septic system just outside of Fairwinds. Wanted to know if they should attend the Public Meeting and if they would be connected to sewer in the future.	The plan mainly addresses how and when we will provide secondary treatment at the remaining two primary treatment facilities. The plan also has programs which apply to those on septic systems and all RDN residents are invited to attend. There are two upcoming SepticSmart workshops in Parksville and Qualicum Beach. Sewer studies have been completed in the past but presently there are no plans to connect Anchor way to sewer.
<p>Area G resident, on October 2, 2013:</p> <ul style="list-style-type: none"> ▪ After attending the October 1 public meeting, asked how she would know if her downspout is connected to the stormdrain or sewer? ▪ How much of the biosolids at FCPC come from Nanoose? Is growth in the Fairwinds area requiring expansion at FCPC? 	<ul style="list-style-type: none"> ▪ The RDN can test it by doing smoke tests or dye tests and that we can send staff out to her neighbourhood to check. ▪ Approximately 2.5 % of the biosolids volume comes from Nanoose. Nanoose is currently not growing in population so they are not contributing significantly to the demand on FCPC.

Date, Community and Question	Response
<p>Caller from Fairwinds on November 14, 2013:</p> <ul style="list-style-type: none"> ▪ Received Nanoose mailout and asked if the upgrade was a legal requirement. ▪ Inquired about grant opportunities. ▪ Asked if the new plant would move anywhere. ▪ Prefers option 3 for 2030. 	<ul style="list-style-type: none"> ▪ The upgrade is a legal requirement. We are required by the provincial Municipal Wastewater Regulation and the federal Wastewater Systems Effluent Regulation to provide secondary treatment or better. ▪ RDN has pursued grant funding and have been informed that there are no grant programs currently available. However, grants for projects such as the Nanoose upgrade have been eligible for grants in the past so the RDN will continue to pursue grant funding. ▪ The plant upgrade will remain in property for existing NBPCC. ▪ Comment received.
<p>Caller from Fairwinds on November 15, 2013:</p> <ul style="list-style-type: none"> ▪ Does Factsheet 7 consider the proposed Fairwinds development? ▪ Will the tax increase begin in 2014? 	<ul style="list-style-type: none"> ▪ Factsheet 7 does not consider the proposed development project. Developers must provide a means of wastewater treatment as part of the application process. If NBPCC service area grows, the cost of capital upgrades will be spread over more people and the cost per household may go down. If wastewater from future development is treated elsewhere, the costs to current users won't be affected. ▪ The proposed tax increases are scheduled to begin in 2014.
<p>Caller from Fairwinds on November 18, 2013 expressed that, as a 91 year old resident, he doesn't feel the changes to the treatment and environment are relevant to him. The tax situation won't bother him.</p>	<p>Comment received.</p>
<p>Caller from Fairwinds on November 19, 2013:</p> <ul style="list-style-type: none"> ▪ Financial information in Factsheet 7 is confusing and difficult to base decisions upon. Costs should be paid for evenly like a mortgage. A compounding tax increase is hard for a retirement community. ▪ The project should be completed as soon as grant funding is available. Since provincial and federal regulations require the upgrade, the province and federal governments should help pay. ▪ What is the change in operating costs between primary and secondary treatment? ▪ What is each household's portion of the overall capital cost? ▪ Does the tax collected apply to subdivided (empty) lots or only built lots? 	<ul style="list-style-type: none"> ▪ Comment received ▪ Comment received ▪ NBPCC Annual operating costs are \$170,000 for primary treatment and \$245,000 for secondary treatment ▪ The capital cost of the \$4.1 million project, spread across 796 parcels, is approximately \$5,150 per parcel (not including interest). ▪ The taxes will apply to all subdivided lots, including empty lots

Table 2. Emails in Response to the LWMP Amendment

Date, Community and Question	Response
Resident on August 22, 2013 requested more information about the LWMP.	Provided links to LWMP website including 1997 LWMP and the LWMP Amendment and explained that Factsheets are soon to come. The RDN has a LWMP because provincial and federal regulations require that wastewater treatment facilities provide secondary-level treatment or better. Two of the four RDN wastewater treatment facilities need to be upgraded to meet this requirement. The LWMP establishes a reasonable timeline to provide secondary-level treatment. The LWMP Amendment proposes changes to the timeline to achieve secondary treatment. As well, it proposes a rate increase for most users with sewer service in order to finance the upgrade as well as maintenance and expansion projects. The LWMP Amendment is also relevant to unsewered areas, though there is no proposed rate change for these residents.
Two Nanoose residents on August 26, 2013: “We fully support this initiative but only with the understanding that costs incurred will be covered by current, existing revenues. We do not expect that this initiative will increase our water services tax. We expect that, as we do with our household, when or if we want to embark on a new purchase or expenditure we do not do it with the assumption of an increase to household income. So we cover this new initiative with existing household revenues or cut back on something else we are doing, or we do NOT embark on it. We call it ‘living within our means’. We expect those charged with the responsibility of managing our tax dollars will do the same!”	Acknowledged comment, invited them to attend the Public Meeting in Nanoose.
Nanaimo resident on August 26, 2013 suggested that secondary treatment upgrades be completed sooner than later.	Comment received.
A Project coordination and management services company, in partnership with a financial services provider, on August 27, 2013, is interested in proposing a suitable alternative to raising taxes.	Acknowledged comment and advised that there will be future opportunities for companies to provide proposals.
Cedar resident on September 3, 2013 asked how the LWMP Amendment would affect her property and requested further information to review.	Provided Factsheet 2 and 3, SepticSmart Poster and links to the SepticSmart and LWMP websites.
Two Fairwinds residents on November 14, 2013: “This house would vote for the 2030 option.”	Comment received.

Date, Community and Question	Response
Two Fairwinds residents on November 16, 2013 support Option 1. “We feel that the sooner we clean up the environment the better it will be for all concerned and it will be a good example for others. We cannot expect future generations to clean up the mess we leave behind. Thank you for your comprehensive analysis.”	Comment received.
Two Fairwinds residents on November 19, 2013. “Thank you for sending the letter and factsheet on the Liquid Waste Management Plan, both of which are excellent information. We both prefer completion option 3 (2030).”	Comment received.
<p>Fairwinds resident on November 18, 2013:</p> <ul style="list-style-type: none"> ▪ Inquired how expansion was factored into NBPCC upgrade ▪ What is the degree of accuracy for the current estimate? ▪ What design and construction contingency amounts are included within the estimated cost of \$4.1m? ▪ What is the estimated operating cost increase projected to be upon completion compared to current operating costs? ▪ Is the cost sharing scenario chart correct in indicating that the 1/3 grant option will cost \$15 average annual increase for option 2 (2025) but \$16 average annual increase for option 3 (2030)? ▪ Concerned that the financial model does not incorporate an inflation/escalation factor. 	<ul style="list-style-type: none"> ▪ The upgrade project as currently proposed does not consider expansion since the facility currently operates at approximately 50% capacity. We are working with the main developer to estimate and accommodate growth projections. Regardless of population growth, existing residents will only pay for their portion of the upgrade. New development will cover 100% of the costs of expansion. If the NBPCC service area does grow, the cost per household may decrease. ▪ The costs are Class C cost estimates. ▪ The cost estimate includes a 30% allowance for contingency. As we complete the design phase, the contingency will be 15%. ▪ The table columns on page 6 of Factsheet have been erroneously switched for the 1/3 grant scenario. It should read that the average annual tax increase is \$16/year for the 2025 option and \$15/year for the 2030 option. ▪ The cost estimate of \$4.1 million is based on 2012 dollars. In our financial model, we have not inflated the cost to 2020, 2025 or 2030. ▪ After secondary treatment is completed, operational costs will be close to double. This has been accounted for in the proposed tax increases.
Two Fairwinds residents on November 2013 who reviewed the mailout and Factsheet 7. “Thank you for that presentation. We believe that we should upgrade the current system by 2020. The cost to residence is not the primary factor, in our view. We feel it is the right thing to do as citizens of BC.”	Comment received.

FEEDBACK FROM PUBLIC MEETINGS

1. Public Wastewater Systems

1a) Is sewer generally desirable where it does not exist?

Date	Location	Feedback
26-Aug-13	Extension	[General consensus] Sewer would be desirable but it is expensive
28-Aug-13	Bowser	[General consensus] "sewer is always better"
29-Aug-13	Dashwood	Yes, they would probably love to have sewer
5-Sep-13	Coombs	Not in my area, we have 20 acres. Everything is so spread out it would be overkill
9-Sep-13	Nanaimo	In our area (Nanoose) there are about 30 homes; about 1/3 have new septic systems and I don't think any of those would want to go onto sewer. We are on rocky property but are one house away from Fairwinds. At the time it was developed, pump and haul was the only option if we wanted to develop
12-Sep-13	Lantzville	It depends on the density. Piped sewage only matters on 1/2 acre lots or smaller
12-Sep-13	Lantzville	I live in an area with 5 acre parcels. I can put a second home on my property but I cannot subdivide as I would need [room for] four fields
12-Sep-13	Lantzville	I can put another septic system in for \$25,000 - a one-time cost (plus maintenance), no tax
12-Sep-13	Lantzville	Running a pipe between me and my neighbour's would not be worth it
12-Sep-13	Lantzville	Will we ever get sewer and water up there?
12-Sep-13	Lantzville	What did they do in the Green Lake area? Everyone has their own pump and they were all happy to connect to sewer. They got grants based on everyone connecting
16-Sep-13	Nanoose	I have no desire for it (currently on septic in Cedar)
16-Sep-13	Nanoose	I'm not interested in sewer but I am interested in septic systems being checked. People move from the city and don't realize they are on septic and flush everything down. Soon it smells like septic. Need inspection
16-Sep-13	Nanoose	If the environment is showing significant impacts from septic systems then yes!
16-Sep-13	Nanoose	Does DFO use the Fisheries Act to regulate upland sewage issues? Can they set a precedent? i.e. for a large failing system? Answer: that would typically be dealt with by VIHA
25-Sep-13	Qualicum Beach	Everyone here has sewer
25-Sep-13	Qualicum Beach	When I moved here from Victoria I looked into areas that were sewer. It was important to me. If you ask realtors, they say it comes up often.
25-Sep-13	Qualicum Beach	I bought my sewage system many times. First time I was on septic, second time it was community sewer, third time it was a municipal system through the RDN. This is a concern, for example Hawthorne Rise residents, who are faced with \$40,000 when they have been surrounded by sewer systems for 40 years. It would have cost \$5,000 before.
25-Sep-13	Qualicum Beach	It is a hard time to make good decisions for people when they won't make them for themselves
26-Sep-13	Gabriola	It is probably desired in some areas as they probably need it. It could be affecting groundwater. Maybe it could be looked at for some areas,

Date	Location	Feedback
		decentralized but community-based in these areas. Room for septic fields was not considered when they were subdivided.
30-Sep-13	Cedar	Yes: 1
30-Sep-13	Cedar	Maybe: 1
30-Sep-13	Cedar	No: 3
1-Oct-13	French Creek	Depends on the cost, and size of the property
1-Oct-13	French Creek	Not applicable to this area, everyone is on sewer

1b) What is a reasonable cost per household for the provision of sewer where it does not currently exist? (Include collection system and connection to private property)

Date	Location	Feedback
26-Aug-13	Extension	\$20,000 or even a little more would be reasonable
26-Aug-13	Extension	Density would increase with sewer infrastructure
26-Aug-13	Extension	Lot sizes are small in Extension so sewer would be beneficial. Some people (in the village) need sewer
26-Aug-13	Extension	Failing septic systems drain into waterways where people draw drinking water from
28-Aug-13	Bowser	It should be equivalent to the cost of replacing a septic system (about \$15,000-\$20,000). If it was the same price, they would probably choose sewer
28-Aug-13	Bowser	When explaining the overall costs to the public, it must be clear that there is not a one-time cost, there are operating costs as well
28-Aug-13	Bowser	The cost won't stay the same, it will always go up
28-Aug-13	Bowser	When considering the costs of operating sewer; one must also consider that one will eventually have to replace a septic system. The costs probably balance out.
28-Aug-13	Bowser	Germany and Ontario pay for sewer using a different model
28-Aug-13	Bowser	How do you put in a sewer when paying for it causes more growth and more demand on a system but growth is needed to pay for it?
29-Aug-13	Dashwood	(Area F resident) Area F would have to be very desperate as costs would be very large but people would pay what they had to
29-Aug-13	Dashwood	We were told it would be \$25,000 per home to put in sewer. This is too much for those living in mobile homes
9-Sep-13	Nanaimo	The cost of a septic field (\$30-40,000) is the cost we'd be willing to pay
9-Sep-13	Nanaimo	It's interesting, no one talks about it
12-Sep-13	Lantzville	Building a Type 2 onsite system costs at least \$25,000
12-Sep-13	Lantzville	Cost should be divided across a given region
12-Sep-13	Lantzville	\$10,000 would be reasonable. More than that may be hard to pay
12-Sep-13	Lantzville	If septic fails, then \$10,000 may seem cheap as it would cost \$20-30,000 to replace a septic.
12-Sep-13	Lantzville	It cost \$7,000 for mine when I put it in many years ago

Date	Location	Feedback
12-Sep-13	Lantzville	Lantzville has a sewer plan with 7-8 phases. We have done Phase 1 and part of Phase 2 and are working towards Phase 3
12-Sep-13	Lantzville	In the industrial park there is valuable land that can't be developed because you need to reserve space for a septic field
16-Sep-13	Nanoose	It depends on if you're in an area like Cedar. Putting in sewer is very expensive because the houses are spread out.
16-Sep-13	Nanoose	We should be concerned that if we do not have proper regulations and controls on sewer and septic that we could have a situation like Walkerton, Ontario. Example, if everyone dumps what they want into the Englishman River, we use that for drinking water. We should be concerned about how waste affects our clean water and environment.
23-Sep-13	Parksville	I'm concerned about the cost and the abilities with hard rock and clay
25-Sep-13	Qualicum Beach	A reasonable cost would be \$12,000
25-Sep-13	Qualicum Beach	My son just put in a septic system and it was bloody expensive. The cost for sewer should be about the same.
25-Sep-13	Qualicum Beach	I'd pay \$12,000, but I'd rather pay \$8,000
25-Sep-13	Qualicum Beach	About the same as a septic system
26-Sep-13	Gabriola	\$60,000 per household. The odd person may accept but most couldn't afford it
26-Sep-13	Gabriola	In a way, government was formed to provide sewage systems. Whether or not they can afford it shouldn't mean it shouldn't be done. If someone has a failing septic it may not be affecting them but the people downstream have fecal coliform contamination and the environment is affected
30-Sep-13	Cedar	Less than a septic system (three more people agreed)
30-Sep-13	Cedar	Less than \$30,000
1-Oct-13	French Creek	If on a functioning septic system, no cost is reasonable
1-Oct-13	French Creek	In Hawthorne Rise area, it costs \$20,000 to connect

2. Private Onsite Systems

2a) Are you aware that the RDN offers a free workshop to promote the proper care of private onsite systems?

Date	Location	Feedback
26-Aug-13	Extension	Yes: 6; No: 2
28-Aug-13	Bowser	Yes: 5; No: 7
29-Aug-13	Dashwood	Yes: 1; No: 3
5-Sep-13	Coombs	Yes: 1; No: 2
9-Sep-13	Nanaimo	Yes: 3; No: 6
12-Sep-13	Lantzville	Yes: 2; No: 1
16-Sep-13	Nanoose	Yes: 9; No: 1
25-Sep-13	Qualicum Beach	Yes: 1; No: 5
26-Sep-13	Gabriola	Yes: 3; No: 0
30-Sep-13	Cedar	Yes: 3; No: 0
1-Oct-13	French Creek	Yes: 1; No: 1
Total		Yes: 35; No 28

2b) Have you ever attended a SepticSmart workshop?

Date	Location	Feedback
26-Aug-13	Extension	Yes: 4; No: 4
28-Aug-13	Bowser	Yes: 2; No: 10
29-Aug-13	Dashwood	Yes: 1; No: 3
5-Sep-13	Coombs	Yes: 1; No: 2
9-Sep-13	Nanaimo	Yes: 2; No: 6
12-Sep-13	Lantzville	Yes: 1; No: 2
16-Sep-13	Nanoose	Yes: 3; No: 7
25-Sep-13	Qualicum Beach	Yes: 0; No: 5
26-Sep-13	Gabriola	Yes: 1; No: 2
30-Sep-13	Cedar	Yes: 2; No: 2
1-Oct-13	French Creek	No: 1
Total		Yes: 17; No 44

2c) Do you have any concerns about how well your, or your neighbours', onsite system works or the quality of treatment it provides?

Date	Location	Feedback
26-Aug-13	Extension	[General consensus] My system is working fine
26-Aug-13	Extension	[General consensus] Concerned about neighbouring systems
28-Aug-13	Bowser	Generally, we need to be very concerned about sewage (or any) discharge into Baynes Sound as the aquaculture industry is a

Date	Location	Feedback
		significant benefit to the region
28-Aug-13	Bowser	There is a concern about wastewater seepage from derelict properties (and oils etc. from derelict cars). There are no bylaws to stop the discharge. They reported to VIHA but they did nothing. Old septic fields discharge into ditches which discharge into Baynes Sound.
29-Aug-13	Dashwood	No
5-Sep-13	Coombs	No
9-Sep-13	Nanaimo	No
12-Sep-13	Lantzville	No
12-Sep-13	Lantzville	My neighbours are a long way away
16-Sep-13	Nanoose	No
16-Sep-13	Nanoose	I'd say yes
23-Sep-13	Parksville	There are many failed systems so we need to eliminate those systems, it is in the best interest of everyone
23-Sep-13	Parksville	San Pareil is an example of an area that should be connected to the sewer service system. Is it being considered? It is a perfect example of an area that would be added for health and environmental reasons.
23-Sep-13	Parksville	Is there already a pipe in San Pareil? Could a single home connect? Answer: No. It would be a community decision to connect and to date there hasn't been an interest. They would have to hold a referendum
23-Sep-13	Parksville	Info and education should be consolidated with guidelines that are same across the board. Are they in place? Answer: Guidelines are in place under provincial regulation. They are promoted but not set by the RDN.
23-Sep-13	Parksville	We are below Coombs and Errington which are on septic and if they fail there is a risk of contamination of our water resources
25-Sep-13	Qualicum Beach	For the Barclay Crescent upgrade, about 35 of 200 homes were hooked up but the majority of the outstanding properties were the ones with the failing systems. That is a concern
26-Sep-13	Gabriola	I live on 5 acres, it doesn't bother me.
26-Sep-13	Gabriola	It could seep into groundwater
30-Sep-13	Cedar	If it affected my well (another person agreed)
30-Sep-13	Cedar	No, it was inspected and is working fine
30-Sep-13	Cedar	No, I designed and installed them myself
1-Oct-13	French Creek	Are new systems obligated to report maintenance? Answer: Systems installed after May 31, 2005 are required to follow a maintenance plan but no reporting is required.
1-Oct-13	French Creek	Is there any testing of onsite systems now? Answer: No, testing is the responsibility of the homeowner. VIHA has the responsibility to follow up with complaints about health hazards
1-Oct-13	French Creek	Is there information on the number or frequency of failing onsite systems?
1-Oct-13	French Creek	There is a concern about failing onsite systems and the impact on others

2d) Are there any issues you regarding onsite systems which you would like the RDN to address?

Date	Location	Feedback
26-Aug-13	Extension	Around 2005 there was no one taking responsibility to get on ground and check up on failing systems (even with complaint)
26-Aug-13	Extension	VIHA should continue to be the responsible party. I do not want the RDN to provide that service
28-Aug-13	Bowser	No, it is not good for the RDN to become involved in septic inspections – It is VIHA's role
28-Aug-13	Bowser	Lack of stormwater management can cause old septic systems to be a problem. If there was proper management, then there is no carrier. In some cases there is infrastructure but the RDN needs eyes out in the community
29-Aug-13	Dashwood	No
5-Sep-13	Coombs	No
9-Sep-13	Nanaimo	We're unable to separate and use our grey water and it would be a huge step to increase water conservation. Would cut down the amount of water that needs treatment
9-Sep-13	Nanaimo	Is higher or lower concentration of effluent better for treatment?
9-Sep-13	Nanaimo	I heard infrastructure is having problems with low flush toilets
12-Sep-13	Lantzville	There is a lot of kick back from people when you talk of inspecting septic systems. It seems like a money grab
12-Sep-13	Lantzville	The rules for subdivision should be changed when it comes to septic. If I want to subdivide I need to prove [the space for] 4 fields but can't because I have no topsoil
12-Sep-13	Lantzville	I think people can do their own construction and not hire people except to inspect as it would be substantially less expensive
12-Sep-13	Lantzville	I think onsite sewer regulations are pretty onerous
12-Sep-13	Lantzville	We need greywater system as it causes problems putting too much volume into septic systems
25-Sep-13	Qualicum Beach	[nothing mentioned]
26-Sep-13	Gabriola	Jurisdiction falls under VIHA. When septic tanks get pumped out, maybe the RDN could keep track, and send a friendly reminder that it has been 5 years
26-Sep-13	Gabriola	I'm reluctant to have more government management when people seem to have had enough.
26-Sep-13	Gabriola	I think it's important for government to have oversight as there are health risks associated with sewage contamination
26-Sep-13	Gabriola	To me it's about balance. First, there's a problem with VIHA not inspecting even when they receive calls. Second, I think the government should be paying for this, a part of taxes but so it doesn't cost more than \$100/year. But if the government gets involved, then VIHA should be inspecting but only that the product is working, with lighter regulations (i.e. the DIY system) so that DIY systems (treatment that produces drinking water) can be installed, especially if the DIY

Date	Location	Feedback
		system works just the same as a licensed person's installed system.
30-Sep-13	Cedar	A water quality database for groundwater
30-Sep-13	Cedar	Documented mandatory maintenance
1-Oct-13	French Creek	In Rivers Edge there is a covenant on septic maintenance and reporting. How is that working?

3. Source Control

3a) Can you recommend any community groups who may like to partner with the RDN to promote source control and what type of contaminant they would target?

Date	Location	Feedback
26-Aug-13	Extension	Volunteer fire departments for medication drop off (i.e. one day pick up per week)
28-Aug-13	Bowser	Restaurant associations to properly dispose of grease, gas stations too (maybe not in Area H, but in others)
28-Aug-13	Bowser	Forestry Companies
28-Aug-13	Bowser	VIU, Shellfish Growers Association, Nile Creek Enhancement Society
29-Aug-13	Dashwood	Municipal standards should be the same
29-Aug-13	Dashwood	School programs to educate children
29-Aug-13	Dashwood	Newcomer groups
5-Sep-13	Coombs	Nothing leaps to mind
9-Sep-13	Nanaimo	Vancouver Island Water Watch
9-Sep-13	Nanaimo	Streamkeepers
12-Sep-13	Lantzville	Schools are a good place to target education
12-Sep-13	Lantzville	Pollutants that go down the drain
12-Sep-13	Lantzville	A friend puts everything down the garburator...bad for sewer
12-Sep-13	Lantzville	Banning garburators would be a good first step
12-Sep-13	Lantzville	Car washes, disinfectants, different detergents
12-Sep-13	Lantzville	Commercial laundromats. A lot of time it's not as much the different detergents but the fabrics
12-Sep-13	Lantzville	Restaurants
12-Sep-13	Lantzville	Stratas on one water bill...no ownership
12-Sep-13	Lantzville	Green bin...the RDN does not collect from multi-family units so if you have to take compost down to a big bin they just throw it into the garbage
12-Sep-13	Lantzville	Porta-pottys have dyes and formaldehyde. There could be a better way
12-Sep-13	Lantzville	Commercial carpet cleaners produce 5 lbs of fabric in every dump, plus bad chemicals
12-Sep-13	Lantzville	Defoamers are bad for the environment.
12-Sep-13	Lantzville	School boards and malls - proper disposal of stripping wax from floors. Not just dumping down drains
16-Sep-13	Nanoose	Does the RDN have anything to do with the Nanaimo Recycling

Date	Location	Feedback
		Exchange? They take paint and most things. It would be a good partnership
16-Sep-13	Nanoose	Promote how to get a hold of information on where to take toxic substances
16-Sep-13	Nanoose	Madrona - has septic problems
16-Sep-13	Nanoose	In Fairwinds we need leadership and to work with each other in the community. We have 6000 people [in Nanoose Bay] but we operate like we have 1,500. Biggest challenge is getting Nanoose Bay to operate and work as a community. We have a community association and a ratepayers association but need an advisory committee to get people working together
23-Sep-13	Parksville	Kids. They go home and tell their parents about it. They are interested in how things work
23-Sep-13	Parksville	Mid-island Salmon Enhancement Society
23-Sep-13	Parksville	Island Trust
23-Sep-13	Parksville	Mid-Vancouver Island Habitat Enhancement Society
23-Sep-13	Parksville	Is there any way to monitor what goes into the sewer, inside and out of homes? Answer: No, it is purely educational, though the RDN does have a Source Control Bylaw that regulates what is permitted to go down.
23-Sep-13	Parksville	In Germany, they separate and have electrical controls that the industry pays for
23-Sep-13	Parksville	By partnering with the City of Parksville you can use their communication methods to citizens (i.e. Parksville website vs. RDN website) since many people in Parksville don't know they are also in the RDN and they not think to go to the RDN website.
23-Sep-13	Parksville	We are not engaged [about sewer] as the RDN takes care of it.
25-Sep-13	Qualicum Beach	Dental boards
25-Sep-13	Qualicum Beach	Auto shops and repair shops
25-Sep-13	Qualicum Beach	Is there an alternative for those painting who wash all the latex paint off their brushes? I heard there is water-based auto paint in California
25-Sep-13	Qualicum Beach	Restaurants and grease traps
26-Sep-13	Gabriola	Gabriola Streamkeepers
26-Sep-13	Gabriola	Gabriola Groundwater Management Society
26-Sep-13	Gabriola	Sustainable Gabriola - an umbrella group that tries to connect all NGO and non-profit groups on Gabriola
26-Sep-13	Gabriola	Target new people that move here from the city and are unaware
26-Sep-13	Gabriola	Contact Welcome Wagon
30-Sep-13	Cedar	None come to mind x 4
1-Oct-13	French Creek	Friends of French Creek
1-Oct-13	French Creek	Streamkeepers
1-Oct-13	French Creek	Partner with Solid Waste on their bulletins which say what can go down the drain. Provide info on alternative disposal options.
1-Oct-13	French Creek	Partner with retailers of these chemicals to see if they can take them back (i.e. paint stores)

3b. What other source control initiatives would assist homeowners?

Date	Location	Feedback
26-Aug-13	Extension	More education about what NOT to put down the drain
26-Aug-13	Extension	Newsletters (i.e. Regional Perspectives) to get information out or mail box notices (laminated, updated every month or so)
26-Aug-13	Extension	Figure out the cost (and advertise this) of putting certain items down the drain
26-Aug-13	Extension	Piggy back on other waste disposal initiatives (for advertising)
28-Aug-13	Bowser	Messages in the Regional Perspectives, even if it is just a few lines
29-Aug-13	Dashwood	My observation is that people who care are careful about what they put down the drain and people who don't care just dump whatever they want down the drain. Behaviour is hard to modify
29-Aug-13	Dashwood	Financial incentives may help change behaviour
29-Aug-13	Dashwood	It is perceived that the government will regulate what is allowed to go down the drain. Often people don't follow the directions on packaging on how to use these chemicals.
29-Aug-13	Dashwood	There is no follow-up or enforcement
29-Aug-13	Dashwood	If one municipality uses a [potentially harmful chemical] the next municipality also does
29-Aug-13	Dashwood	Permeable roads are better than impermeable ones as permeable ones have a better chance to filter contaminants before they enter the waterways
5-Sep-13	Coombs	Our biggest worry is our wells, no one wants a polluted well, our wells are far more important than our septic systems.
5-Sep-13	Coombs	Scared our neighbours will pollute [our wells]
5-Sep-13	Coombs	As long as they don't bring in the seismic testing (testing for natural gas) again (~10 years ago). It changed my well.
9-Sep-13	Nanaimo	Is garburator use beneficial or not? (compared to composting)
9-Sep-13	Nanaimo	A more appropriate way to discard of organics. Add into your educational materials
9-Sep-13	Nanaimo	Grey water for watering gardens
9-Sep-13	Nanaimo	Rainwater collection
16-Sep-13	Nanoose	Drop something, even a single post card, in the mail box. As a person with a young family I don't have time to read all the papers. I'm computer savvy but I don't troll the websites as a hobby. People don't think about it until there is a problem
16-Sep-13	Nanoose	Could industry (e.g. septic haulers) hand out promotional material (such as the benefits of pumping every 3-5 years)?
23-Sep-13	Parksville	A regular "Did You Know?" column in the paper with educational trivia. It would reach a lot of people, who would probably look forward to reading it.
23-Sep-13	Parksville	In the future, build test ports into the system
23-Sep-13	Parksville	Parksville bases bylaws on RDN standards - ask for results to make

Date	Location	Feedback
		sure bylaws are met
26-Sep-13	Gabriola	You are already doing SepticSmart
30-Sep-13	Cedar	Fish painted on storm drains
30-Sep-13	Cedar	Source Control Do's and Don'ts
1-Oct-13	French Creek	I like the idea of community collection events, like at the Civic Centre, but people don't want to wait for these
1-Oct-13	French Creek	More awareness of the recycle station on the Alberni Highway
1-Oct-13	French Creek	Contaminants: paint, paint thinner, oil, medications, pesticides, herbicides, flammable liquids. Where to take materials that the Nanaimo Recycling Exchange won't accept.
1-Oct-13	French Creek	Bylaw enforcement

4. Rainwater Management / Drinking Water and Watershed Protection

Are there any rainwater management, stormwater management, drinking water protection or watershed protection issues in your community that you would like the RDN to consider when developing the Rainwater Management Plan?

Date	Location	Feedback
26-Aug-13	Extension	Cisterns
26-Aug-13	Extension	Greywater management
26-Aug-13	Extension	Safety of our drinking water: who's testing, who's keeping track on what's going on above the drinking water intake
26-Aug-13	Extension	All water sources are going to be scarce
26-Aug-13	Extension	Forestry companies using fertilizers, pesticides and other chemicals -- RDN should hold them to standards
26-Aug-13	Extension	Better notice when forestry companies are using chemicals -- (mail box) and up in forestry land and recreational trails (people like berry picking in this area)
28-Aug-13	Bowser	Stormwater management and erosion control, specifically in cliff and steep slope areas and in the village
28-Aug-13	Bowser	Forestry companies not managing stormwater effectively (i.e. Cook Creek and Rosewall Creek)
28-Aug-13	Bowser	Everything that goes into a system comes out of a system
29-Aug-13	Dashwood	Area F has a terrible problem with flash flooding. Many people cut down most of the vegetation, pave and direct excess water to neighbours downstream and flood their property, and this continues until a flat area is reached, which pools with water in the winter and kills vegetation. There is no recourse or ability to stop this.
29-Aug-13	Dashwood	Other than providing info, the RDN should leave people alone
29-Aug-13	Dashwood	What happens to stormwater?
29-Aug-13	Dashwood	Rainwater management (collection and use) is important, especially where you have people watering lawns
5-Sep-13	Coombs	If we stop using impermeable (paved) surfaces, more water will soak in and we will have more groundwater. The problem is paved surfaces
9-Sep-13	Nanaimo	Yes! Buying our drinking watershed for the people to own
9-Sep-13	Nanaimo	I think buying our watershed is a great idea but how can the people afford it?
9-Sep-13	Nanaimo	Victoria and Lantzville have purchased their watershed
9-Sep-13	Nanaimo	No one actually owns the lakes, it's the land around it that's important
9-Sep-13	Nanaimo	It's paramount that we work together to own our water supply; it's our sovereignty
9-Sep-13	Nanaimo	If someone cuts the trees down, no one seems to hold them accountable
9-Sep-13	Nanaimo	Our watershed is constantly being logged. It makes the water flow faster
9-Sep-13	Nanaimo	It comes down to development strategies, building specifications

Date	Location	Feedback
9-Sep-13	Nanaimo	The amount of infiltration is important
9-Sep-13	Nanaimo	In our rainwater management, if we vegetated our ditches (like a swale) we would increase infiltration and it gets rid of culverts
12-Sep-13	Lantzville	We have our own impact management strategies in Lantzville [municipality]
12-Sep-13	Lantzville	Controlling erosion - if you stop rainwater from flowing, that's not good (more mosquitoes)
12-Sep-13	Lantzville	I don't know how you do it without a lot of money
12-Sep-13	Lantzville	Differs between rural and urban
12-Sep-13	Lantzville	Underground storage system
12-Sep-13	Lantzville	More rain gardens
12-Sep-13	Lantzville	Commercial projects - used to have to put in oil/water separators but the ministry stopped inspecting
16-Sep-13	Nanoose	It's a land development issue. Plan properly to meet objectives (rainwater harvest, stormwater management)
16-Sep-13	Nanoose	In Parksville, they should look into rainwater management as their drains couldn't take the rain from that last storm
16-Sep-13	Nanoose	Do the hydrologists look at well levels going down to determine how much we need to manage
16-Sep-13	Nanoose	We need to collect and store the water that is coming down all the time? It's a terrible waste not to manage it. I remember when Parksville was running out of water.
16-Sep-13	Nanoose	One day we will have a water shortage. We can't seem to determine how much water is in the aquifers.
16-Sep-13	Nanoose	Are we using less and less of the Englishman River? It seems like with the bank collapsing the last few years we need more drinking water protection for us
16-Sep-13	Nanoose	Rainwater management is key
16-Sep-13	Nanoose	"Mimic Water Balance" is a strong objective any management plan should incorporate
16-Sep-13	Nanoose	We need to promote the natural water balance. We need to understand the local hydrology and what our aquifers can hold. The runoff into local streams that maintains our biological resources
16-Sep-13	Nanoose	How does the Drinking Water and Watershed Protection program differ from the LWMP? This particular program crosses both.
16-Sep-13	Nanoose	Are there seven different municipalities that use our water system, that use the Arrowsmith Dam? We should have an interest in the Errington River Water Supply
16-Sep-13	Nanoose	Does the piping need to be upgraded
16-Sep-13	Nanoose	It will be cost more for us if others pull out
16-Sep-13	Nanoose	Is there an initiative for developers to put in rain catchment systems on new homes? There should be! What's happening in Cedar should be applied to the rest of the region if we put it in the planning stage
16-Sep-13	Nanoose	Better infiltration through better design. Retention through design. Don't put it into pipes, let it infiltrate.

Date	Location	Feedback
16-Sep-13	Nanoose	How does this relate to standards for the roads (i.e. swales, ditch instead of curbs in front of properties). Sidewalks prevent infiltration. Have standards changed?
16-Sep-13	Nanoose	What did the new Nanoose Bay firehall do? They put in swales / a rain garden
23-Sep-13	Parksville	Protecting drinking water and watershed, especially outside of the area at higher elevations
23-Sep-13	Parksville	If you want a green lawn and to wash your car, rainwater is key
23-Sep-13	Parksville	rebates for cisterns
23-Sep-13	Parksville	When I boil water, during certain months I notice a light film on my water. Need to make the city aware of it.
23-Sep-13	Parksville	We need to stop flushing our toilet with potable water
23-Sep-13	Parksville	Need to use more greywater like Australia
23-Sep-13	Parksville	Our aquifers are depleting and summer is our busiest time of year for tourists and we use the most water then
23-Sep-13	Parksville	We should set limits and charge more for high usage (i.e. over 120 L/day). 420 L/day is too much.
23-Sep-13	Parksville	I'd like to see a non-potable water distribution system for watering City parks and store the water uphill so it can be gravity fed.
23-Sep-13	Parksville	Have onsite systems that collect and use greywater onsite
23-Sep-13	Parksville	Collect water from roofs and use it indoors like Australia
23-Sep-13	Parksville	Can city water parks reuse the water as they use so much water
23-Sep-13	Parksville	Have a reservoir and you could truck water in. To have a separate utility costs too much and creates room for errors. Deal with it at the source is the cheapest way
23-Sep-13	Parksville	Smart controllers for municipal irrigation systems so they do not water when it rains
23-Sep-13	Parksville	Put the yellow fish on stormdrains (MVIHES)
23-Sep-13	Parksville	Retrofits are costly. New construction should be targeted
23-Sep-13	Parksville	Set design requirements. Roof catchment to storage system, onsite, solar collectors, geothermal, copper piping on roofs, engage local industry but we should legislate it.
23-Sep-13	Parksville	It's a mind set
23-Sep-13	Parksville	We have more authority in rezoning. Make it desirable for builders by adding value to it and show marketability of it to buyers, sellers, regulators
23-Sep-13	Parksville	How long can you store rainwater before it has to be used?
23-Sep-13	Parksville	Mosquitoes can lay eggs after 3 days.
25-Sep-13	Qualicum Beach	Parksville just had a big storm and that water had to get out of the city so it didn't flood.
25-Sep-13	Qualicum Beach	Flooding is a function of the design failing.
25-Sep-13	Qualicum Beach	I'd rather the water go down a pipe than flood my basement
25-Sep-13	Qualicum Beach	Can we make rainwater drinkable? I'm concerned that if there is a disaster and our drinking water supply is contaminated, what are we going to drink? We should have a plan for this.

Date	Location	Feedback
26-Sep-13	Gabriola	The cistern rebate program is great, definitely
26-Sep-13	Gabriola	An awareness of water quantity and quality issues (what we are talking about)
26-Sep-13	Gabriola	Also have put on a few workshops that have been beneficial
26-Sep-13	Gabriola	Rainwater harvest handbook is great
26-Sep-13	Gabriola	Why don't we use more bioswales to control excess rain runoff? They have so many functions, groundwater recharge, filtration, etc.
30-Sep-13	Cedar	Rain Gardens
1-Oct-13	French Creek	Landscapers and people with gardens should save rainwater and use it in the summer. It saves drinking water as they are not using up treated water.
1-Oct-13	French Creek	Government buildings should collect rainwater
1-Oct-13	French Creek	Condo development
1-Oct-13	French Creek	Use rainwater in the summer, don't need it in the winter
1-Oct-13	French Creek	Could you not have a drainfield for rainwater in new construction?
1-Oct-13	French Creek	Is it feasible to encourage rock pit drain area on private sites?
1-Oct-13	French Creek	Rainwater should not be in liquid waste as it is a valuable resource. We should not put in big pipes and shuttle it away. It is not a waste or something to get rid of as fast as you can. It is something to hang onto, encourage infiltration. By including rainwater in wastewater it perpetuates the thought that it is waste.

5. Odour Control

5a) Do wastewater-related odours affect you (at your residence, on your commute, where you recreate)?

Date	Location	Feedback
26-Aug-13	Extension	Haven't smelled anything from GNPCC
26-Aug-13	Extension	When I lived behind Brooks Landing I could smell GNPCC
28-Aug-13	Bowser	FCPCC when you go by sometimes it's terrible
28-Aug-13	Bowser	We don't have any RDN infrastructure in Area H
29-Aug-13	Dashwood	On commute or while walking along Lee Road or even on the beach I smell FCPCC. It doesn't upset me as I know treatment is good, but it is noticeable
29-Aug-13	Dashwood	In March, the herring roe on the beach smells too but it's not a bad smell
29-Aug-13	Dashwood	The stinkiest thing is the composting plant in Nanaimo
5-Sep-13	Coombs	[analogy] can't complain about dairy farmers as we need milk...city people move to rural areas and them complain of the smell of manure. You can't have it both ways.
5-Sep-13	Coombs	Never in French Creek long enough to smell it
9-Sep-13	Nanaimo	I can smell FCPCC when go by
9-Sep-13	Nanaimo	I haven't smelled GNPCC, but I don't live there
9-Sep-13	Nanaimo	I once smelled effluent just off Hammond Bay area
12-Sep-13	Lantzville	Only place I really notice offensive odour is Duke Point [composting facility]
12-Sep-13	Lantzville	It used to be pretty bad on Peterson Road between October and December before they put in sewer systems. Sewage from septic systems was getting into ditches.
12-Sep-13	Lantzville	Winchelsea was bad too [before sewer was brought in]
16-Sep-13	Nanoose	Yes, when I go by FCPCC I can definitely smell it
16-Sep-13	Nanoose	Yes, I notice it too when I go by FCPCC
16-Sep-13	Nanoose	NBPCC has a foul smell at certain times of the year i.e. Dolphin Lake area
16-Sep-13	Nanoose	First thing in the morning you can smell it when you walk by
16-Sep-13	Nanoose	I'm in a walking group and I can smell it when you walk by but the smell does not cover a huge area
23-Sep-13	Parksville	I drive through French Creek
23-Sep-13	Parksville	FCPCC was bad last year. Not one or two days but 2-3 weeks
23-Sep-13	Parksville	I went to your FCPCC Open House and I could tell odour management was important to you
23-Sep-13	Parksville	I never knew that the RDN wanted us to report odours. Let the public be your eyes and ears, empower them. Have a sticker on the fridge that says "smell something, give us a call"
25-Sep-13	Qualicum Beach	My experience is that when there's an odour at French Creek, the RDN says that it's fish and they've been saying that since I moved here
25-Sep-13	Qualicum Beach	The Vernon treatment facility doesn't have the same odour issues

Date	Location	Feedback
25-Sep-13	Qualicum Beach	I live in French Creek and occasionally I turn on the shower and notice a bad smell. (I'm on Epcor water). It usually happens in the spring
25-Sep-13	Qualicum Beach	French Creek residents association deals with stink reports in the spring and other seasons when the herring are not spawning
25-Sep-13	Qualicum Beach	There is a theory that there is some improper septic hauler discharge
26-Sep-13	Gabriola	Every so often I go by a manhole by Maffeo Sutton and it smells
26-Sep-13	Gabriola	No
30-Sep-13	Cedar	Wind brings odours from the Duke Point composting facility so if DPPCC ever failed, it might waft over too
30-Sep-13	Cedar	No (4 agreed)
1-Oct-13	French Creek	Please address the odours at Morningstar Lagoon
1-Oct-13	French Creek	Morningstar golf course smells. Is it the effluent causing that stink? Answer: At Morningstar Golf Course there are two large ponds with no aeration right now. Dissolved oxygen levels are significantly lower than the effluent at the facility
1-Oct-13	French Creek	There is a terrible odour from Morningstar Golf Course. It is ruining our lives.
1-Oct-13	French Creek	Would rainwater smell that bad in the ponds?
1-Oct-13	French Creek	I contacted the provincial government with my concern and they said that it wasn't their jurisdiction
1-Oct-13	French Creek	No more buck passing, we need solutions now
1-Oct-13	French Creek	If you cut off the supply of treated effluent in the summer, Morningstar Golf Course would react
1-Oct-13	French Creek	Improve signage at Morningstar Ponds
1-Oct-13	French Creek	The pond is fuller than ever right now, never seen it so full. Is there an overflow? I'm worried that if it rains, it will spill over the edge
1-Oct-13	French Creek	How close to capacity is FCPC running, does that affect the smell?
1-Oct-13	French Creek	There are odours nearly every day in French Creek. Is it the plant? Brackish water? Fish? How do you tell?

5b) What is an acceptable level of odour? (frequency / duration / proximity)

Date	Location	Feedback
26-Aug-13	Extension	None
26-Aug-13	Extension	It is not acceptable to make people put up with long-term odours
28-Aug-13	Bowser	None
28-Aug-13	Bowser	On a hot, hot summer day with lots of tourists and no wind we may have some smell. There is a cost associated with reducing odors and maybe we should be ok with some odours
29-Aug-13	Dashwood	In the mid-1990's FCPC stunk beyond belief
29-Aug-13	Dashwood	Plant is camouflaged well, you really have to look for it...it's out of sight but not out of smell
5-Sep-13	Coombs	I guess there has to be [some smell] depending on which way the wind blows

Date	Location	Feedback
9-Sep-13	Nanaimo	If you don't live by it, you don't really smell it
9-Sep-13	Nanaimo	Bottom line is we need to accept a small level of smell
12-Sep-13	Lantzville	As long as you keep it in Nanaimo
12-Sep-13	Lantzville	I lived on Hammond Bay before and there was no smell
12-Sep-13	Lantzville	People on Gulf View Drive notice smells off and on over the past 5 years. Doesn't make you gag, it's just a smell.
12-Sep-13	Lantzville	You shouldn't notice that you live next to a sewage treatment plant
16-Sep-13	Nanoose	Currently there are no houses next to NBPCC and you'd have to do some testing to determine if there is a problem
16-Sep-13	Nanoose	I have lived by NBPCC for three years. There is a slight smell but nothing serious
23-Sep-13	Parksville	What can you do about the odours? Can you prevent them? Answer: You can theoretically prevent all odours by covering everything and creating equipment redundancy (because equipment breaks) but this would be very expensive
23-Sep-13	Parksville	You could give the existing neighbours fans
25-Sep-13	Qualicum Beach	Zero. No one likes an odour. I don't live near it but I wouldn't if there was an odour.
25-Sep-13	Qualicum Beach	One or two times a year for a short period, but not 4 days or more
25-Sep-13	Qualicum Beach	People in close proximity pay the price but a lot of people in a wider area reap the benefits. Why should we expand if French Creek has to suffer more? People 30 km away don't mind shipping their sewer to French Creek as long as they don't have to smell it.
26-Sep-13	Gabriola	Anything I can't smell
30-Sep-13	Cedar	None, because there are too many ways to stop it x 4
1-Oct-13	French Creek	None
1-Oct-13	French Creek	If you are in a residential area you should have no odours (many agreed)
1-Oct-13	French Creek	Time of year matters - summer vs. winter
1-Oct-13	French Creek	Will future expansion cause more odour? What can we realistically expect?
1-Oct-13	French Creek	If you cannot control existing odours, the plant should not expand
1-Oct-13	French Creek	Odour control is a must. It should be the number 1 concern.

6. Volume Reduction

6a) Are you aware that the RDN offers free water conservation workshops?

Date	Location	Feedback
26-Aug-13	Extension	Yes: 1; No: 7
26-Aug-13	Extension	Rural people know how to conserve water. If you are on a well you automatically conserve
28-Aug-13	Bowser	Yes: 4; No: 8
29-Aug-13	Dashwood	Yes: 1; No: 3
5-Sep-13	Coombs	Yes: 1; No: 2
9-Sep-13	Nanaimo	Yes: 3; No: 6
12-Sep-13	Lantzville	Yes: 4; No: 0
12-Sep-13	Lantzville	Is all the water supply metered? Answer: Yes
16-Sep-13	Nanoose	Yes: 6; No: 3
23-Sep-13	Parksville	Yes: 6; No: 1
25-Sep-13	Qualicum Beach	Yes: 1; No: 3
26-Sep-13	Gabriola	Yes: 3; No: 0
30-Sep-13	Cedar	Yes: 2; No: 2
1-Oct-13	French Creek	Yes: 6; No: 15
1-Oct-13	French Creek	Low flush toilets are a big conserver of water. It is important.

6b) Are there other initiatives you would like the RDN to offer in the future?

Date	Location	Feedback
26-Aug-13	Extension	Yes, native plant and xeriscaping
28-Aug-13	Bowser	Do you talk about grants, rebates at the workshops?
28-Aug-13	Bowser	How do you reach the non-converted in the bigger question
29-Aug-13	Dashwood	In rural areas our concern is water withdrawal from wells
29-Aug-13	Dashwood	In the winter time, that's when septic systems can flood
29-Aug-13	Dashwood	The process and impact on aquifers (Parksville is pumping out of the river in the winter and putting it into aquifers for use in the summer). People should be more educated on this
29-Aug-13	Dashwood	People should be more educated on the effect their water use has on our water supply (how individuals affect this)
29-Aug-13	Dashwood	People will conserve more as the cost increases
29-Aug-13	Dashwood	Sail boats and pleasure crafts - where do they dump their waste and how is it regulated
29-Aug-13	Dashwood	Is there a problem with leakage in older septic
29-Aug-13	Dashwood	If you charge more for water use in the summer, when it is scarce, and less for water in the winter, when it is plentiful, people will conserve more
5-Sep-13	Coombs	Notices at the Rodeo grounds is a good way to get the word out
9-Sep-13	Nanaimo	Grey water reuse, plant trees with people so they don't have to water their lawns as much

Date	Location	Feedback
12-Sep-13	Lantzville	Sewage system is gravity fed and requires a certain amount of liquid
16-Sep-13	Nanoose	Do you offer anything at the school level?
16-Sep-13	Nanoose	I though the workshops were just for irrigation, I didn't know you did all these. The Get Involved website is good.
23-Sep-13	Parksville	The system is designed for high volume so if we got low volumes will we have issues? Answer: This is not currently an issue.
23-Sep-13	Parksville	How do you communicate these workshops? Could be on our city webpage.
23-Sep-13	Parksville	Can advertise through a weekly "Did you know" column in the paper
23-Sep-13	Parksville	Make the info into a game, like multiple choice. Make the facts community-based.
25-Sep-13	Qualicum Beach	A home that reuses water and is totally off the grid. To use less resources. There should be a workshop on how to make our homes more self-sufficient
25-Sep-13	Qualicum Beach	Greywater reuse
25-Sep-13	Qualicum Beach	Heat on demand would save water and electricity as I run my tap for a long time waiting for it to get warm.
25-Sep-13	Qualicum Beach	Put hot water tank more centrally in the home so hot water comes out more quickly
25-Sep-13	Qualicum Beach	There's a lot of good ideas out there but they don't get talked about
25-Sep-13	Qualicum Beach	What are the opportunities to have a low flush toilet for someone without one?
25-Sep-13	Qualicum Beach	I think the problem is that some people don't know how or can't do the research on low flush toilets to find out if they work
26-Sep-13	Gabriola	In Area B, it's not always possible for people to attend, so you could have something online for workshops
26-Sep-13	Gabriola	What about a 10 minute clip with a discussion online?
26-Sep-13	Gabriola	I would get more out of a video than a slide show
26-Sep-13	Gabriola	What about a webinar
26-Sep-13	Gabriola	What about greywater or purple pipes?
26-Sep-13	Gabriola	On Gabriola, a lot of people have installed greywater reuse systems themselves
30-Sep-13	Cedar	Rain Gardens
30-Sep-13	Cedar	Greywater reuse
1-Oct-13	French Creek	No suggestions

7. What should the RDN do, if anything, to promote the reduction of I&I on private property?

Date	Location	Feedback
26-Aug-13	Extension	No answer
28-Aug-13	Bowser	The town of Qualicum Beach is concerned about I&I and about two years ago did a study in Chartwell area. As a result, corrected piping lowered operating costs
28-Aug-13	Bowser	Provide incentives for people doing rainwater harvesting

Date	Location	Feedback
28-Aug-13	Bowser	Someone who uses only rainwater would not be paying for water but would still be sending waste to the sewer system
29-Aug-13	Dashwood	Education is a big thing. What is I&I?
29-Aug-13	Dashwood	Mostly it's an engineering problem, when they find it, they fix it. It's just a problem of finding it.
29-Aug-13	Dashwood	Education is needed as a lot of people are ignorant. People most likely aren't doing it intentionally, rather just because they don't know.
29-Aug-13	Dashwood	People don't give it much thought. Once it goes down the drain, it's just gone; they don't understand the impacts it can/does have
5-Sep-13	Coombs	Make an incentive for people to fix it (i.e. provide new pipe if homeowner installs it)
5-Sep-13	Coombs	Ultimately, residents pay for volume so that's incentive to fix it.
9-Sep-13	Nanaimo	Are there any programs to help the people deal with failing pipes on their property? There should be grants to fix your system.
9-Sep-13	Nanaimo	You have to identify the problem to deal with it
9-Sep-13	Nanaimo	You need better upgrades to the infrastructure to deal with it
9-Sep-13	Nanaimo	Most people aren't aware of it. They don't care even if they did they wouldn't do anything about it.
9-Sep-13	Nanaimo	Awareness and education to bring attention to this
9-Sep-13	Nanaimo	Promote that the more efficient your system is, the lower the overall cost. Use money as a motivator.
12-Sep-13	Lantzville	Have you quantified the amount of I&I
12-Sep-13	Lantzville	You could have a local bylaw but how do you detect it?
12-Sep-13	Lantzville	You wouldn't know you had a cracked line until sewage comes to the surface
12-Sep-13	Lantzville	Most lines are new here
16-Sep-13	Nanoose	What do you do now? Do you do smoke tests to see if any Nanoose Bay storm connections go into sewer?
16-Sep-13	Nanoose	Is it a building inspection issue?
16-Sep-13	Nanoose	If rainwater is being held back [through rainwater management], it won't be entering sewer pipes and will decrease I&I
23-Sep-13	Parksville	If you want a preferential rate then you allow inspection of your private pipes (system)
23-Sep-13	Parksville	The City of Parksville is doing a storm and waste management plan soon. We can check our own system but what do you do for private systems?
23-Sep-13	Parksville	In Ontario they pay you \$25 if you take you downspout out of the ground and lay it on the surface. Trees and garden benefit but it works when you are on a high side (not a swamp). You change one thing and it affects another, you always have to look at the consequences
25-Sep-13	Qualicum Beach	What control do we have over this?
26-Sep-13	Gabriola	Rebates for private property connections.
30-Sep-13	Cedar	n/a
1-Oct-13	French Creek	What is the total percentage of I&I in FCPC influent?

Date	Location	Feedback
1-Oct-13	French Creek	Are roof drains connected to the system?
1-Oct-13	French Creek	I'm amazed that I&I can be up to 70%. Are there strategies to deal with that?
1-Oct-13	French Creek	Can RDN enforce the disconnection of downspouts into sewer systems?

8. Part 1: GNPCC. Based on the technical, social, environmental, and economic implications, which option do you prefer [2016, 2018, 2019]?

Date	Location	Feedback
26-Aug-13	Extension	No answer
28-Aug-13	Bowser	no answer
29-Aug-13	Dashwood	I don't think all the alternatives are presented. Water and unpolluted water is very important, not just for human use but also for all creatures that depend on water.
29-Aug-13	Dashwood	This is one of the primary things that the federal and provincial governments should subsidize/pay for as municipal level does not have the taxing power to pay for this. Current Canadian model is NOT good model.
29-Aug-13	Dashwood	We need solid lobbying by municipal council to federal government to pay for infrastructure. We need sufficient lobbying for pushback. What feds say is not good enough as the situation with water is too important. It should be a citizen's issue as we should all have to protect and care for our water.
29-Aug-13	Dashwood	The ability of municipalities to fund is very challenging as upper levels of government have stopped funding
29-Aug-13	Dashwood	We need a citizen's base to push this forward to federal government and provincial government
5-Sep-13	Coombs	Doesn't make a difference to me
9-Sep-13	Nanaimo	Has the RDN been putting away money for infrastructure? Yes, but the premature failure of the outfall will require most of the savings.
9-Sep-13	Nanaimo	Where will the money come from? Answer: Expansion is paid for through development cost charges (DCCs). Upgrades are paid for with tax revenue. The RDN is also pursuing grant funds.
9-Sep-13	Nanaimo	[Discussed tax increases for each scenario and why the dates were chosen (1997 commitments; recent precedent in Metro Vancouver)]
9-Sep-13	Nanaimo	2020 is too long to be pumping effluent into the Strait of Georgia
9-Sep-13	Nanaimo	The cost difference is really insignificant but if the extra time gives you more opportunity and flexibility of options, then it is worth it.
12-Sep-13	Lantzville	\$15 is not too much, that's why not many people are here. There is no incentive to get involved
12-Sep-13	Lantzville	2019 because we really want grants as Federal and Provincial government said there'd be no grants for a few years
12-Sep-13	Lantzville	I'd rather take my chances in the future than knowing there's no money
12-Sep-13	Lantzville	No opinion, I'm on septic
12-Sep-13	Lantzville	How are you going to decide the date? Answer: decision will be by the regional Board and staff recommendation to the board.
16-Sep-13	Nanoose	What is the chance of getting a grant?
16-Sep-13	Nanoose	Is it possible to look at the issue by dissecting the problem? Encourage more public acceptance? For example, use greywater systems so that we reduce the amount of pollutants and volume that

Date	Location	Feedback
		the treatment systems have to deal with. Is there a way to encourage source control at home through the Ministries? If we can reduce source control issues maybe we don't need to do this right away.
16-Sep-13	Nanoose	Existing homes are too old to retrofit. It is hard to change and expensive from a building code perspective.
16-Sep-13	Nanoose	Can we put this vision [greywater management] into the LWMP. Put grey water and source control into our homes.
23-Sep-13	Parksville	Does the outfall pipe have to be replaced in 2015. If so, why?
23-Sep-13	Parksville	Why aren't provincial funds being used or offered?
23-Sep-13	Parksville	2019 sounds good to me
23-Sep-13	Parksville	By delaying to 2019 would the pipe be paid off? Answer: Currently GNPCC carries no debt but the outfall replacement will use up most of our reserves and we will have to borrow to complete secondary treatment.
23-Sep-13	Parksville	Is this a good fit for a P3? Answer: P3 are not often used in projects like these but we could consider design-build.
23-Sep-13	Parksville	Does this consider other increases (i.e. Hydro) taxpayers will incur so the burden does not become too great? Answer: This is a project we must complete. There are hefty fines if we don't complete it. But we do look at the overall impact.
23-Sep-13	Parksville	I would like a better understanding of where you are coming from and what is being considered in the decision making process.
23-Sep-13	Parksville	In regard to economics, you will pay now or you will pay later.
25-Sep-13	Qualicum Beach	I'd like it if senior governments contributed some money
25-Sep-13	Qualicum Beach	How come the developers aren't paying? We shouldn't have to keep footing the bill just because we live here. Answer: developers pay for expansion through DCCs.
25-Sep-13	Qualicum Beach	I'd say, considering the outfall, that 2018-1019 is preferred so it's not such a big tax load
25-Sep-13	Qualicum Beach	We should have a better cost estimate before we agree on a date.
26-Sep-13	Gabriola	Interest rates are good now so now may be better
26-Sep-13	Gabriola	The cost difference in taxes doesn't seem like that much, why not do it sooner and get it done.
26-Sep-13	Gabriola	It doesn't go up much in tax cost and it would be much better environmentally to do it sooner.
30-Sep-13	Cedar	2016 x 2 - costs go up the longer you wait. It's hard to predict inflation, material and labour costs
30-Sep-13	Cedar	One preferred 2019
30-Sep-13	Cedar	No preference
1-Oct-13	French Creek	It is presumptuous to comment on this as it does not affect us much
1-Oct-13	French Creek	It affects the Strait of Georgia, which affects us all
1-Oct-13	French Creek	Does VIHA have a deadline or mandate?
1-Oct-13	French Creek	Is 2016 even feasible?
1-Oct-13	French Creek	There is a challenge because we don't want anything the Strait of Georgia but it is hard to be on a timeline

8. Part 2: NBPCC. Based on technical, social, environmental, and economic implications, which option do you prefer [2020, 2025, 2030]?

Date	Location	Feedback
26-Aug-13	Extension	No answer
28-Aug-13	Bowser	Is secondary treatment the model? i.e. Comox Valley Regional tried putting in secondary and the community uproared so they put in tertiary treatment
28-Aug-13	Bowser	As a person who floats around in the Strait of Georgia, I would think the sooner the better for water quality
28-Aug-13	Bowser	Interest rates are increasing, which will increase the cost of borrowing and the overall cost of the project. Prices are good now
29-Aug-13	Dashwood	[Not specifically answered, but generally the comments above apply]
9-Sep-13	Nanaimo	This is incentive to move to Nanaimo
9-Sep-13	Nanaimo	I'd opt for 2025 since there is not a significant cost difference between 2025 and 2030 and it would still allow sufficient time to plan
9-Sep-13	Nanaimo	This is mainly concerning Fairwinds area
12-Sep-13	Lantzville	Shouldn't Fairwinds decide as it affects them - they have to pay for it
12-Sep-13	Lantzville	Will it be possible to apply for separate grants for each treatment plant? Yes.
12-Sep-13	Lantzville	So all those detergents and chemicals go into the Strait of Georgia?
12-Sep-13	Lantzville	Any tertiary systems on the island?
16-Sep-13	Nanoose	Nanoose Bay never gets funding as it is not a municipality. Nanoose Bay should incorporate so we can get funding as it is based on property taxes
16-Sep-13	Nanoose	When Madrona tried to get sewer there was no funding
16-Sep-13	Nanoose	Is this in addition to the sewer tax we pay now?
16-Sep-13	Nanoose	The later the better as most of us won't be around then. Let our kids know so they are prepared for it.
16-Sep-13	Nanoose	Developers are responsible for water and sewer
16-Sep-13	Nanoose	If we hold off until 2030 we may have thousands of more residents to share the cost
16-Sep-13	Nanoose	I think the sooner the better but unfortunately, any tax increase is seen as bad
16-Sep-13	Nanoose	Do the current development talks include secondary treatment?
16-Sep-13	Nanoose	If we do it sooner, then we potentially pay more? Yes.
16-Sep-13	Nanoose	What input has the MOE given? Advisory Committee, staff comments on three Draft reports, meetings
23-Sep-13	Parksville	So however many units of sewage are going out now, they would decrease if secondary treatment was implemented? Answer: Yes
23-Sep-13	Parksville	I would rather choose an option based on population, rather than date
23-Sep-13	Parksville	Will this push ahead the Fairwinds Lakes District development?
23-Sep-13	Parksville	I'd be inclined to go with the later date but if the Lakes District goes

Date	Location	Feedback
		ahead then it can be moved forward but it would be hard to go the other way
23-Sep-13	Parksville	Can we use effluent for other purposes
25-Sep-13	Qualicum Beach	If I was living there I'd say 2030
25-Sep-13	Qualicum Beach	I'm speechless with the first number [2020]
26-Sep-13	Gabriola	That's a lot of money. This is the type of tax that starts to break people
26-Sep-13	Gabriola	The high taxes could be why you don't get the expected growth
26-Sep-13	Gabriola	What about the effects on the receiving environment
26-Sep-13	Gabriola	How did Nanoose Bay feel when they saw their tax increase after they saw Nanaimo?
26-Sep-13	Gabriola	I'd go for 2020
30-Sep-13	Cedar	Not affected by it
30-Sep-13	Cedar	Same answer as GNPCC
30-Sep-13	Cedar	Development would be good, so they can share the tax burden
1-Oct-13	French Creek	If you wait longer, you hope for more people to spread out the cost
1-Oct-13	French Creek	Do these figures factor in the potential growth in Fairwinds? Answer: No, it assumes minimal growth
1-Oct-13	French Creek	Are DCCs based on primary or secondary treatment?
1-Oct-13	French Creek	Solids from Nanoose are trucked to FCPC.

8. Part 3: FCPC. Do you have any comments for the RDN regarding the expansion of FCPC?

Date	Location	Feedback
29-Aug-13	Dashwood	No
29-Aug-13	Dashwood	Are there more ways to mitigate/control the demand of FCPC at the source/control the input into the system? Are there things that could decrease the demand and delay the expansion? Answer: Water conservation and a reduction in inflow and infiltration would decrease the demand and delay expansion
5-Sep-13	Coombs	Hope that estimate is right
9-Sep-13	Nanaimo	It needs to be done
9-Sep-13	Nanaimo	I think it has to be expanded if the population is increasing
9-Sep-13	Nanaimo	Have they had problems in the past year? I've noticed it smells more
9-Sep-13	Nanaimo	Do you have the land for it? Answer: Yes.
9-Sep-13	Nanaimo	It will be a completely new building? Answer: Yes
12-Sep-13	Lantzville	Did they deal with odour there?
16-Sep-13	Nanoose	I would encourage the RDN to look at the numbers and see how they can drive down costs with technology (i.e. recovering phosphorus). Push technology as much as possible to bring down costs
16-Sep-13	Nanoose	The later you push back the date, the lower the cost
16-Sep-13	Nanoose	I'd like to hear more of a push for the environment, let's not just bring it down to cost. Plan for future generations
16-Sep-13	Nanoose	I'd like more push from the RDN to bring the focus to the

Date	Location	Feedback
		environment
16-Sep-13	Nanoose	How close are we to the current capacity?
23-Sep-13	Parksville	If population growth diminishes then we'll pay more
23-Sep-13	Parksville	You are collecting DCCs already? Yes? What portion will it cover?
25-Sep-13	Qualicum Beach	People in French Creek already feel like they've paid three times over
25-Sep-13	Qualicum Beach	What if we decrease the volume into the plan (e.g. dual flush toilets, reduce summer irrigation, increase water bills)
26-Sep-13	Gabriola	Go ahead
26-Sep-13	Gabriola	To me it seems like something that should be sold to the province as it would be a huge benefit
26-Sep-13	Gabriola	We don't all share the treatment plant but we all share the environment
26-Sep-13	Gabriola	It's not like you are asking for continuous funds, it is a one shot deal, not long term or ongoing. They should get on board.
30-Sep-13	Cedar	No x 2
30-Sep-13	Cedar	Is there any novel or experimental technologies being used? Answer: About 10% of the treated effluent is pumped during the summer to storage ponds at Morningstar Golf Course. They use the treated effluent to irrigate the golf course.
1-Oct-13	French Creek	Only want to live with own odours, not new expansion odours
1-Oct-13	French Creek	Do we want the risk of a plant that's twice as big with twice the potential for odours?
1-Oct-13	French Creek	How much would cost if there was not expansion, just capital upgrades? Answer: About \$27 million for expansion, and \$5 million for upgrades
1-Oct-13	French Creek	Would this project be eligible for grants? Answer: Some but it would be difficult because the plants moving to secondary treatment will get priority
1-Oct-13	French Creek	If no expansion occurs, will we still see an increase in our taxes? Answer: The 85% expansion is not included in the figure because it is covered by DCCs
1-Oct-13	French Creek	Would we be doubling the size? Answer: No. It will be about 40% bigger.
1-Oct-13	French Creek	Tax base would be higher, costs would be spread out
1-Oct-13	French Creek	I'm not in what's being expanded, just what's being upgraded
1-Oct-13	French Creek	Are we at capacity? Answer: If all the building permits in Parksville, Qualicum Beach and French Creek were developed, then FCPC would be at capacity
1-Oct-13	French Creek	Can you relate to the OCP for a firm prediction of when it is a problem? Answer: We track figures of population growth to see when it is needed.

9. Do you have any comments regarding biosolids management in the RDN?

Date	Location	Feedback
26-Aug-13	Extension	It smells and gets on the dog when it rains
26-Aug-13	Extension	Interested in testing and monitoring requirements
26-Aug-13	Extension	Those living near Dumont road are concerned about biosolids application
26-Aug-13	Extension	Asked if there was enough application land if there is a rotation cycle
26-Aug-13	Extension	Wondered who is controlling the frequency of application, quality and area of land where biosolids is applied
26-Aug-13	Extension	Asked about biosolids treatment process
26-Aug-13	Extension	What happens when VIU runs out of land
26-Aug-13	Extension	It is important to consult the public if deciding to open up more areas to biosolids application, especially from those who live in those areas
26-Aug-13	Extension	Does VIU pay for the biosolids or do they get paid
26-Aug-13	Extension	Are biosolids used in other places? Answer: Yes
28-Aug-13	Bowser	It's a great idea
28-Aug-13	Bowser	Sold somewhere (in a store) is that feasible?
28-Aug-13	Bowser	Is generating revenue possible?
28-Aug-13	Bowser	How safe are biosolids?
29-Aug-13	Dashwood	Trees like it
29-Aug-13	Dashwood	I would like to know more about biosolids
5-Sep-13	Coombs	As long as it won't pollute the wells where it's spread. Regulations don't stop pollution
5-Sep-13	Coombs	I'm more concerned with the non-biological component (i.e. mercury, lead, copper) than the biological. Non-biological does not break down.
5-Sep-13	Coombs	What do you do with the grease? Make biodiesel?
5-Sep-13	Coombs	Is there anything that can be done with the grease? Could produce heat with it.
9-Sep-13	Nanaimo	Did biosolids all used to go to the landfill? Yes
9-Sep-13	Nanaimo	Are biosolids being used in the Nanaimo drinking watershed? No, it is off Weigles Road. We follow strict regulations regarding setbacks from wells, etc.
9-Sep-13	Nanaimo	Could we sell it?
9-Sep-13	Nanaimo	NRE is doing a fantastic job of reusing and recycling items so not much is wasted
12-Sep-13	Lantzville	Will there be more [application areas] taking the biosolids as there will be more biosolids produced after secondary treatment?
12-Sep-13	Lantzville	Any chance we can stop biosolids application on Dumont Road?
12-Sep-13	Lantzville	It's dried poop, isn't it? Nightsoil they call it in the UK
12-Sep-13	Lantzville	Keep it out of my backyard
12-Sep-13	Lantzville	You still test it for chemical composition? Yes.
12-Sep-13	Lantzville	Don't stop looking for another place as that is a high recreation area and always will be. What about Weyerhaeuser up in Qualicum Beach and their spruce lot? What about that for a site?
12-Sep-13	Lantzville	Do they check for heavy metal content? Yes, that is one of the

Date	Location	Feedback
		limitations for application frequency.
12-Sep-13	Lantzville	Do they still let it drain (covered) before they spread it. Yes, that is my understanding.
16-Sep-13	Nanoose	[Ran out of time for discussion. Mediator reviewed question and asked audience to provide feedback in the survey]
23-Sep-13	Parksville	Is there a role for private industry in this? Answer: Yes, we have a partnership with VIU and SYIVIS based on a competitive bidding process.
23-Sep-13	Parksville	It seems like it is working very well.
23-Sep-13	Parksville	In Vancouver it also works very well.
25-Sep-13	Qualicum Beach	When that place first opened up you could go get truckloads of it
25-Sep-13	Qualicum Beach	So biosolids have contaminants (heavy metals) in them? Answer: They measure before and after application and apply in concentrations that are compliant with the regulations. Answer: They measure before and after application and apply in concentrations that are compliant with the regulations
25-Sep-13	Qualicum Beach	What about antibiotics and medical waste. Is there an alternative to biosolids, like incineration? In Port Alberni they are looking at using to use it as an alternative fuel to heat hospitals and schools.
25-Sep-13	Qualicum Beach	Is the biosolids application affecting anyone's drinking water source?
26-Sep-13	Gabriola	With people putting medications down their toilet, have they found high levels of estrogen in the biosolids woodlot? Answer: No, but there is high nitrogen and low phosphorus, which produces a lot of woody tree growth, but the trees have small cones because of the nitrogen and low phosphorus
26-Sep-13	Gabriola	It looks nice so if it works, then great
26-Sep-13	Gabriola	I like that you are working with VIU, it's a good partnership
30-Sep-13	Cedar	We have friends who are concerned about the odours
30-Sep-13	Cedar	Can it be used for garden dirt? Answer: Biosolids must be treated to a higher "unrestricted" quality to be used in gardening.
30-Sep-13	Cedar	Is there an economic benefit to using biosolids on the VIU woodlot? Answer: Yes, it is cheaper than the alternative choice of disposing of it in the landfill.
1-Oct-13	French Creek	How many tonnes are put out each year? Answer: Roughly 4,500 bulk tonnes of biosolids are produced by the RDN's Pollution Control Centres every year.
1-Oct-13	French Creek	Would it be profitable to bag it and sell it? Courtenay-Comox sells out in a day. Answer: This would require a higher level of treatment, with extra costs.
1-Oct-13	French Creek	Where is the site? What are the aquifer implications? Answer: VIU woodlot on Weigles Road. Hydrogeologists have studied this twice and have determined that there is no impact. VIU also does its own ongoing monitoring.
1-Oct-13	French Creek	Is there a capacity issue at the woodlot if there is growth of PCCs and therefore biosolids? Answer: There is sufficient space to handle future

Date	Location	Feedback
		biosolids.
1-Oct-13	French Creek	People are using the garburators less because of the Green Bin.

10. What opportunities for resource recovery in the RDN would you like to see explored?

Date	Location	Feedback
26-Aug-13	Extension	District heating is good
26-Aug-13	Extension	recovery options are good but they should not affect the quality of living (smell) or harm the environment
28-Aug-13	Bowser	It's a good idea to explore
28-Aug-13	Bowser	Has RDN looked at smaller treatment plants for resource recovery options?
29-Aug-13	Dashwood	Is there a way to recover pharmaceuticals, chemicals, minerals from the wastewater and sell them? (i.e. phosphorus for fertilizers)
5-Sep-13	Coombs	District heating is a good idea as long as you heat above 6°C. If you can take heat from effluent, go for it. Hopefully it won't be made from steel (joke, in reference to the outfall corrosion). The steel was probably supplied by the lowest bidder. Don't go with the lowest bidder
5-Sep-13	Coombs	As long as the resource recovery items are not fluff
5-Sep-13	Coombs	It has to be cost effective, pay its own way.
9-Sep-13	Nanaimo	Do they have tours where you can see what's going on? If a group was interested, could we book one?
9-Sep-13	Nanaimo	I think if people could see what happens to all this stuff. I want to know, we need to know.
12-Sep-13	Lantzville	More opportunities to heat elementary schools. We all pay school taxes anyway.
12-Sep-13	Lantzville	A big wind turbine to remove the smell :)
12-Sep-13	Lantzville	Heat pump - to heat and cool a building (mall, RDN building, school, mall, etc.)
12-Sep-13	Lantzville	Chlorine and sodium thiosulfate - turns chlorine back into salt - they are two opposites. Is this too expensive? Can make your own chlorine with a chlorine pump
12-Sep-13	Lantzville	All these things have a lifespan so when they need to be replaced, do we have a future plan? We need to look at that and put a percentage of revenue aside for replacement. We haven't done it yet then? No, but there is a plan to start doing that.
16-Sep-13	Nanoose	
23-Sep-13	Parksville	I would like to see all opportunities explored and researched
23-Sep-13	Parksville	Make changes that outweigh any negatives
23-Sep-13	Parksville	Look at them all and see what would work here
23-Sep-13	Parksville	With FCPC would methane heat be made available with expansion?
23-Sep-13	Parksville	In a competitive process will you ask for certain parameters to be included in the bid?

Date	Location	Feedback
25-Sep-13	Qualicum Beach	Expand on those already used
25-Sep-13	Qualicum Beach	Can we get heat to other schools?
25-Sep-13	Qualicum Beach	I'd like to see drinking water captured. How can we make drinking water out of liquid waste?
26-Sep-13	Gabriola	Have you thought about phosphorus recovery? It's been promoted elsewhere as a money maker as there is a finite amount of phosphorus in the world
30-Sep-13	Cedar	Metal recovery
30-Sep-13	Cedar	Reclaimed water
30-Sep-13	Cedar	For biosolids to be available to the public
30-Sep-13	Cedar	Rain gardens and onsite stormwater
30-Sep-13	Cedar	All should be recovered, the more the better
30-Sep-13	Cedar	New technology may come available
30-Sep-13	Cedar	Don't be constrained by socio-political norms. Explore new innovations from around the world. Think outside the box.
1-Oct-13	French Creek	Is there a reason that other PCCs do not recover methane biogas?
1-Oct-13	French Creek	Is continuing effluent reuse in the strategy?
1-Oct-13	French Creek	Is there a significant cost to convert to anaerobic digesters?
1-Oct-13	French Creek	How much heat and energy does GNPCC generate?

FIRST NATIONS ENGAGEMENT PROGRESS REPORT

On the

*Regional District of Nanaimo
Liquid Waste Management Plan Amendment*

*DRAFT – December 2013
File No: 5340-20*



**LIQUID WASTE
MANAGEMENT PLAN**

TABLE OF CONTENTS

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Introduction

Vancouver Island and coastal British Columbia are home to many First Nations communities whose traditional territories share common boundaries with Regional District of Nanaimo (RDN). Specifically, three First Nations have reserves within RDN boundaries: Qualicum First Nation, Snaw'Naw'As First Nation and Snuneymuxw First Nation. The RDN recognizes and acknowledges the importance of cultural, traditional use, and archaeological sites and shares the common interest of protecting our watershed and receiving waters. The RDN hopes to develop lasting collaborative relationships with First Nations and work together to as stewards of the land.

In 2008, the RDN embarked on a process to amend the Liquid Waste Management Plan (LWMP). LWMPs and amendments must be approved by the Minister of Environment. The province of British Columbia has a duty to consult with First Nations whenever it considers a decision that has the potential to affect aboriginal interests or treaty rights. For the LWMP amendment, the province delegated procedural aspects of First Nations consultation to the RDN.

The LWMP amendment represents an important milestone in an ongoing process of engagement with First Nations related to liquid waste management. The RDN will continue to engage First Nations to provide ongoing opportunities to identify adverse impacts as planning and implementation moves forward in the coming months and years.

The RDN wishes to engage First Nations in a respectful and meaningful way by ensuring that there are a range of opportunities to meet, engage, and participate directly in the liquid waste management planning and decision-making process. Progress towards procedural aspects of consultation and engagement are documented within this report.

PARTICIPATION IN THE LWMP AMENDMENT PROCESS

Participation in the LWMP Amendment Process

The RDN amended the LWMP between 2008 and 2013 under the guidance of the Regional Liquid Waste Advisory Committee (RLWAC). In February 2008, the RDN Board approved an update to the RLWAC Terms of Reference to include two members who represent First Nations. In February 2008, the RDN invited the Snaw'Naw'As First Nation and the Snuneymuxw First Nation representation on the RLWAC (see letters in Appendix A). The Snuneymuxw First Nation accepted the invitation and has had representation on the committee since April 2008.

Snuneymuxw First Nation was invited to 17 RLWAC meetings between April 2008 and November 2013. A Snuneymuxw First Nation representative attended the April 3, 2008 meeting. Minutes and reports were prepared for the Snuneymuxw First Nation regularly. More information on the RLWAC is available in the separate LWMP Amendment and Public Consultation Summary Report.

FIRST NATIONS ENGAGEMENT

Public Consultation and First Nations Engagement are key components of the LWMP amendment process. While distinct, engagement with First Nations followed a timeline complementary to the public consultation process.

- 2008 – 2013: Inclusion in the development and decision-making process through the RLWAC
- July – December 2013: Focused consultation and engagement.

The RDN will continue to engage with First Nations after the LWMP amendment is completed.

To prepare for focussed consultation and engagement, the RDN referenced the province's Consultative Areas Database (CAD) Public Map Service to identify First Nations groups with potential aboriginal interests within the project boundaries. The CAD query identified the following 22 groups:

- Cowichan Tribes
- Ditidaht First Nation
- Halalt First Nation
- Hul'qumi'num Treaty Group
- Hupacasath First Nation
- K'omoks First Nation
- Laich-kwil-tach Treaty Society
- Lake Cowichan First Nation

PARTICIPATION IN THE LWMP AMENDMENT PROCESS

- Lyackson First Nation
- Nanwakolas First Nations Referrals Office
- Penelakut Tribe
- Qualicum First Nation
- Semiahmoo First Nation
- Sliammon First Nation
- Snaw'Naw'As First Nation
- Snuneymuxw First Nation
- Stz'uminus First Nation
- Te'Mexw Treaty Association
- Tseshaht First Nation
- Wei Wai Kum First Nation
- We Wai Kai Nation
- Xwemalhkwa (Homalco) First Nation.

First Nations engagement included:

- Letters to all 22 First Nations groups identified by the CAD query
- Meeting with First Nations, upon request, to share information
- Follow up letters and phone and email conversations
- Invitation to access online information and the community feedback survey
- Accommodation where appropriate.

LETTERS TO FIRST NATIONS

The RDN sent a series of information letters and invitations to First Nations. The letters included:

July 9, 2013:

Letters were sent from RDN Chair Joe Stanhope to:

- Snuneymuxw First Nation Chief and Council
- Snaw'Naw'As First Nation First Nation Chief and Council
- Qualicum First Nation Chief and Council.

The letters above included background information, an invitation to participate in the LWMP Amendment process and an invitation to tour RDN wastewater treatment facilities.

PARTICIPATION IN THE LWMP AMENDMENT PROCESS

August 8, 2013:

Letters were sent from RDN Chair Joe Stanhope to all 22 First Nations groups identified by the CAD query:

- Cowichan Tribes Chief and Council
- Ditidaht First Nation Chief and Council
- Halalt First Nation Chief and Council
- Hul'qumi'num Treaty Group, Executive Director, Al Anderson
- Hupacasath First Nation Chief and Council
- K'omoks First Nation Chief and Council
- Laich-kwil-tach Treaty Society Chief Negotiator
- Lake Cowichan First Nation Chief and Council
- Lyackson First Nation Chief and Council
- Nanwakolas First Nations Referrals Office Project Manager
- Penelakut Tribe Chief and Council
- Qualicum First Nation Chief and Council
- Semiahmoo First Nation Chief and Council
- Sliammon First Nation Chief and Council
- Snaw'Naw'As First Nation Chief and Council
- Snuneymuxw First Nation Chief and Council
- Stz'uminus First Nation Chief and Council
- Te'Mexw Treaty Association Chief Negotiator
- Tseshaht First Nation Chief and Council
- Wei Wai Kum First Nation Chief and Council
- We Wai Kai Nation Chief and Council
- Xwemalhkwa (Homalco) First Nation Chief and Council.

The letters above summarized the LWMP amendment and the RDN's desire to share information and meet to discuss concerns directly. The letters accompanied a copy of the draft LWMP amendment and a Wastewater Factsheet. The letter requested feedback by October 15, 2013.

August 29, 2013:

A letter was sent from Randy Alexander to Chief Bob, Snaw'Naw'As First Nation to accompany a secondary LWMP Amendment package.

PARTICIPATION IN THE LWMP AMENDMENT PROCESS

November 20, 2013:

Letters were sent from RDN Chair Joe Stanhope to:

- Snuneymuxw First Nation Chief and Council
- Snaw'Naw'As First Nation First Nation Chief and Council
- Qualicum First Nation Chief and Council.

The letters above thanked the First Nations for their consideration of the information provided. The letters also expressed the RDN's intent to complete the LWMP Amendment process in December 2013 and requested information regarding any aspects of the LWMP amendment which may impact aboriginal rights. The letter further expressed an interest to continue working to discuss LWMP activities taking place within their traditional territory.

December 3, 2013:

Letters were sent from RDN Chair Joe Stanhope to:

- Cowichan Tribes Chief and Council
- Ditidaht First Nation Chief and Council
- Halalt First Nation Chief and Council
- Hul'qumi'num Treaty Group, Executive Director, Al Anderson
- Hupacasath First Nation Chief and Council
- K'omoks First Nation Chief and Council
- Laich-kwil-tach Treaty Society Chief Negotiator
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- We Wai Kai Nation Chief and Council
- Xwemalhkwa (Homalco) First Nation Chief and Council.

PARTICIPATION IN THE LWMP AMENDMENT PROCESS

The letters above thanked the First Nations for their consideration of the information provided. The letters also expressed the RDN's intent to complete the LWMP Amendment process in December 2013 and requested information regarding any aspects of the LWMP amendment which may impact aboriginal rights.

All letters sent to First Nations are included in Appendix A.

LETTERS FROM FIRST NATIONS

The RDN received two letters from First Nations in response to the letters above. Letters received included:

- A letter from Rob Everson, Chief Councillor, K'ómoks First Nation was received on September 12, 2013.
- A letter from Chief White III Kwulasultun, Snuneymuxw First Nation, to Joe Stanhope was received on October 24, 2013.

Letters received from First Nations are included in Appendix B.

MEETINGS

Snuneymuxw First Nation

On November 5, 2013, RDN staff met with technical staff and contract engineers from Snuneymuxw First Nation to discuss technical aspects of the Liquid Waste Management Plan.

Snaw'Naw'As First Nation

To date, there have been no meetings with the Snaw'Naw'As First Nation specifically to discuss the LWMP amendment. However, the LWMP amendment was discussed during other meetings between the RDN and Snaw'Naw'As First Nation.

Qualicum First Nation

In response to an invitation in the introductory letter, Councillor Recalma attended a tour of the FCPC on July 26, 2013.

Councillor Recalma from the Qualicum First Nation attended the LWMP Public Meeting in Bowser on August 28, 2013.

The RDN provided the Qualicum First Nation with a SepticSmart workshop to on October 19, 2013. The RDN was informed at that time that QFN Chief and Council had reviewed the LWMP at a council meeting and raised no issues.

Phone Calls and Emails

RDN staff followed up on the letters and information sent August 8, 2013 to confirm receipt of the package and to inquire into any response, feedback or desire to discuss liquid waste management planning aspects or any impacts to aboriginal rights. Records of phone and email correspondence are included in Appendix C.

DRAFT

Accommodation

To date, First Nations have not identified any LWMP-related impacts to aboriginal interests. Therefore, accommodation was not discussed during consultation and engagement activities. Still, the RDN intends to continue engaging with First Nations after the LWMP amendment is completed. If LWMP-related impacts are identified in the future, the RDN intends to address them in a respectful manner.

DRAFT

Appendices

APPENDIX A: LETTERS FROM THE RDN TO FIRST NATIONS

APPENDIX B: LETTERS FROM FIRST NATIONS TO THE RDN

APPENDIX C: RECORD OF FOLLOW-UP PHONE CONVERSATIONS AND EMAILS

DRAFT

Appendix A:

Letters from the RDN to First Nations

- NS
- SDP
- file



REGIONAL
DISTRICT
OF NANAIMO

February 15, 2008

File No.: 5345-30

Chief Viola Wyse
Snuneymuxw First Nation
668 Centre Street
Nanaimo, BC
V9R 4Z4

Dear Chief Wyse:

Re: Regional District of Nanaimo Liquid Waste Advisory Committee

The Regional District of Nanaimo is embarking on a review of our Liquid Waste Management Plan (LWMP). To assist in the review the RDN has formed the Regional Liquid Waste Advisory Committee (RLWAC).

The LWMP review will include a review of source control programs, stormwater management, sewer service area strategies, programs for on-site disposal systems, innovative treatment and re-use opportunities, and other liquid waste management issues and initiatives.

The review will also consider the LWMP in the context of Official Community Plans and the Regional Growth Strategy.

The RDN respectfully invites Snuneymuxw First Nation representation to a position on the committee. If SFN wishes to participate in the review process, please advise us by March 14, 2008 as to your appointed representative. The Committee will be meeting in April and agenda materials will be forwarded in advance to committee representatives.

Questions on the review process may be directed to me or to Sean DePol, Manager of Liquid Waste, at 390-6560.

Regards,

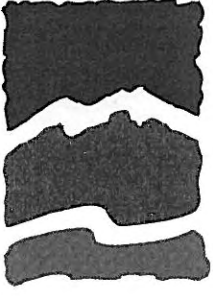
John O. Finnie, P. Eng
General Manager of Environmental Services

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

- NS
- SDP
- file



REGIONAL
DISTRICT
OF NANAIMO

February 15, 2008

File No.: 5345-30

Chief David Bob
Nanoose First Nation
209 Mallard Way
Lantzville, BC
V0R 2H0

Dear Chief Bob:

Re: Regional District of Nanaimo Liquid Waste Advisory Committee

The Regional District of Nanaimo is embarking on a review of the 1997 Liquid Waste Management Plan (LWMP). To assist in the review the RDN has formed the Regional Liquid Waste Advisory Committee (RLWAC).

The LWMP review will include a review of source control programs, stormwater management, sewer service area strategies, programs for on-site disposal systems, innovative treatment and re-use opportunities, and other liquid waste management issues and initiatives.

The review will also look at the LWMP in the context of Official Community Plans and the Regional Growth Strategy.

The RDN respectfully invites Nanoose First Nation representation on the committee. If NFN wishes to participate in the review process, please advise us by March 14, 2008 as to your appointed representative. The Committee will be meeting in April and agenda materials will be forwarded in advance to committee representatives.

Questions on the review process may be directed to me or to Sean DePol, Manager of Liquid Waste, at 390-6560.

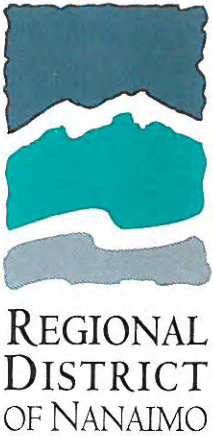
Regards,

John O. Finnie, P. Eng
General Manager of Environmental Services

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



July 9, 2013

File:

5345-01

Chief and Council
Snuneymuxw First Nation
668 Centre Street
Nanaimo, BC V9R 4Z4

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo is amending its Liquid Waste Management Plan (LWMP). We respectfully recognize that lands involved in, and affected by this plan fall within the Traditional Territory of the Snuneymuxw First Nation.

The Snuneymuxw First Nation has been a member of the RDN Liquid Waste Advisory Committee since it was formed in 2008. On behalf of the RDN Board of Directors, I thank you for your participation, and invite you, and any of your designated staff, to share information and ideas related to the LWMP, and upcoming planning for important treatment facility upgrades. I also invite you to a tour of our Greater Nanaimo Pollution Control Centre, and any of our other facilities.

Attached is some background information on the RDN Wastewater Services, our pollution control centres, and the Liquid Waste Management Plan amendment. More information about the Liquid Waste Management Plan amendment can be found at www.rdnLWMP.ca.

Our staff would be pleased to provide you with any additional information, and hear your feedback. The RDN staff contact for this project is Randy Alexander, General Manager of Regional and Community Utilities (email: ralexander@rdn.bc.ca; phone: 250-390-6543). Randy will follow up by phone with your office to answer any questions about the project.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this invitation.

Sincerely,

Joe Stanhope
Chairperson

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

cc: Paul Thorkelsson, Chief Administrative Officer
Randy Alexander, General Manager, Regional and Community Utilities

Enclosure: Wastewater Services Factsheet

WASTEWATER SERVICES FACTSHEET 1

REGIONAL DISTRICT OF NANAIMO

OVERVIEW

Wastewater Services

Wastewater management is a key service provided by the Regional District of Nanaimo (RDN). The RDN treats wastewater from approximately 113,500 people between Qualicum Beach and Duke Point. To provide this service, RDN Wastewater Services owns and operates four wastewater treatment

facilities. Two treatment facilities provide secondary treatment and two provide chemically-enhanced primary treatment.

RDN wastewater is managed

according to the Liquid Waste Management Plan, Operational Certificates, and Waste Discharge Permits. RDN Wastewater Services uses an

RDN WASTEWATER SERVICES OWNS AND OPERATES FOUR WASTEWATER TREATMENT FACILITIES. TWO FACILITIES PROVIDE SECONDARY TREATMENT AND TWO PROVIDE CHEMICALLY-ENHANCED PRIMARY TREATMENT

Environmental Management System and participates in benchmarking to continually improve service and environmental performance. RDN Wastewater Services also has

comprehensive, long term programs to manage wastewater, produce biosolids, use waste as a resource, and prevent pollution in the region.

WHY DOES THE RDN HAVE A LIQUID WASTE MANAGEMENT PLAN (LWMP)?

Laws governing wastewater management in British Columbia require us to protect public health and achieve a standard level of wastewater treatment. They also encourage us to recover resources from waste. Our LWMP authorizes the RDN to find community-driven and cost-effective solutions to achieve these goals.

A public LWMP amendment process is now underway. The result will guide our wastewater strategy into the future, which includes upgrading treatment levels.



FAST FACTS

POLLUTION CONTROL CENTRES

GREATER NANAIMO POLLUTION CONTROL CENTRE

Plant location: 4600 Hammond Bay Road, Nanaimo

Outfall Terminus: 49°14'14.0985"N; 123°56'17.7600"W

Estimated population served: 86,068

Current treatment: chemically-enhanced primary treatment



FRENCH CREEK POLLUTION CONTROL CENTRE

Plant location: 957 Lee Road, Parksville

Outfall Terminus: 49°22'8.2566"N; 124°20'47.8771"W

Estimated population served: 26,047

Current treatment: secondary treatment



NANOOSE BAY POLLUTION CONTROL CENTRE

Plant location: 3260 Schooner Cove Drive, Nanoose Bay

Outfall Terminus: 49°17'27.2202"N; 123°7'40.1987"W

Estimated population served: 1,350

Current treatment: chemically-enhanced primary treatment



DUKE POINT POLLUTION CONTROL CENTRE

Plant location: 625 Jackson Road, Nanaimo

Outfall Terminus: 49°8'41.3917"N; 123°52'10.2921"W

Number of connections: 30

Current treatment: secondary treatment with UV disinfection



For more information, contact:

Wastewater Services

Regional District of Nanaimo

6300 Hammond Bay Road

Nanaimo, BC V9T 6N2

E-mail: rcu@rdn.bc.ca

250-390-6560 (Nanaimo)

250-954-3792 (Oceanside)

1-877-607-4111 (Toll Free)

1-800-862-3429 (Emergency)

Fax: (250) 390-1542





July 9, 2013

File

5345-01

Chief and Council
Snaw-Naw-As First Nation
209 Mallard Way
Lantzville, BC V0R 2H0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo is amending its Liquid Waste Management Plan (LWMP). We respectfully recognize that lands involved in, and affected by this plan fall within the Traditional Territory of the Snaw-Naw-As First Nation.

On behalf of the RDN Board of Directors, I invite you, and any of your designated staff, to share information and ideas related to the LWMP, and upcoming planning for important treatment facility upgrades. I also invite you to a tour of our Nanoose Bay Pollution Control Centre, and any of our other facilities.

Attached is some background information on the RDN Wastewater Services, our pollution control centres, and the Liquid Waste Management Plan amendment. More information about the Liquid Waste Management Plan amendment can be found at www.rdnLWMP.ca.

Our staff would be pleased to provide you with any additional information, and hear your feedback. The RDN staff contact for this project is Randy Alexander, General Manager of Regional and Community Utilities (email: ralexander@rdn.bc.ca; phone: 250-390-6543). Randy will follow up by phone with your office to answer any questions about the project.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this invitation.

Sincerely,

Joe Stanhope
Chairperson

cc: Paul Thorkelsson, Chief Administrative Officer
Randy Alexander, General Manager, Regional and Community Utilities

Enclosure: Wastewater Services Factsheet

6300 Hammond Bay Rd.
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Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

WASTEWATER SERVICES FACTSHEET 1

REGIONAL DISTRICT OF NANAIMO

OVERVIEW

Wastewater Services

Wastewater management is a key service provided by the Regional District of Nanaimo (RDN). The RDN treats wastewater from approximately 113,500 people between Qualicum Beach and Duke Point. To provide this service, RDN Wastewater Services owns and operates four wastewater treatment

facilities. Two treatment facilities provide secondary treatment and two provide chemically-enhanced primary treatment.

RDN wastewater is managed

according to the Liquid Waste Management Plan, Operational Certificates, and Waste Discharge Permits. RDN Wastewater Services uses an

RDN WASTEWATER SERVICES OWNS AND OPERATES FOUR WASTEWATER TREATMENT FACILITIES. TWO FACILITIES PROVIDE SECONDARY TREATMENT AND TWO PROVIDE CHEMICALLY-ENHANCED PRIMARY TREATMENT

Environmental Management System and participates in benchmarking to continually improve service and environmental performance. RDN Wastewater Services also has

comprehensive, long term programs to manage wastewater, produce biosolids, use waste as a resource, and prevent pollution in the region.

WHY DOES THE RDN HAVE A LIQUID WASTE MANAGEMENT PLAN (LWMP)?

Laws governing wastewater management in British Columbia require us to protect public health and achieve a standard level of wastewater treatment. They also encourage us to recover resources from waste. Our LWMP authorizes the RDN to find community-driven and cost-effective solutions to achieve these goals.

A public LWMP amendment process is now underway. The result will guide our wastewater strategy into the future, which includes upgrading treatment levels.



FAST FACTS

POLLUTION CONTROL CENTRES

GREATER NANAIMO POLLUTION CONTROL CENTRE

Plant location: 4600 Hammond Bay Road, Nanaimo

Outfall Terminus: 49°14'14.0985"N; 123°56'17.7600"W

Estimated population served: 86,068

Current treatment: chemically-enhanced primary treatment



FRENCH CREEK POLLUTION CONTROL CENTRE

Plant location: 957 Lee Road, Parksville

Outfall Terminus: 49°22'8.2566"N; 124°20'47.8771"W

Estimated population served: 26,047

Current treatment: secondary treatment



NANOOSE BAY POLLUTION CONTROL CENTRE

Plant location: 3260 Schooner Cove Drive, Nanoose Bay

Outfall Terminus: 49°17'27.2202"N; 123°7'40.1987"W

Estimated population served: 1,350

Current treatment: chemically-enhanced primary treatment



DUKE POINT POLLUTION CONTROL CENTRE

Plant location: 625 Jackson Road, Nanaimo

Outfall Terminus: 49°8'41.3917"N; 123°52'10.2921"W

Number of connections: 30

Current treatment: secondary treatment with UV disinfection



For more information, contact:

Wastewater Services

Regional District of Nanaimo

6300 Hammond Bay Road

Nanaimo, BC V9T 6N2

E-mail: rcu@rdn.bc.ca

250-390-6560 (Nanaimo)

250-954-3792 (Oceanside)

1-877-607-4111 (Toll Free)

1-800-862-3429 (Emergency)

Fax: (250) 390-1542





REGIONAL
DISTRICT
OF NANAIMO

July 9, 2013

File:

5345-01

Chief and Council
Qualicum First Nation
5850 River Road
Qualicum Beach, BC V9K 1Z5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo is amending its Liquid Waste Management Plan (LWMP). We respectfully recognize that lands involved in, and affected by this plan fall within the Traditional Territory of the Qualicum First Nation.

On behalf of the RDN Board of Directors, I invite you, and any of your designated staff, to share information and ideas related to the LWMP, and upcoming planning for important treatment facility upgrades. I also invite you to a tour of our French Creek Pollution Control Centre, and any of our other facilities.

Attached is some background information on the RDN Wastewater Services, our pollution control centres, and the Liquid Waste Management Plan amendment. More information about the Liquid Waste Management Plan amendment can be found at www.rdnLWMP.ca.

Our staff would be pleased to provide you with any additional information, and hear your feedback. The RDN staff contact for this project is Randy Alexander, General Manager of Regional and Community Utilities (email: ralexander@rdn.bc.ca; phone: 250-390-6543). Randy will follow up by phone with your office to answer any questions about the project.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this invitation.

Sincerely,

Joe Stanhope
Chairperson

cc: Paul Thorkelsson, Chief Administrative Officer
Randy Alexander, General Manager, Regional and Community Utilities

Enclosure: Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
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WASTEWATER SERVICES FACTSHEET 1

REGIONAL DISTRICT OF NANAIMO

OVERVIEW

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WHY DOES THE RDN HAVE A LIQUID WASTE MANAGEMENT PLAN (LWMP)?

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Plant location: 625 Jackson Road, Nanaimo

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Number of connections: 30

Current treatment: secondary treatment with UV disinfection



For more information, contact:

Wastewater Services

Regional District of Nanaimo

6300 Hammond Bay Road

Nanaimo, BC V9T 6N2

E-mail: rcu@rdn.bc.ca

250-390-6560 (Nanaimo)

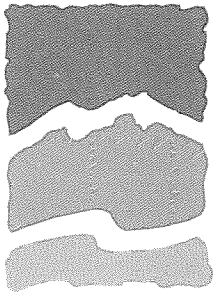
250-954-3792 (Oceanside)

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1-800-862-3429 (Emergency)

Fax: (250) 390-1542





REGIONAL
DISTRICT
OF NANAIMO

August 7, 2013

File

5345-01

Chief and Council
Cowichan Tribes
5760 Allenby Road
Duncan, BC V9L 5J1

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Cowichan Tribes.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Cowichan Tribes have sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

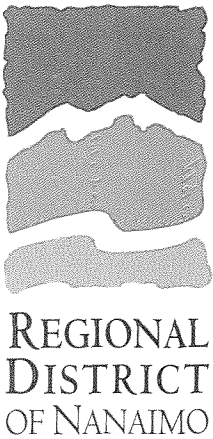
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
Ditidaht First Nation
PO Box 340
Port Alberni, BC V9Y 7M8

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Ditidaht First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Ditidaht First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

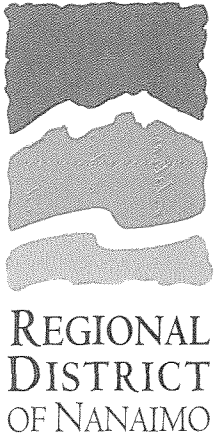
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
Halalt First Nation
7973 Chemainus Road
Chemainus, BC V0R 1K5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Halalt First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Halalt First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

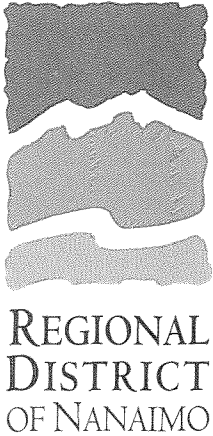
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Al Anderson
Executive Director
Hul'qumi'num Treaty Group
12611-B Trans Can Hwy RR1
Ladysmith, BC V9G 1M5

Dear Al Anderson:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Hul'qumi'num Treaty Group member bands.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Hul'qumi'num Treaty Group has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

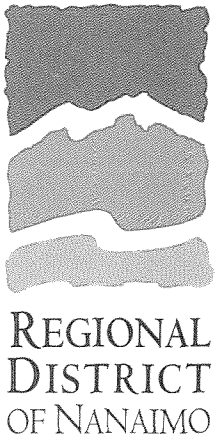
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
Hupacasath First Nation
PO Box 211
Port Alberni, BC V9Y 7M7

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Hupacasath First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Hupacasath First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

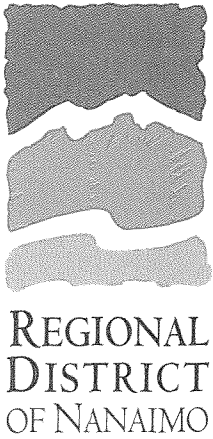
6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet



August 7, 2013

File

5345-01

Chief and Council
K'omoks First Nation
3320 Comox Road
Courtenay, BC V9N 3P8

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the K'omoks First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the K'omoks First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

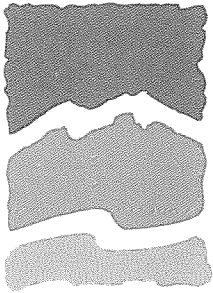
6300 Hammond Bay Rd.
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V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet



REGIONAL
DISTRICT
OF NANAIMO

August 7, 2013

File

5345-01

Chief Negotiator
Laich-kwil-tach Treaty Society
1441 Old Island Hwy
Campbell River, BC V9W 2E4

Dear Chief Negotiator:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Laich-kwil-tach Treaty Society member nations.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Laich-kwil-tach Treaty Society has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

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Sincerely,

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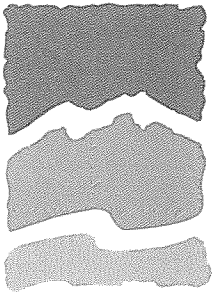
6300 Hammond Bay Rd.
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V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet



REGIONAL
DISTRICT
OF NANAIMO

August 7, 2013

File

5345-01

Chief and Council
Lake Cowichan First Nation
313B Deer Road
Lake Cowichan, BC V0R 2G0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Lake Cowichan First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

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We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

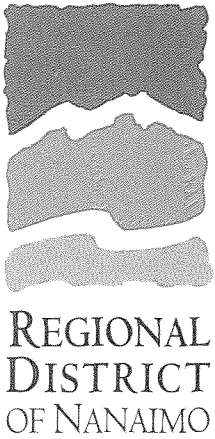
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
Lyackson First Nation
9137 Chemainus Road
Chemainus, BC V0R 1K5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Lyackson First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Lyackson First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

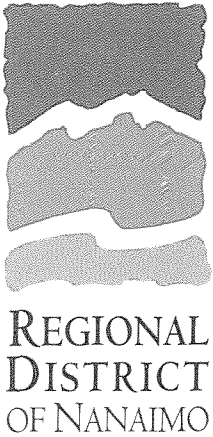
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Project Manager
Nanwakolas First Nations Referrals Office
203-2005 Eagle Drive
Campbell River, BC V9H 1V8

Dear Project Manager:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Geographic Scope of the Nanwakolas First Nations Referrals Office.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Nanwakolas First Nations Referrals Office has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

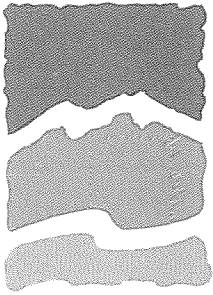
6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet



REGIONAL
DISTRICT
OF NANAIMO

August 7, 2013

File

5345-01

Chief and Council
Penelakut Tribe
PO Box 360
Chemainus, BC V0R 1K0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Penelakut Tribe.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Penelakut Tribe has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

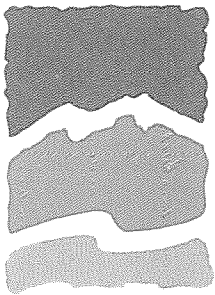
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
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RDN Website: www.rdn.bc.ca



REGIONAL
DISTRICT
OF NANAIMO

Chief and Council
Qualicum First Nation
5850 River Road
Qualicum Beach, BC V9K 1Z5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in, and affected by this plan fall within the Traditional Territory of the Qualicum First Nation.

On July 10, 2013, I sent a letter inviting the Qualicum First Nation Chief and Council to meet and share information related to wastewater management in the RDN. I understand that Councilor Michael Recalma recently attended a tour of the French Creek Pollution Control Centre. We appreciate his participation and feedback on how best to seek your input on the LWMP Amendment. At Councilor Recalma's request, three copies of the draft LWMP Amendment are enclosed. We hope to complete the amendment process this fall, and want to make sure the Qualicum First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests.

As mentioned in our earlier letter, we would be very happy to meet with you to provide information on the LWMP Amendment. As well, we would like to extend an offer for membership on our Regional Liquid Waste Advisory Committee and then, once the LWMP Amendment is approved, the Plan Monitoring Committee. The Committee meets twice a year or more frequently if necessary. More information about the LWMP Amendment and Advisory Committee can be found at www.rdnLWMP.ca.

Our staff would be pleased to provide you with any additional information and hear your feedback. The RDN staff contact for this project is Randy Alexander, General Manager of Regional and Community Utilities (email: ralexander@rdn.bc.ca; phone: 250-390-6543). Randy will follow up by phone with your office to answer any questions about the project.

We understand that you are extremely busy and that requests such as this can be challenging to meet. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

Sincerely,

Joe Stanhope
Chairperson

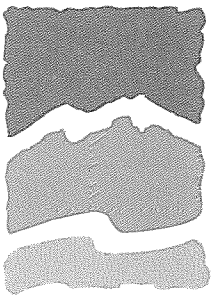
cc: Paul Thorkelsson, Chief Administrative Officer
Randy Alexander, General Manager, Regional and Community Utilities

Enclosure: Draft RDN Liquid Waste Management Plan Amendment, 3 copies

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
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RDN Website: www.rdn.bc.ca



REGIONAL
DISTRICT
OF NANAIMO

August 7, 2013

File

5345-01

Chief and Council
Semiahmoo First Nation
16049 Beach Rd
Surrey, BC V3S 9R6

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Semiahmoo First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Semiahmoo First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

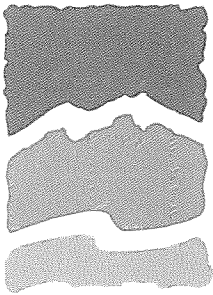
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
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RDN Website: www.rdn.bc.ca



REGIONAL
DISTRICT
OF NANAIMO

August 7, 2013

File

5345-01

Chief and Council
Sliammon First Nation
RR 2 Sliammon Road
Powell River, BC V8A 4Z3

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Sliammon First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Sliammon First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111

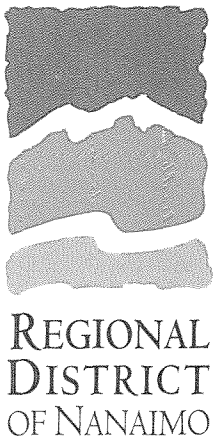
Toll Free: 1-877-607-4111

Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet



August 7, 2013

File

5345-01

Chief and Council
Snaw-Naw-As First Nation
209 Mallard Way
Lantzville, BC V0R 2H0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in, and affected by this plan fall within the Traditional Territory of the Snaw-Naw-As First Nation.

On July 10, 2013, I sent a letter inviting the Snaw-Naw-As First Nation Chief and Council to meet and share information related to wastewater management in the RDN. A draft of the LWMP Amendment is enclosed. We are hoping to complete the amendment process this fall, and we want to make sure the Snaw-Naw-As First Nation has sufficient opportunity to identify any areas where the LWMP amendment may affect your interests.

As well, we would like to extend an offer for membership on our Regional Liquid Waste Advisory Committee and then, once the LWMP Amendment is approved, the Plan Monitoring Committee. The Committee meets twice a year or more frequently if necessary. More information about the LWMP Amendment and the Advisory Committee can be found at www.rdnLWMP.ca.

Our staff would be pleased to provide you with any additional information, and hear your feedback. The RDN staff contact for this project is Randy Alexander, General Manager of Regional and Community Utilities (email: ralexander@rdn.bc.ca; phone: 250-390-6543). Randy will follow up by phone with your office to answer any questions about the project.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

Sincerely,

Joe Stanhope
Chairperson

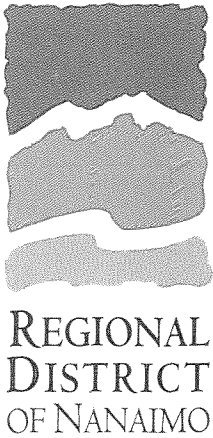
cc: Paul Thorkelsson, Chief Administrative Officer
Randy Alexander, General Manager, Regional and Community Utilities

Enclosure: Draft RDN Liquid Waste Management Plan Amendment

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
Snuneymuxw First Nation
668 Centre Street
Nanaimo, BC V9R 4Z4

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in, and affected by this plan fall within the Traditional Territory of the Snuneymuxw First Nation.

On July 10, 2013, I sent a letter inviting the Snuneymuxw First Nation Chief and Council to meet and share information related to wastewater management in the RDN. James Wesley of the Snuneymuxw First Nation has been a member of our Liquid Waste Advisory Committee since it was formed in 2008. The Advisory Committee has been the primary forum for planning the amendment, and we appreciate his participation.

A draft of the LWMP Amendment is enclosed. We hope to complete the amendment process this fall, and we want to make sure the Snuneymuxw First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests.

As mentioned in our earlier letter, we would be very happy to meet with you to provide information on the LWMP Amendment. As well, our staff would be pleased to provide you with any additional information, and hear your feedback. More information about the LWMP Amendment can also be found at www.rdnLWMP.ca. The RDN staff contact for this project is Randy Alexander, General Manager of Regional and Community Utilities (email: ralexander@rdn.bc.ca; phone: 250-390-6543). Randy will follow up by phone with your office to answer any questions about the project.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

Sincerely,

Joe Stanhope
Chairperson

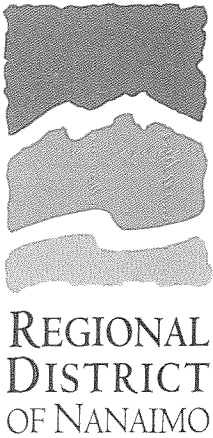
6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

cc: Paul Thorkelsson, Chief Administrative Officer
Randy Alexander, General Manager, Regional and Community Utilities

Enclosure: Draft RDN LWMP Amendment



August 7, 2013

File

5345-01

Chief and Council
Stz'uminus First Nation
12611A Trans Canada Hwy
Ladysmith, BC V9G 1M5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Stz'uminus First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Stz'uminus First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

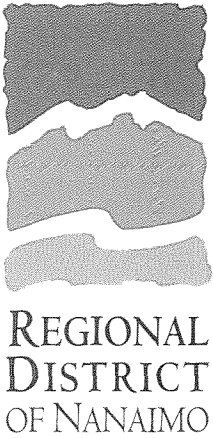
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Wilson Bob
Chief Negotiator
Te'Mexw Treaty Association
13D Cooper Road
Victoria, BC V9A 4K2

Dear Mr. Bob:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the of the Te'Mexw Treaty Association member bands.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Te'Mexw Treaty Association has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

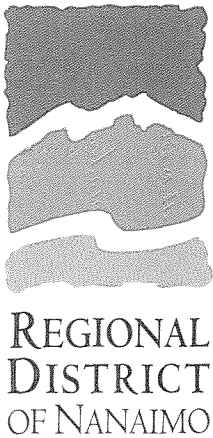
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
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Ph: (250)390-4111
Toll Free: 1-877-607-4111
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RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
Tseshaht First Nation
5091 Tsuma-as Drive
Port Alberni, BC V9Y 8X9

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Tseshaht First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Tseshaht First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

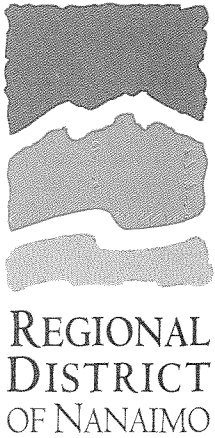
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
We Wai Kai Nation
PO BOX 220
Quathiaski Cove, BC V0P 1N0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the We Wai Kai Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the We Wai Kai Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

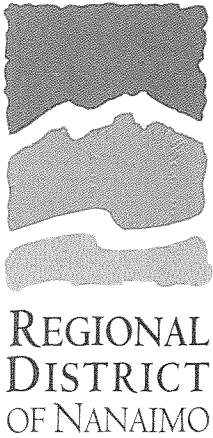
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

6300 Hammond Bay Rd.
Nanaimo, B.C.
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Ph: (250)390-4111
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Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
Wei Wai Kum First Nation
1400 Weiwaikum RD
Campbell River, BC V9W 5W8

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Wei Wai Kum First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Wei Wai Kum First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

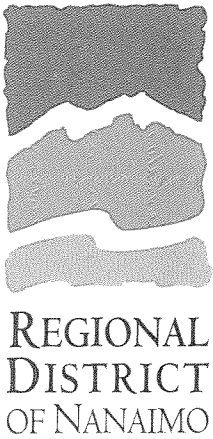
cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

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Nanaimo, B.C.
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RDN Website: www.rdn.bc.ca



August 7, 2013

File

5345-01

Chief and Council
Xwemalhkwa (Homalco) First Nation
1218 Bute Crescent
Campbell River, BC V9H 1G5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

The Regional District of Nanaimo (RDN) is amending its Liquid Waste Management Plan (LWMP), which is the provincial regulatory mechanism for discharging municipal wastewater to the environment. We respectfully recognize that lands involved in and/or affected by this plan fall within the Traditional Territory of the Xwemalhkwa (Homalco) First Nation.

A draft of the LWMP Amendment is provided on the CD enclosed, along with our Wastewater Services Factsheet. Hard copies of the Draft LWMP Amendment are available upon request. We would be very happy to meet with you to provide you with any additional information, and hear your feedback. As well, more information about the LWMP Amendment can be found at www.rdnLWMP.ca. The RDN staff contact for this project is Shelley Norum, Wastewater Program Coordinator (email: snorum@rdn.bc.ca; phone: 250-390-6575). Shelley will follow up by phone with your office to answer any questions about the project.

We want to make sure the Xwemalhkwa First Nation has sufficient opportunity to identify any areas where the LWMP Amendment may affect your interests. In support of our proposed timelines for submission of the amendment to the province, we respectfully request your feedback, regarding any areas where the amendment may affect your interests, by October 15, 2013.

We understand that you are extremely busy and that requests such as this can be challenging. Your participation and perspective are very important to us. I look forward to receiving your response to this opportunity.

Sincerely,

Joe Stanhope
Chairperson

cc: Paul Thorkelsson, Chief Administrative Officer
Shelley Norum, Wastewater Program Coordinator

Enclosure: Draft RDN LWMP Amendment (CD)
Wastewater Services Factsheet

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Nanaimo, B.C.
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REGIONAL
DISTRICT
OF NANAIMO

August 29, 2013

File

5345-01

Chief Bob
Snaw-Naw-As First Nation
209 Mallard Way
Lantzville, BC V0R 2H0

Dear Chief Bob:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

As per your request, please find attached an additional copy of the materials sent to Chief and Council by Chair Stanhope on August 8, 2013.

I have also attached a series of brief factsheets that summarize the contents of the Liquid Waste Management Plan (LWMP) Amendment.

We are in the process of holding public meetings regarding the LWMP Amendment, and would be very interested in holding one for the Snaw-Naw-As. Thank you for your consideration.

Yours truly,

Randy Alexander
General Manager
Regional & Community Utilities

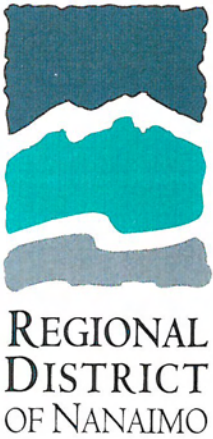
cc: Joe Stanhope, Chairperson
Paul Thorkelsson, Chief Administrative Officer, RDN

Enclosure: Copy of Letter from Chairperson Stanhope dated August 7, 2013
LWMP Factsheets 1-7, Wastewater Mini-glossary
Draft RDN Liquid Waste Management Plan Amendment

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



November 20, 2013

File

5345-01

Chief and Council
Snaw-naw-as First Nation
209 Mallard Way
Lantzville BC V0R 2H0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letters of July 9, 2013, and August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand you have been in contact with Regional District staff regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Snaw-naw-as First Nation has sufficient opportunity to identify any areas where the LWMP may affect your interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

Completion of the amendment represents an important milestone in an ongoing process of engagement related to Liquid Waste Management. In support of this effort, please tell us about any aspects of the amendment that may impact your aboriginal interests. We will continue to engage the Snaw-naw-as First Nation to provide ongoing opportunities to identify adverse impacts, as the planning and implementation moves forward in the coming months and years. We continue to be very interested in meeting with you to discuss any aspects of the current and proposed LWMP activities undertaken within your traditional territory.

We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chairperson

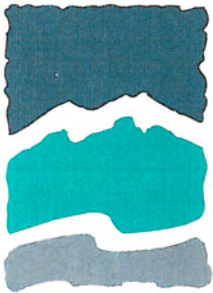
cc:

Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
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REGIONAL
DISTRICT
OF NANAIMO

November 20, 2013

File

5345-01

Chief and Council
Qualicum First Nation
5850 River Road
Qualicum Beach, BC V9K 1Z5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letters of July 9, 2013, and August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand you have been in contact with Regional District staff regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Qualicum First Nation has sufficient opportunity to identify any areas where the LWMP may affect your interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

Completion of the amendment represents an important milestone in an ongoing process of engagement related to Liquid Waste Management. In support of this effort, please tell us about any aspects of the amendment that may impact your aboriginal interests. We will continue to engage the Qualicum First Nation to provide ongoing opportunities to identify adverse impacts, as the planning and implementation moves forward in the coming months and years. We continue to be very interested in meeting with you to discuss any aspects of the current and proposed LWMP activities undertaken within your traditional territory.

We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

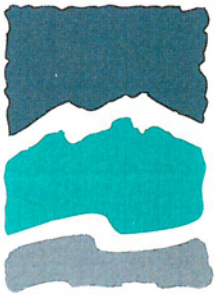
Joe Stanhope
Chairperson

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
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REGIONAL
DISTRICT
OF NANAIMO

November 20, 2013

File

5345-01

Chief and Council
Snuneymuxw First Nation
668 Centre Street
Nanaimo BC V9R 4Z4

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

Thank you very much for Chief White's letter of October 24, 2013 regarding the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). We appreciate the opportunity for our staff to meet with your technical staff and Engineers on November 5, 2013 to review the technical details of the LWMP Amendment.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Snuneymuxw First Nation has sufficient opportunity to identify any areas where the LWMP may affect your interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

Completion of the amendment also represents an important milestone in an ongoing process of engagement with Snuneymuxw First Nation related to Liquid Waste Management. In support of this effort, please tell us about any aspects of the amendment that may impact your aboriginal interests. We will continue to engage the Snuneymuxw First Nation to provide ongoing opportunities to identify adverse impacts, as the planning and implementation moves forward in the coming months and years. We continue to be very interested in meeting with you to discuss any aspects of the current and proposed LWMP activities undertaken within your traditional territory.

We share the desire expressed in Chief White's letter for respectful and meaningful engagement between our Governments and staff. Further to your suggestion, our Board would appreciate the opportunity to have a dialogue about the Treaty of 1854 and constitutionally protected treaty rights.

Sincerely,

Joe Stanhope
Chairperson

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

Ph: (250)390-4111
Toll Free: 1-877-607-4111
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RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Ditidaht First Nation
PO Box 340
Port Alberni BC V9Y 7M8

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Ditidaht First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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December 3, 2013

File

5345-01

Chief and Council
Halalt First Nation
7973 Chemainus Road
Chemainus, BC V0R 1K5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Halalt First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

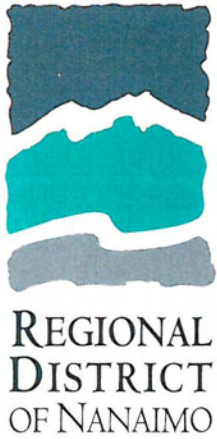
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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December 3, 2013

File

5345-01

Al Anderson
Executive Director
Hul'qumi'num Treaty Group
12611-B Trans Can Hwy RR1
Ladysmith BC V9G 1M5

Dear Mr. Anderson:

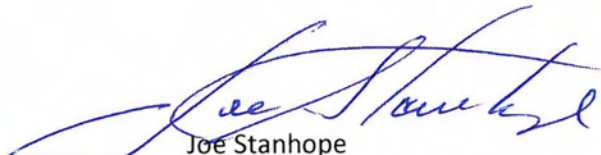
Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that member bands of the Hul'qumi'num Treaty Group has sufficient opportunity to identify any areas where the LWMP may affect their aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within the traditional territories of your member bands. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,



Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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December 3, 2013

File

5345-01

Chief and Council
Hupacasath First Nation
PO Box 211
Port Alberni BC V9Y 7M7

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Hupacasath First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

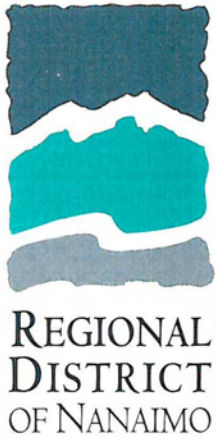
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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December 3, 2013

File

5345-01

Chief and Council
K'omoks First Nation
3320 Comox Road
Courtenay, BC V9N 3P8

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). Thank you very much for Rob Everson's letter of September 12, 2013. I acknowledge the importance of cultural and archaeological sites and of the protection of Baynes Sound both as a traditional use site and as a source of fishing and aquaculture activities for the K'omoks First Nation.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from the K'omoks First Nation regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
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RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief Negotiator
Laich-kwil-tach Treaty Society
1441 Old Island Hwy
Campbell River BC V9W 2E4

Dear Chief Negotiator:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Laich-kwil-tach Treaty Society has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
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RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Lake Cowichan First Nation
313B Deer Road
Lake Cowichan BC V0R 2G0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Lake Cowichan First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Lyackson First Nation
9137 Chemainus Road
Chemainus BC V0R 1K5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Lyackson First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

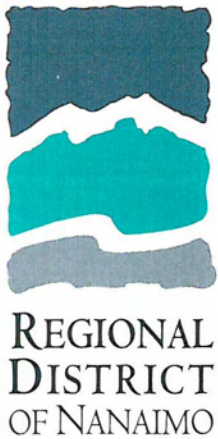
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
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December 3, 2013

File

5345-01

Project Manager
Nanwakolas First Nations Referrals Office
203-2005 Eagle Drive
Campbell River BC V9H 1V8

Dear Project Manager:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Nanwakolas First Nations Referrals Office has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

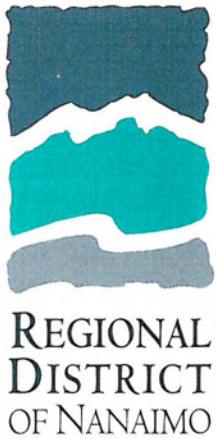
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
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RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Penelakut Tribe
PO Box 360
Chemainus BC V0R 1K0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Penelakut Tribe has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Semiahmoo First Nation
16049 Beach Rd
Surrey BC V3S 9R6

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Semiahmoo First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Sliammon First Nation
RR 2 Sliammon Road
Powell River BC V8A 4Z3

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Sliammon First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

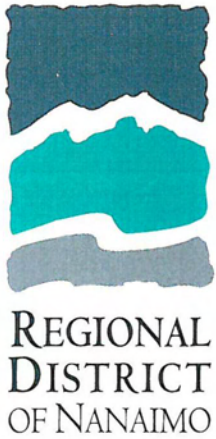
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

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Nanaimo, B.C.
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RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Stz'uminus First Nation
12611A Trans Canada Hwy
Ladysmith BC V9G 1M5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Stz'uminus First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Wilson Bob
Chief Negotiator
Te'Mexw Treaty Association
13D Cooper Road
Victoria BC V9A 4K2

Dear Mr. Bob:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Te'Mexw Treaty Association has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

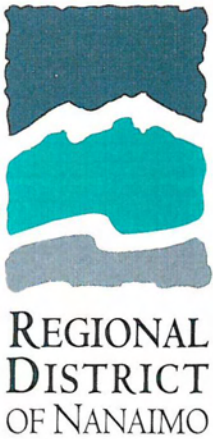
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
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RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Tseshaht First Nation
5091 Tsuma-as Drive
Port Alberni BC V9Y 8X9

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Tseshaht First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Wei Wai Kum First Nation
1400 Weiwaikum RD
Campbell River BC V9W 5W8

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Wei Wai Kum First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

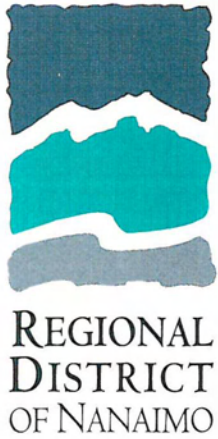
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
We Wai Kai Nation
PO BOX 220
Quathiaski Cove BC V0P 1N0

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the We Wai Kai Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

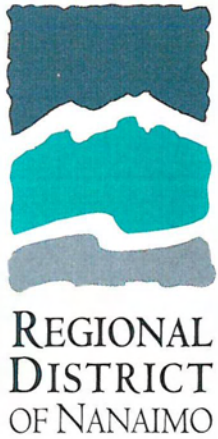
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Xwemalhkwa (Homalco) First Nation
1218 Bute Crescent
Campbell River BC V9H 1G5

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Xwemalhkwa (Homalco) First Nation has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

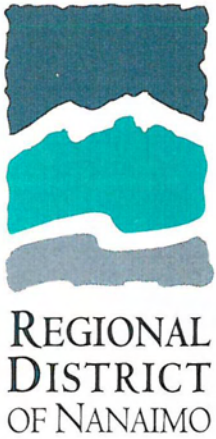
Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Fax: (250)390-4163

RDN Website: www.rdn.bc.ca



December 3, 2013

File

5345-01

Chief and Council
Cowichan Tribes
5760 Allenby Road
Duncan BC V9L 5J1

Dear Chief and Council:

Re: Regional District of Nanaimo Liquid Waste Management Plan Amendment

I write in follow-up to my letter of August 7, 2013 regarding the amendment underway to the Regional District of Nanaimo's (RDN) Liquid Waste Management Plan (LWMP). I understand our staff has contacted you regarding the amendment, and I would like to thank you for your consideration of the information we have provided.

As I stated in my letter of August 7, 2013, we are hoping to complete the current LWMP amendment this fall, and want to make sure that the Cowichan Tribes has sufficient opportunity to identify any areas where the LWMP may affect your aboriginal interests. We are currently proposing to complete the amendment by the end of December. Submission of the amendment to the province, and subsequent Minister's approval, will allow us to move forward with treatment upgrades that will improve effluent quality, and reduce potential impacts related to the discharge.

We continue to be very interested in hearing from you regarding any aspects of the current and proposed LWMP activities undertaken within your traditional territory. We understand that you are extremely busy, and requests such as this can be challenging. Your participation and perspective are very important to us.

Sincerely,

Joe Stanhope
Chair, Regional District of Nanaimo

cc: Paul Thorkelsson, Chief Administrative Officer, RDN
Randy Alexander, General Manager, Regional & Community Utilities, RDN

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

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Toll Free: 1-877-607-4111
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RDN Website: www.rdn.bc.ca

Appendix B:

Letters from First Nations to the RDN



K'ómoks First Nation

3320 Comox Road, Courtenay BC V9N 3P8 Tel: (250) 339-4545 Fax: (250) 339-7053

September 12, 2013

Chairperson Joe Stanhope
Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo BC V9T 6N2

RDN CAO'S OFFICE			
CAO	<input checked="" type="checkbox"/>	GM R&P	
GMS&CD	<input checked="" type="checkbox"/>	GM T&SW	
GM R&CU	<input checked="" type="checkbox"/>	DF	
SEP 24 2013			
DCS		BOARD	
CHAIR	<input checked="" type="checkbox"/>		

Dear Chairperson Stanhope,

Re: RDN Liquid Waste Management Plan Amendment

Thank you for your recent letter and attached disk regarding the Regional District of Nanaimo's proposed amendments to the Liquid Waste Management Plan.

We have reviewed the materials and at this time have no specific comment. The amendments as proposed do not appear to have material impacts for our Nation over the short term. In general, our concerns relate to the protection of lands and water within our Traditional Territory from any form of contamination. Additionally, we require the careful protection of Baynes Sound both as a traditional use site and to protect our ongoing fishing and aquaculture activities. We do not foresee a need to meet on this application.

Should your agency proceed with the proposed amendments, K'ómoks First Nation reserves the right to raise objections to this application if any cultural use or archaeological sites are identified or if we discover impacts on our rights or interests we have not foreseen with respect to any works conducted or authorized by the Regional District of Nanaimo.

By this letter we provide notification that no bylaw, policy, or regulation can impact the Rights and Title of K'ómoks First Nation. K'ómoks First Nation has fished, hunted, and harvested in the lands adjacent to watercourses and the sea in our Traditional Territory since time immemorial and fully intends to continue with these activities on lands under our jurisdiction. Our membership has recently signed an Agreement in Principle relating to the Treaty Process, and as such K'ómoks First Nation has moved to a higher level and spectrum of consultation and accommodation with regards to matters relating to lands and waters in our Traditional Territory. Our interests cannot be in any way hampered or limited.

The Supreme Court of Canada made it clear that governments owe a fiduciary duty of utmost good faith to consult with the First Nations with respect to our lands and resources. This consultation must at minimum have the intention of substantially addressing the concerns of the First Nation whose lands are at issue. The courts have also confirmed that government are obliged to make an initial assessment of our rights and must not only engage in meaningful consultation but also must seek an accommodation of our cultural and economic interests.

Thank you for your continued efforts to communicate with K'ómoks First Nation.

Sincerely,

Rob Everson
Chief Councillor



Snuneymuxw First Nation

668 Centre Street
Nanaimo, BC, V9R 4Z4

Telephone: 250/740-2300
Fax: 250/753-3492

October 24, 2013

Joe Stanhope, Chairperson
Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC V9T 6N2

Dear Joe,

Re: RDN Liquid Waste Management Plan amendment

I write in response to your letter of August 7, 2013 and communication from the RDN staff regarding the RDN's Liquid Waste Management Plan ("LWMP").

Thank you for providing the materials that you forwarded to our office. We have not had the expertise or time to fully review and comment on the technical details of the amendment.

However we do note there are aspects that relate to water and aquatic resources. The discharge of waste water into the environment will impact Snuneymuxw resources and the marine environment. As you may be aware, the Treaty of 1854 provides significant recognition and protection of Snuneymuxw constitutionally protected treaty rights related to water and fisheries. As such, going forward we need to have a real dialogue about the Treaty of 1854 and these resources in relation to the LWMP and more generally. I look forward to respectful and meaningful engagement between our governments and staff on this and other serious issues.

Yours truly,

A handwritten signature in blue ink, appearing to read "Douglas White III". The signature is fluid and cursive, with a small dot at the end.

Douglas White III Kwulasultun

cc: Paul Thorkelsson, Chief Administrative Officer
Randy Alexander, General Manager, Regional and Community Utilities

Norum, Shelley

From: Aaron Hamilton <aaron.hamilton@lakecowichanfn.com>
Sent: Thursday, November 28, 2013 10:09 AM
To: Norum, Shelley
Subject: RE: Regional District of Nanaimo Liquid Waste Management Plan Amendment

Good Morning Shelley,

I have reviewed the LWMP briefly and currently do not see any impacts to our traditional territory (which is the Cowichan Lake watershed).

Thank you,

Aaron

From: Norum, Shelley [<mailto:SNorum@rdn.bc.ca>]
Sent: November-07-13 10:25 AM
To: aaron.hamilton@lakecowichanfn.com
Subject: FW: Regional District of Nanaimo Liquid Waste Management Plan Amendment

Good Morning Aaron,

I am following up on my email from last month (below) in regards to our Liquid Waste Management Plan Amendment package. Again, I would be very happy to speak with the Lake Cowichan First Nation on any issues or questions regarding our LWMP.

Sincerely,

Shelley

From: Norum, Shelley
Sent: Tuesday, October 08, 2013 11:03 AM
To: 'aaron.hamilton@lakecowichanfn.com'
Subject: Regional District of Nanaimo Liquid Waste Management Plan Amendment

Aaron,

I am following up on our Liquid Waste Management Plan Amendment package which was couriered to Chief and Council on August 8, 2013. I understand that you are reviewing the file and I was wondering if you had any questions or comments. If you do, I would be happy to speak with further. As well, the RDN would be happy to meet with your further to discuss any interests and concerns you may have.

Thank you for reviewing our file and have a great day!

Shelley Norum, RPBio
Wastewater Program Coordinator
Regional District of Nanaimo
6300 Hammond Bay Road, Nanaimo, BC V9T 6N2
P: 250.390.6575 | F: 250.390.1542

Appendix C:

Record of Follow-up Phone Conversations and Emails

Appendix C: Record of follow-up phone conversations and emails to First Nations

Community	Conversation
Cowichan Tribes	Spoke with Helen on September 16, 2013. She said that our project would be low on their priority (not urgent) and that they would defer something like this to the Snuneymuxw First Nation, as they are cautious about overlapping territories.
Ditidaht First Nation	<p>Spoke with Band office on September 16, 2013 and was referred to Terry Edgar. Recommended calling his office (Public Works). Called and left a phone message with reason for calling and contact info.</p> <p>Called Terry Edgar and left a message on Tuesday, October 1, 2013.</p> <p>Terry Edgar returned my call on October 8, 2013. They received our package. He and a few others have reviewed the package. They are geographically removed from our project so they have no concern and no comment.</p>
Halalt First Nation	<p>Called the Band office on September 16, 2013. They confirmed that they received our courier package on August 8th. The person assigned to the file is working from home today so left contact information and requested a return call.</p> <p>Called band office on October 1, 2013. Received instructions to call Caroline, the Band Manager back next Monday as she is away in a workshop all week.</p> <p>Left a message on October 9th, requesting a return call.</p> <p>Called and spoke to Caroline on October 29, 2013. She mentioned that they generally respond to packages such as ours so we should be receiving a letter if anything comes up.</p>
Hul'qumi'num Treaty Group	Called the office on September 16, 2013. Was informed that the Hul'qumi'num Treaty Group receives the information for reference and to support the member bands but are not authorized to make any comments. The individual bands have authorization to comment.
Hupacasath First Nation	<p>Called on September 16, 2013. Was informed that the council is away right now. Left a message on the Chief's voicemail with the reason for calling and a request for a return call.</p> <p>Called office on October 1, 2013 and was put through to Murray, the Housing Manager. He has not received a package as I described but will follow up with Rick, the CEO, to try and track it down. Murray took my phone number to get back to me.</p> <p>Left a message on October 8, 2013 following up on our previous conversation. Mentioned that we are happy to send another package, or I can direct him to where the information can be downloaded online. I requested a return call.</p> <p>Murray called back on October 8th. He has looked for the package and has spoken with Rick and he doesn't remember seeing anything so I walked Murray through how to download all of our info, including the Factsheets, off our internet site. He was able to find everything. I sent a copy of the cover letter to Murray's email on October 8, 2013. Followed up with Murray on October 29th. He said that he filled out the survey and passed the LWMP along to Rick, the CEO, and recommended following up with him. He spoke a bit about wastewater and their needs. Their main village is right downtown Port Alberni so all of their services are municipal services. But all the building lots are developed so there can be no more new lots on the main reserve. Any new development must be on the Klehkoot IR near Sproat Lake and the soils there are not suitable for septic systems so something else would need to be done</p>

	<p>there. They are interested in learning about what is being done elsewhere and would like to see a copy of the final LWMP Amendment. A copy of the final LWMP can be sent to Chief and Council.</p> <p>Called and left a message with Rick Houston on October 29, 2013.</p> <p>Called and spoke to Rick on November 7, 2013. He mentioned that he received my phone message but hadn't seen our file yet. I walked him through our website and directed him to the online documents and he was able to find him. I confirmed with him that we were requesting that they review the document and provide us with their comments. I followed up with an email to Rick on November 7, 2013 including the original cover letter which was sent on August 8, 2013.</p>
K'omoks First Nation	<p>Called the office on September 16, 2013. Receptionist confirmed that the file was received but no one is available to comment. I left my contact name and phone number for them to follow up. Received a letter to Chairperson Joe Stanhope from K'omoks First Nation on September 24, 2013 (see Appendix B).</p>
Laich-kwil-tach Treaty Society	<p>Called the office on September 16, 2013. Receptionist took my name and number and will check with the Chief Negotiator to see if the package was received and if there is any follow-up.</p> <p>Rod MacNackam returned my call on September 18, 2013. They received our CD and have no concerns as most of the plan is outside of their territory.</p>
Lake Cowichan First Nation	<p>Called on September 16, 2013 and received no answer. Left a message with my reason for calling and my contact information.</p> <p>Called back on October 1st. Left a detailed message with my phone number requesting a call back.</p> <p>Called on October 8th and spoke to the receptionist. Our CD package was received and it has gone to the Operations Manager, Aaron Hamilton. He is travelling, back on October 21st but I may send him an email.</p> <p>An email was sent on October 8th.</p> <p>Left a voice message for Aaron on October 29, 2013.</p> <p>Sent another email to Aaron on November 7, 2013.</p> <p>Received email from Aaron on November 28, 2013 "I have reviewed the LWMP briefly and currently do not see any impacts to our traditional territory (which is the Cowichan Lake watershed)." Email is attached below.</p>
Lyackson First Nation	<p>Called on September 16, 2013 and spoke to Curtis. He will look into the file and get back to me today. Curtis from Lyackson returned my call. He couldn't find anything from us on file but forwarded my message to Kathleen Johnnie who should follow up with me today.</p> <p>Phoned again on September 23rd and spoke to Kathleen. She asked for another copy of our package to be sent to via email. This email was sent on September 23, 2013. Curtis confirmed receipt and that he will download and forward the information to Kathleen today.</p> <p>Sent a followup email on October 8th. Received no response of interest.</p>
Nanwakolas First Nations Referrals Office	<p>Left a message for Art Wilson on September 16, 2013. Included my reason for calling and contact information.</p> <p>Called back and spoke with Art Wilson on October 1st. He confirmed that they</p>

	<p>received the package. No further information from us is required. It would have been forwarded to the member bands and he has not heard back, though he would only hear back regarding the "problem files". He stated that we should be receiving a letter from the member nations and that he will follow up with each one today to make sure the process is going smoothly.</p>
Penelakut Tribe	<p>Called on September 16, 2013 and spoke to receptionist. They have received our package. Receptionist has not heard of anything which has come up because of our plan but I left my name and number so someone can contact me in case anything comes up.</p>
Qualicum First Nation	<p>On July 31, 2013 an email was sent to Councillor Michael Recalma, thanking him for joining staff for a tour of the French Creek Pollution Control Centre and for discussion how best to obtain input from the Qualicum First Nation regarding the LWMP amendment.</p>
Semiahmoo First Nation	<p>Left a message on September 16, 2013.</p> <p>Left another detailed message requesting a response, on October 1, 2013.</p> <p>Called and left another message requesting a call back on Thursday, November 7th, 2013.</p> <p>Sent email to mail@semiahmoofirstnation.org on November 14, 2013.</p> <p>Called on November 20, 2013. Spoke with the receptionist who confirmed that our package was received and that there was no comment or questions, otherwise we would have been contacted by now.</p>
Sliammon First Nation	<p>Called on September 16, 2013. Someone at the office will look into whether they received a package and get back to me, including whether there is a response.</p> <p>Spoke with Rod Allen on October 1st. He does not recall seeing the package, but will look into it and get back to me. I left my phone number for followup.</p> <p>Rod Allen called back on October 1st. He confirmed receipt of our package and has forwarded the information on to Chief and Council. They will discuss our package at the council meeting on October 10th and Rod will get back to me on October 11th if there is any comment.</p> <p>Called and left a message on November 7, 2013, requesting Rod return my call. Followed up with an email to rod.allan@sliammon.bc.ca on November 7, 2013.</p>
Snaw'Naw'As First Nation	<p>RDN staff spoke with Chief David Bob of Nanoose First Nation on June 22, 2013, regarding our interest in discussing the LWMP amendment. Chief Bob offered to set up a visit to their Wastewater Treatment facility.</p> <p>Followed up with Chief Bob by phone on July 12, 2013 and email on July 15, 2013.</p> <p>RDN staff sent a follow up email to Chief Bob on July 31, 2013.</p> <p>Received email response from Chief Bob on August 23, with intent to review the info package.</p> <p>Randy followed up on August 23, 2013 with offer to meet.</p> <p>Received email from Chief Bob on August 23, 2013 requesting an additional copy of the LWMP information package.</p> <p>A second LWMP information package was hand delivered to the Nanoose Band Office on August 29, 2013.</p>

	<p>RDN staff sent Chief Bob an email on October 23, 2013 to inquire into progress on consideration of the LWMP amendment package with offers to discuss the plan.</p> <p>RDN staff spoke with Chief Bob regarding the LWMP amendment on November 5, 2013. RDN was informed that the wastewater and water treatment operator was directed to review the LWMP information package.</p>
Snuneymuxw First Nation	<p>RDN staff spoke with Sandra Atkinson (SFN receptionist) on September 16, 2013. She checked and confirmed that the package was received and distributed. She will send out another email with my message and follow-up contact information. She followed up with Paul Silvie who mentioned that he has been trying to contact our CAO to meet and discuss a number of issues. RDN CAO, has since been in contact with Paul Silvey.</p> <p>On July 31, 2013, Randy Alexander (RDN) sent emails to James Wesley and Paul Silvey (SFN) discussing the LWMP and asking how to best obtain further input from the Snuneymuxw First Nation.</p> <p>On October 10, 2013 Paul Silvey (SFN) and Paul Thorkelsson (RDN) discussed the LWMP Amendment in a phone conversation. Paul mentioned that they may be able to respond with a letter, but not until after October 15th. Paul Thorkelsson assured Paul Silvey that that timeline would be fine.</p> <p>On October 21, 2013, email correspondence between Paul Thorkelsson and Paul Silvey confirmed that the October 15th response date requested by the RDN was chosen to encourage a timely response but it does not eliminate or limit input.</p> <p>Doug Muir left a message for Randy Alexander on October 28, 2013. Randy called back on October 29, 2013 to make arrangements to meet the next week, pending a schedule that works for all.</p>
Stz'uminus First Nation	<p>Called on September 16, 2013 and was directed to the Referrals office, who would deal with this. Called the Referrals office on September 16, 2013. They believe they received the plan but have to check and get back to me as to whether they have a response.</p> <p>Lindsay got back to me on September 17, 2013 and requested another copy and said that a downloaded copy off our website would be fine. I walked her through how to download it on our internet site. I sent her another copy of our cover letter by email on September 17, 2013.</p> <p>Called the referrals office on October 8, 2013 and spoke with Lindsay. She said it was a while ago that she reviewed the files and she doesn't think that she had any questions or comments but will look again later this week and get back to me if there are any.</p>
Te'Mexw Treaty Association	<p>Spoke with Stacy, office assistant, on September 16, 2013. They were closed for the month of August, so probably would not have received anything. Requested directions to our online version for downloading be sent by email. Email with copy of the original letter and directions to our website was sent on September 17, 2013.</p> <p>Called back on October 8, 2013 and spoke with Stacy. She was able to download the files and she sent them on to their advisor that day. She mentioned that their advisor would have reviewed the files and would have called me back if there were any issues.</p>
Tseshah First Nation	<p>Called on September 16, 2013. Receptionist believes that they have received the package and that it would have been forwarded, and is awaiting review. However,</p>

	<p>the person in charge of review is out of the office until September 23 and has probably not reviewed the package yet. For the future, I may call Christine directly. Left a message for Christine Hintz, Executive Assistant who handles all packages sent to Chief and Council.</p> <p>Called Christine on October 1, 2013. Christine mentioned that there have been a number of losses in the community and the Band has been at a standstill for past month, so the package has likely not been reviewed. She took my phone number down and will follow up, perhaps with the Fisheries Officer to see if there may be in interest there.</p> <p>Called Christine back on November 7, 2013 and she put me through to Andy Olsen, Fisheries Manager. I left a message with Andy requesting a return call. Left another message on Andy Olsen's voicemail requesting a return call on November 20, 2013.</p>
Wei Wai Kum First Nation	<p>Called on September 16, 2013 and left a message for Band Manager Ken Cooper. Requested a confirmation that the package was received and inquired about feedback or any interests to meet to discuss the plan.</p> <p>He returned my call on September 24th. He didn't recall seeing a package, but if he received one, he would have forwarded it to the Public Works Administrator, who is away sick right now. I can call back and speak with Jason Price, Land, Housing and Public Works Administrator. Ken mentioned that they have a service agreement with the City of Campbell River for the treatment of wastewater.</p> <p>Left a detailed message for Jason Price on October 1st, with a request to call me back.</p> <p>Left another message on October 8th.</p> <p>Called back on November 7th and spoke to Jason Price. He received the package and has no issues with it.</p>
We Wai Kai Nation	<p>Called the Band office on September 16, 2013 and was forwarded to Brian Kelly, Band Administrator. Brian received the file and doesn't think there is any comment but he has to check with the Lands Manager. He will get back to me if there is any comment.</p>
Xwemalhkwa (Homalco) First Nation	<p>Called on September 16, 2013 and left a message with Allison Turnholme, who is away for the rest of the day.</p> <p>Allison called back on Thursday, September 19, 2013 and left a message saying that Marianne, Treaty Coordinator is responsible for all referrals and she would have received our package.</p> <p>I left a message for Marianne on September 23, 2013.</p> <p>Marianne returned my call on September 24, 2013. Said she didn't see anything on her desk but will check her mail this morning. If there is something there, she will review it this afternoon and get back to me with any response. I gave her directions to the online material in case she did not find the package.</p>

Schedule C



LIQUID WASTE MANAGEMENT PLAN AMENDMENT

DRAFT JANUARY 2014
FILE NO: 5340-20



www.rdnLWMP.ca | rcu@rdn.bc.ca

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A PLAN TO SUPPORT **SUSTAINABLE
WASTEWATER MANAGEMENT** IN THE
REGIONAL DISTRICT OF NANAIMO

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EXECUTIVE SUMMARY

OUR REGION

We recognize that we must work together with our community members and neighbours to build a resilient future.

The Regional District of Nanaimo (RDN) provides regional governance and services to Vancouver Island's central east coast. The RDN is British Columbia's third most populous Regional District, and home to more than 140,000 people. We are situated within the traditional territory of several First Nations, including three that have villages and other lands under their jurisdiction: Snuneymuxw, Snaw-naw-as, and Qualicum First Nations. We are a diverse region made up of a mosaic of distinct communities that also include the municipalities of Nanaimo, Lantzville, Parksville, and Qualicum Beach, as well as seven unincorporated Electoral Areas.

We live in a beautiful region and we will work to keep it that way.

The RDN lies within the Georgia Strait-Puget Sound Basin – one of the most ecologically diverse bioregions in the world. This includes a variety of interconnected habitats – ranging from marine, coastal, rivers, streams, lakes, wetlands, and estuaries, to fertile forests and mountainous sub-alpine ecosystems – that support an abundance of terrestrial, aquatic and marine life.

Respect for the environment underlies our decisions.

The RDN is recognized for its leadership among Canadian local governments in sustainable community development, improving services and quality of life for residents, while reducing the local environmental footprint and dependence on limited resources. The mission of the RDN Board is to deliver services in a manner that enhances the environmental, social, and economic well-being of the residents and communities in the region. Our vision is an environmentally, socially, and economically healthy region; resilient and adaptable to change. We will meet current residents' needs without compromising our ability to do the same for future residents. Our Liquid Waste Management Plan (LWMP) is an integral component of our strategy to achieve that mission and vision.

OUR PLAN

The RDN's original LWMP was completed in 1997 and approved by the Minister of Environment, Lands and Parks in 1999.

This amendment was developed through a 5-year collaborative process, and charts our path for the next 20 years and beyond. It is our commitment to manage our liquid resources in a manner that meets the goals and needs of our residents and environment, now and into the future.

OUR GUIDING PRINCIPLES

To achieve the vision and mission set by the RDN Board, the amended LWMP was crafted using three Guiding Principles: *flexibility*, *sustainability* and *collaboration*. Flexibility is necessary to meet future

demands, new environmental criteria and evolving technologies. Sustainability represents affordable solutions for wastewater management that respect and protect the environment and public health. Our goal is to manage wastewater and rainwater as resources, not wastes. Collaboration with other levels of government including First Nations, government agencies, municipalities, businesses, the public, and other stakeholders will guide the development and implementation of our wastewater management strategies.

OUR REGIONAL PRIORITIES

Protect Human Health and the Environment

We will manage our liquid waste and rainwater resources in a manner that protects human health and the environment, and future generations' access to those resources.

Secondary Upgrades

Currently, Greater Nanaimo Pollution Control Centre (GNPCC) and Nanoose Bay Pollution Control Centre (NBPCC) provide chemically-enhanced primary treatment and must be upgraded in the upcoming years. Federal and provincial laws governing wastewater management require us to achieve a standard of effluent quality that can be achieved through secondary wastewater treatment or better.

Prepare for Growth

GNPCC and French Creek Pollution Control Centre (FCPCC) are reaching their capacity and must be expanded to accommodate growth in the service areas. Preparing for growth, both through development cost charge (DCC) collection and capital projects, is a priority.

Integrated Resource Management

We will take an integrated resource recovery (IRR) approach to liquid waste planning. Our decisions will consider potential energy generation, water conservation and reuse, nutrient recovery, greenhouse gas and odour emissions.

We recognize that water is a shared and interconnected resource and our waste management decisions affect our neighbours and the water resources we all rely upon. The RDN commits to managing our water resources in an integrated manner.

Efficient Services and Asset Management

The RDN is committed to delivering affordable and efficient services to its residents while responsibly managing wastewater infrastructure. We will perform preventative and corrective maintenance, and replace infrastructure when necessary to optimize life expectancy and system performance. To maximize efficiency, the RDN will consider lifecycle costs, resource consumption, ease of operation, adaptability, and worker safety. Capital assets will be designed and managed for the long term.

Meaningful Engagement and Consultation

Meaningful public consultation is essential to the development of an LWMP and the RDN is committed to providing a range of opportunities for the RDN public to be informed and participate directly in the LWMP amendment process.

OUR 10 LWMP PROGRAMS

Ten programs make up the core of the amended LWMP and provide the tools to achieve our goals:

1. Public Wastewater Systems

Objectives: To increase access to sewer services and reduce the risk to human health and the environment from failing onsite systems.

Key Accomplishments: The RDN works with property owners to establish sewer service in areas where failure of septic systems is identified. Since 2000, the RDN has undertaken sewer servicing feasibility studies in several communities, and undertaken a study identifying village centres with potential for investment in wastewater infrastructure.

Key Commitments: The RDN will establish long term strategies to achieve wastewater servicing in growth containment areas, and for properties with failing onsite systems. Specific work includes: sewer servicing engineering studies for Bowser and Cedar villages; and developing a draft bylaw to allow properties with failing onsite systems to connect to sewer services.

2. Private Onsite Systems

Objective: To protect human health and the environment from failing onsite systems through education and awareness.

Key Accomplishments: The RDN developed a comprehensive and innovative SepticSmart education program delivered on an ongoing basis through workshops, and online. This program has been recognized across BC, and forms the basis of similar programs in other jurisdictions. We have recently enhanced the source control component of the program.

Key Commitments: The RDN will continue to update and improve the successful SepticSmart program. We will work with Vancouver Island Health Authority to develop targeted communications for areas at high risk for groundwater contamination, and to limit holding tanks in new developments.

3. Source Control

Objective: To reduce wastewater contaminants at the source.

Key Accomplishments: The RDN has established a comprehensive bylaw restricting the discharge of waste into our sewers. This bylaw provides an effective regulatory foundation for our source control efforts. Specific SewerSmart education programs have been implemented, targeting, dental sector, restaurant sector, households, and garburator use.

Key Commitments: The RDN will continue to enhance the outreach and public education programs. Outreach will target residents, businesses and medical facilities to address pharmaceuticals, personal care products, organics, fat, oil, grease and inflow and infiltration

(I&I). We will work with member municipalities to establish source control bylaw(s). We will also work with municipalities, harbour authorities and marinas to develop programs to discourage marine dumping. We will partner with community groups and agencies to promote source control. During the consultation process, participants identified several new opportunities for partnership on source control initiatives.

4. Odour Control

Objective: To reduce nuisance odours from our wastewater infrastructure.

Key Accomplishments: Our wastewater facilities are an integral part of our communities, and we recognize the importance of being a good neighbour. The RDN has invested significantly to upgrade odour control equipment and measures at our facilities. Our target is no odour complaints, and at FCPC we received no complaints in 2011. RDN staff investigate and respond to all complaints within 24 hours.

Key Commitments: The RDN will continue to improve odour control programs, including proactive odour management and incorporating odour control technologies into the design of planned sewage infrastructure. Our target will be zero odour complaints.

5. Rainwater Management – Drinking Water & Watershed Protection

Objective: To protect our water resources through an integrated wastewater-rainwater-watershed management approach.

Key Accomplishments: In 2008, the RDN implemented the “Drinking Water and Watershed Protection Program” (DWWP). This program is the foundation of our rainwater management commitments under the LWMP. The DWWP is an integrated watershed management approach focussed on protecting our water resources. Effective partnerships with community members, government agencies, academia, and business are key to the success of our programs.

Specific accomplishments of our DWWP and rainwater management activities include:

- Team WaterSmart awareness and education initiatives: participation at community events; Water Conservation workshops including: WellSmart, Xeriscaping, Rainwater Harvesting, Efficient Irrigation and Gardening; Stream Protection; Home Greywater Systems); guidebooks including Rainwater Harvesting Best Practices.
- Incentive rebate programs including: Low Flow Toilets; Rainwater Harvesting Systems; Well Protection Upgrades; Sustainable Development.
- Our Community Watershed Monitoring Network: Partnership between the RDN, Community groups and Ministry of Environment collect valuable water quality data from 14 watersheds across the RDN, identifying priorities for action.
- WaterMap: An online interactive tool that provides public access to water resource mapping.
- Expansion of the provincial observation well network in partnership with Geological Survey of Canada and the Province.

- Development of a region wide Water “Budget” Model, quantifying water availability and demand in order to gain an improved understanding of how population growth, land use and climate change will impact water resources.
- Approval of a regional “Water Conservation Plan”.

The RDN also establishes development permit areas under specific Official Community Plans to protect water resources. Through formation of the W3C: Wastewater and Water Collaborative Meeting, the RDN also meets biannually with municipalities to share information related to advances in rainwater management. As well, member municipalities have introduced a broad range rainwater and stormwater management practices and standards into their development activities.

Key Commitments: The DWWP work undertaken to date provides the foundation for RDN Rainwater commitments in this LWMP amendment. Specific commitments include:

- Continued implementation of the seven programs detailed in the DWWP Program, including Integrated Watershed Management planning
- Collaboration with member municipalities to establish a regional rainwater management strategy to ensure conformance with provincial requirements (including eliminating sewer overflows and reducing I&I)
- Implementation of the recently approved Water Conservation Plan and refinement of the Water Balance Model to assist in land use and development decisions.
- Continuation and evolution of water education and incentive programs and watershed monitoring partnerships.

6. Volume Reduction

Objectives: To reduce wastewater production by promoting water conservation measures.

Key Accomplishments: Volume reduction programs (water conservation in homes and businesses) are carried out under the umbrella of the WaterSmart initiative (as described in Program 5 above). Activities include public outreach, communication, workshops, and rebates to support or enhance water conservation activities across the region. The RDN works with member municipalities to implement programs to reduce flows. Member municipalities establish capital plans to address inflow and infiltration at critical locations within Municipal boundaries. Average water consumption in the RDN has been reduced from 331 L/day in 2009 to 281 L/day in 2013.

Key Commitments: The RDN will continue to develop and implement water conservation measures through the DWWP program, with a target of reducing per capita water consumption by 25% between 2009 and 2030.

7. Inflow and Infiltration

Objectives: To meet provincial standards and reduce the volume of surface and groundwater entering sewer systems to reduce wastewater infrastructure loading and costs.

Key Accomplishments: The RDN works with member municipalities to implement programs to reduce I&I. Member municipalities establish capital plans to address inflow and infiltration at

critical locations within Municipal boundaries. Combined sanitary-storm sewers have been eliminated.

Key Commitments: RDN will continue work with member municipalities to continue to reduce flows due to I&I and to eliminate any remaining sewer overflows.

8. Pollution Control Centres

The RDN operates four wastewater treatment plants. Currently, two provide secondary treatment and two provide chemically-enhanced primary treatment. Provincial and federal laws governing our treatment facilities require secondary treatment or better. Upgrading to secondary treatment will:

- Reduce toxins entering the marine environment
- Reduce potential health and environmental risks
- Help protect fishery resources
- Provide potential opportunities to economically recover resources.

The LWMP authorizes the RDN to find community-driven and cost-effective solutions to protect public health and achieve the required level of wastewater treatment over a reasonable timeframe. This amendment provides updated schedules to upgrade and expand our wastewater treatment infrastructure. Updated schedules were developed in consideration of technical, environmental, social and economic constraints, and through public consultation and First Nations engagement.

Objectives: To meet provincial and federal wastewater treatment standards, recover resources, and protect human health and the environment.

Key Accomplishments: Treatment facilities continue to operate in compliance with our permits and operating certificate, and odour control targets are met. Over the past decade, the RDN completed numerous reports, studies, technical memos, and engineering reviews in connection with the upgrades and expansions of our pump stations, forcemains, interceptors and treatment plant facilities. These documents addressed effluent quality, energy efficiency, integrated resource recovery, asset management planning, and odour control.

As well, equipment expansion and engineering related to the planned secondary treatment upgrade at GNPCC is underway. Installation and commissioning of new digester and sedimentation tank were completed in 2013. Engineering for the outfall replacement and secondary treatment are underway.

Key Commitments:

The RDN will:

- Comply with permits and operational certificates.
- Complete the outfall replacement project at GNPCC by 2015 and secondary treatment upgrades by 2018.
- Expand secondary treatment capacity at FCPC as required to address population growth.
- Complete the secondary treatment upgrades at NBPC by 2023.

- Establish receiving environment monitoring programs in coordination with Ministry of Environment.
- Implement asset management strategies to ensure long term quality and integrity of our wastewater infrastructure.
- Develop a sewer servicing strategy for Nanoose Bay.

9. Integrated Resource Recovery

Objectives: To economically recover and utilize resources in wastewater.

Key Accomplishments: Biogas generated in the treatment process at GNPCC is used to fuel boilers, provide heat to processes and buildings and generate electricity.

Reclaimed water from the treatment process is used at FCPC and GNPCC as process and washwater in place of potable water. Treated effluent from FCPC is used for golf course irrigation. Beneficial effluent reuse lessens the demand on potable water supplies and reduces the volume discharged to the ocean.

The RDN has a district heating agreement-in-principle with School District 68 to provide Hammond Bay Elementary School with heat from treated effluent.

GNPCC is one of the first wastewater treatment plants of its size in Canada to implement cogeneration. The electricity generated is sufficient to power 350 homes.

Key Commitments: The RDN will undertake a regional study in 2014 to identify integrated resource recovery (IRR) opportunities related to wastewater management in the Regional District. The study will provide the foundation for development of an IRR implementation strategy for the region. Major capital projects will include IRR opportunities where technically and economically practical.

10. Biosolids

Objectives: To beneficially utilize biosolids produced during wastewater treatment.

Key Accomplishments: Since 1999, biosolids generated at RDN treatment facilities have been beneficially reused in agriculture, landfill closures, mine reclamation and forestry. The RDN currently has an innovative partnership with Vancouver Island University (VIU) and SYLVIS Environmental to apply biosolids at VIU's managed woodlot. Application of biosolids at the woodlot has shown to increase tree growth between 50% and 400%.

Key Commitments: The RDN will continue to beneficially reuse biosolids, advance scientific knowledge, and enhance our biosolids education and outreach program.

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GLOSSARY

<i>ADWF</i>	Average Dry Weather Flow. Defined in the Municipal Wastewater Regulation as the daily municipal wastewater flow to a wastewater facility which occurs after an extended period of dry weather so inflow and infiltration are minimized to the greatest extent possible.
<i>ATAD</i>	Autothermal thermophilic aerobic digestion that treats sludge collected from the bottom of sedimentation tanks. The sludge is held in the tanks for 10 to 12 days at 40 to 60°C, during which it is digested and stabilized by thermophilic biological processes. Significant pathogen reduction is achieved in the ATAD tanks resulting in the creation of 'Class A' biosolids under the <i>Environmental Management Act and Public Health Act Organic Matter Recycling Regulation</i> , administered by the Ministry of Environment.
<i>Benchmarking</i>	Benchmarking is an ongoing process of sharing ideas and comparing products, services and practices with those of similar organizations to improve quality and optimize performance. Through benchmarking, the RDN can improve performance and reduce costs. The RDN's Wastewater Services department has been part of the National Water and Wastewater Benchmarking Initiative since 2001. This initiative is a partnership of more than 43 Canadian cities and Regional Districts, working with private environmental consultants to collect and compare data.
<i>Biogas</i>	Biogas refers to the methane and carbon dioxide produced as a by-product of anaerobic digestion. Biogas is a sustainable fuel source used as fuel for heat or to create electricity.
<i>Biosolids</i>	Stabilized municipal sewage sludge resulting from a municipal wastewater or septage treatment process or septage that meets quality criteria for beneficial use under the Organic Matter Recycling Regulation.
<i>Biosolids Class A</i>	Biosolids that meet requirements of Section 6 of the Organic Matter Recycling Regulation for metal concentrations, pathogen reduction processes, vector attraction reduction, pathogen reduction limits, quality criteria, sampling, analyses and record keeping.
<i>Biosolids Class B</i>	Biosolids that meet requirements of Section 8 of the Organic Matter Recycling Regulation for metal concentrations, pathogen reduction processes, vector attraction reduction, pathogen reduction limits, quality criteria, sampling, analyses and record keeping.
<i>BOD and BOD₅</i>	Carbonaceous 5-day biochemical oxygen demand is the rate at which aerobic biological organisms use the oxygen in water or wastewater over a five day incubation period.
<i>Bylaw No. 500</i>	Regional District of Nanaimo Land Use and Subdivision Bylaw provides land use regulations for properties within all electoral areas except Electoral Area 'B' (Gabriola Island) and 'F' (Errington, Coombs, Whiskey Creek & Hilliers).
<i>Bylaw No. 975</i>	Regional District of Nanaimo Pump & Haul Local Service Establishment Bylaw No. 975 establishes a local service area within the RDN for the collection, conveyance, treatment and disposal of sewage from holding tanks. It specifies who is eligible for the reduced septage disposal rate for pump and haul. To be included in this bylaw a property must meet several specifications including property size, zoning and subdivision requirements.
<i>Bylaw No. 988</i>	Regional District of Nanaimo Trucked Liquid Waste Disposal Bylaw No. 988 specifies disposal rates and regulates the discharge of trucked liquid waste into septage disposal facilities operated by the RDN.
<i>Bylaw No. 1224</i>	Regional District of Nanaimo Sewage Disposal Regulation Bylaw No. 1224 establishes a Local Service to provide treatment and disposal of sewage from holding tanks and regulate the collection and conveyance of sewage from holding tanks in a defined area of the RDN.

<i>Bylaw No. 1225</i>	Regional District of Nanaimo Sewer Use Regulatory Bylaw No. 1225 regulates the discharge of waste into all sewers connected to wastewater facilities operated by the RDN. It is the source control bylaw.
<i>Bylaw No. 1543</i>	Liquid Waste Management Planning Service Establishment Bylaw No. 1543 establishes the service of liquid waste management planning in the RDN with a long range budget for the planning and implementation of the updated Liquid Waste Management Plan.
<i>Capital Plan</i>	A ten year budget used to plan expansion and upgrades at RDN facilities.
<i>Cogeneration</i>	A form of resource recovery which refers to the use of biogas (methane and carbon dioxide by-products) to generate both electricity and heat.
<i>Combined Sewer System</i>	Wastewater systems which collect, transport, or discharge a combination of municipal wastewater and stormwater in a single system.
<i>CCME</i>	Canadian Council of Ministers of the Environment. The CCME has developed a Canada-wide strategy for the management of municipal wastewater, wherein risk guidelines for effluent quality have been established.
<i>CCTV</i>	Closed circuit television. A robotic inspection system using closed circuit cameras mounted on portable platforms. Used frequently in the RDN to inspect wastewater systems and identify defects where infiltration can occur.
<i>Class A Cost Estimate</i>	According to the Ministry of Environment <i>Interim Guidelines for Preparing Liquid Waste Management Plans</i> , a Class A Cost Estimate is based on the final design drawings, and specifications.
<i>Class B Cost Estimate</i>	According to the Ministry of Environment <i>Interim Guidelines for Preparing Liquid Waste Management Plans</i> , a Class B Cost Estimate is prepared after site investigations and studies are complete and the major systems defined. It is based on the completion of the preliminary design. It is used for obtaining approvals, budgetary control and design control.
<i>Class C Cost Estimate</i>	According to the Ministry of Environment <i>Interim Guidelines for Preparing Liquid Waste Management Plans</i> , a Class C Cost Estimate is prepared with limited site information and is based on probable conditions affecting the project. It is used to establish a more specific definition of program costs, to obtain approval in principle and for program planning.
<i>Class D Cost Estimate</i>	According to the Ministry of Environment <i>Interim Guidelines for Preparing Liquid Waste Management Plans</i> , a Class D Cost Estimate is a preliminary estimate which, due to little or no site information, indicates the approximate magnitude of cost of the proposed project. This cost estimate may be derived from lump sum or unit costs, based on the construction costs for similar projects. It is used for discussion and preliminary evaluation of options and to initiate the approvals process.
<i>CSSP</i>	Canadian Shellfish Sanitation Program is a federal food safety program, jointly administered by the Canadian Food Inspection Agency, Environment Canada and Fisheries and Ocean Canada. The purpose of the program is to provide assurance that bivalve molluscan shellfish (e.g. mussels, oysters, and clams) meet food safety and quality standards for both domestic and internal markets, thereby protecting the public from the health risks of consuming contaminated shellfish.
<i>DCC</i>	Development Cost Charges are funds collected to offset that portion of the costs related to services that are incurred as a direct result of this new development. DCCs are applied as one-time charges and are usually collected from developers at the time of subdivision approval or at the time of issuing a building permit.

<i>District Heating</i>	District heating captures thermal energy from wastewater effluent to provide hot water and space heating using heat recovery technology. District heating plants can provide higher efficiencies and better pollution control than localized boilers and provide an example of innovative resource recovery.
<i>DPA</i>	Development Permit Area provides a set of development guidelines pertaining to a specific area as specified by the Official Community Plan. If a property is located within a DPA, a development permit may be required before undertaking any construction or development.
<i>DPPCC</i>	Duke Point Pollution Control Centre, at 925 Jackson Road, Nanaimo, BC.
<i>DWWP</i>	Drinking Water & Watershed Protection Plan to protect water resources in the RDN.
<i>Effluent</i>	Liquid resulting from the treatment of wastewater.
<i>EMS</i>	An Environmental Management System is a tool used to evaluate and improve environmental performance. The RDN Wastewater Service's EMS is ISO 14001 certified.
<i>FCPCC</i>	French Creek Pollution Control Centre, at 957 Lee Road, Parksville, BC.
<i>GNPCC</i>	Greater Nanaimo Pollution Control Centre, at 4600 Hammond Bay Road, Nanaimo, BC.
<i>Grey water</i>	Wastewater from bathroom sinks, showers, and tubs.
<i>Groundwater</i>	Defined by the Municipal Wastewater Regulation as subsurface water at or below a water table in fully saturated geologic materials and formations.
<i>Growth Containment Boundary</i>	Areas defined by the Regional Growth Strategy where growth is intended to be directed. The Growth Containment Boundary is intended to control urban sprawl and to encourage the development of compact, complete communities within municipalities or within a Rural Village Area in electoral areas.
<i>I&I</i>	A collective term for inflow and infiltration.
<i>Infiltration</i>	Infiltration is groundwater that enters the wastewater system indirectly through the land. Infiltration can occur via pipeline cracks, leaky joints or deteriorated manholes.
<i>Inflow</i>	Inflow is water that enters the wastewater system from a direct stormwater connection (i.e. roof leaders, basement sump pumps or foundation drains). Older homes built before the 1970s can be major sources of inflow since building permits at the time allowed property drainage to connect to the wastewater system.
<i>Influent</i>	Wastewater entering the wastewater infrastructure.
<i>IRR</i>	Integrated Resource Recovery. An integrated approach to planning and managing infrastructure to maximize the recovery of value from waste resources (e.g. energy generation, water reuse, and nutrient recovery.) The RDN commits to managing our water resources in an integrated manner and will take an integrated resource recovery approach to liquid waste planning.
<i>Liquid Waste</i>	See wastewater.
<i>LWMP</i>	Liquid Waste Management Plan. BC's <i>Environmental Management Act</i> allows a regional district to develop a liquid waste management plan to establish affordable community-driven solutions for financing and upgrading infrastructure to meet the requirements under the Municipal Wastewater Regulation over a defined period. A LWMP lets a community develop local wastewater management solutions.
<i>MOE</i>	Ministry of Environment, Government of British Columbia. The MOE is the approving authority for the Liquid Waste Management Plan.

<i>MWR</i>	The <i>Environmental Management Act</i> Municipal Wastewater Regulation provides guidance on meeting the current standards and requirements for the treatment, reuse and disposal of sewage. It applies to all discharges of domestic wastewater except those regulated under the <i>Public Health Act</i> Sewerage System Regulation and discharges from single or multi-family dwellings. Also applies to any discharges of sewage to water bodies.
<i>NBPCC</i>	Nanoose Bay Pollution Control Centre, at 3260 Schooner Cove Drive, Nanoose Bay, BC.
<i>Operational Certificates</i>	Issued by the Ministry of Environment to specify authorized discharges and monitoring, reporting, and general requirements related to municipal wastewater discharge.
<i>OCP</i>	An Official Community Plan is defined by Section 875 of the <i>Local Government Act</i> . An official community plan is a statement of objectives and policies to guide decisions on planning and land use management, within the area covered by the plan, respecting the purposes of local government.
<i>OMRR</i>	<i>Environmental Management Act</i> and <i>Public Health Act</i> Organic Matter Recycling Regulation sets the standards for the beneficial re-use of composted organic matter including biosolids.
<i>Preliminary Treatment</i>	The first level of wastewater treatment. Involves screening and/or grinding.
<i>Primary Treatment</i>	Wastewater treatment (involves settling solids and skimming the scum) which consistently produces an effluent quality with a BOD ₅ and TSS not exceeding 130 mg/L, as defined by the MWR.
<i>Private Onsite Systems</i>	Defined under the Sewerage System Regulation as privately owned and maintained Type 1, Type 2, or Type 3 onsite wastewater treatment systems, holding tanks, and strata wastewater collection and treatment systems.
<i>Public Wastewater Systems</i>	Wastewater collection and treatment systems owned and operated by the RDN or a municipality. Public wastewater services are offered to established service areas associated with the Duke Point Pollution Control Centre, Greater Nanaimo Pollution Control Centre, Nanoose Bay Pollution Control Centre, and French Creek Pollution Control Centre. Public wastewater systems may also include systems with flows equal to, or greater than, 22,700 L/day that were privately constructed and transferred to the RDN. Public Wastewater Systems are referred to as community sewer service in an Official Community Plan or the Regional Growth Strategy.
<i>Rainwater Management</i>	Strategies designed to protect the health of watersheds and maintain pre-development water balance by managing rainwater and snow melt runoff.
<i>RDN</i>	The Regional District of Nanaimo; a federation of four municipalities and seven rural electoral areas including the: City of Nanaimo, City of Parksville, Town of Qualicum Beach, District of Lantzville, and electoral areas A, B, C, E, F, G, and H.
<i>Reclaimed Water</i>	Municipal wastewater that is treated and suitable for use in accordance with the MWR.
<i>Regional Growth Strategy</i>	Regional Growth Strategy, as defined by Section 849 of the <i>Local Government Act</i> . The purpose of a Regional Growth Strategy is to promote human settlement that is socially, economically and environmentally healthy and that makes efficient use of public facilities and services, land and other resources.
<i>Resource Recovery</i>	See Integrated Resource Recovery (IRR).
<i>RLWAC</i>	Regional Liquid Waste Advisory Committee. Established to update and monitor implementation of the Liquid Waste Management Plan.

<i>Secondary Treatment</i>	Wastewater treatment (usually biological or physical-chemical) to remove organics which consistently produces an effluent quality with a BOD ₅ and TSS not more than 45 mg/L, as defined by the MWR.
<i>Septic System</i>	A Type 1 private onsite wastewater treatment system. A conventional septic system includes a septic tank and soil filter called a drainfield.
<i>Sewage</i>	See wastewater.
<i>SSR</i>	The <i>Public Health Act</i> Sewerage System Regulation is the provincial regulation that applies to the construction and maintenance of holding tanks and sewerage systems or systems which process a wastewater flow of less than 22,700 L/day (i.e. systems for single family residences, duplexes and strata properties) and discharge to the ground.
<i>Sludge</i>	The organic and inorganic materials that settle in a primary clarifier (primary sludge) or secondary clarifier (secondary sludge).
<i>Stormwater Management</i>	See rainwater management.
<i>Sustainability</i>	Sustainability is about recognizing the inter-relationships between our environment, our society, and our economy. It is about recognizing that people are part of the ecosystem and that economic and social lives of people should be integrated into the environment in ways that maintain or enhance the environment, rather than degrade or destroy it.
<i>Sustainable Wastewater Management</i>	For the RDN, sustainable wastewater management is a long range commitment to build and maintain efficient infrastructure that enhances the environmental health of our region, meets the needs of our communities and represents the outcome of sound financial planning.
<i>Tertiary Treatment</i>	Wastewater treatment which produces phosphorus and nitrogen levels less than 1.0 mg/L, BOD and TSS levels less than 5 mg/L.
<i>TSS</i>	Total suspended solids are solids suspended in wastewater, reported in mg/L.
<i>Type 1 On-Site System</i>	Treatment by septic tank and drainfield only.
<i>Type 2 On-Site System</i>	Treatment that consistently produces an effluent quality with a BOD ₅ not exceeding 45 mg/L and TSS not exceeding 45 mg/L (equivalent to secondary treatment), that discharges to ground via buried perforated pipes or equivalent. Treatment by septic tank, treatment unit, and drainfield.
<i>Type 3 On-site System</i>	Treatment that consistently produces an effluent quality with a BOD ₅ not exceeding 10 mg/L, TSS not exceeding 10 mg/L and a median fecal coliform density of less than 400 colony forming units per 100 mL, that discharges to ground via buried perforated pipes or the equivalent. Treatment by septic, treatment unit, disinfection, and drainfield.
<i>Wastewater</i>	Wastewater, liquid waste and sewage are terms for “used” water and the wastes that it carries. Basically, they are terms for what is flushed down the toilet or washed down the drain. Wastewater can also include rain water, groundwater, or snow melt (inflow and infiltration) that make their way into sanitary wastewater pipes.
<i>WSER</i>	Wastewater Systems Effluent Regulations. Regulations under the federal <i>Fisheries Act</i> designed to harmonize wastewater management in Canada. They include minimum effluent quality standards that can be achieved through secondary wastewater treatment.

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1.0 Introduction

New laws governing wastewater management in British Columbia require a standard level of wastewater treatment that can be achieved through secondary wastewater treatment or better. Those laws also recognize that it will take time for some treatment facilities, such as the Greater Nanaimo Pollution Control Centre (GNPCC) and the Nanoose Bay Pollution Control Centre (NBPCC), to provide secondary treatment. For that reason, BC's *Environmental Management Act* allows local governments to develop a Liquid Waste Management Plan (LWMP). The LWMP lets local governments establish a reasonable timeframe to develop affordable community-driven solutions for financing and upgrading infrastructure and to meet requirements under the provincial Municipal Wastewater Regulation (MWR). It also helps to define how local governments will recover resources from waste; reduce pollution, including the volume of flow, entering wastewater infrastructure; and manage stormwater.

An approved LWMP lets a local government borrow money without going to referendum. Since there is no mechanism to publicly appeal an approved LWMP, an LWMP is available for public and First Nations review and comment, and must be approved by the Regional District of Nanaimo Board (the Board), before it is submitted for approval to the Minister of Environment. For overall approval, the plan must align with:

- Community needs and expectations such as affordable solutions to sustainable wastewater management
- Regional initiatives (i.e. the Board Strategic Plan, Regional Growth Strategy, and Official Community Plans)
- Federal and provincial regulations and guidelines (including those listed in Table 1) which require the upgrade of wastewater treatment facilities to provide a minimum of secondary treatment.

However, the Minister of Environment may, at any time, with or without conditions, approve all or part of a liquid waste management plan or amendment.

Table 1. National, Provincial, and Regional Regulations and Guidelines for Wastewater Management

<p>Regional Initiatives</p> <p>Board Strategic Plan: Expresses a vision and priorities for the RDN and sets a course towards a sustainable future for the Region.</p> <p>Regional Growth Strategy: Directs land use and growth management in the RDN for the next 25 years. Aims to promote sustainable growth while meeting social, economic and environmental objectives. Recognizes the need to coordinate planning with First Nations.</p> <p>Official Community Plans: Guide decision making in the plan areas.</p> <p>Environmental Policy: Commits the Wastewater Services department to providing reliable, high-quality, and cost-effective wastewater services to the people and communities (in Appendix A).</p> <p>Drinking Water & Watershed Protection Plan: Addresses regional water resource protection.</p> <p>Green Building Policy: Prescribes an integrated design process for new construction and major renovations in the RDN. This policy gives the RDN the flexibility to establish specific goals that achieve the highest level of environmental performance for each project.</p>	<p>Federal and Provincial Regulations & Guidelines</p> <p>Fisheries Act Wastewater Systems Effluent Regulations: Regulations to harmonize wastewater management in Canada. They include minimum effluent quality standards that can be achieved through secondary wastewater treatment. Upgrades to existing facilities must be completed by 2020, 2030 or 2040, based on volume, water quality criteria, and discharge location.</p> <p>Environmental Management Act:</p> <ul style="list-style-type: none">▪ Municipal Wastewater Regulation: Regulates the treatment, reuse, and disposal of municipal wastewater.▪ Code of Practice for the Use of Reclaimed Water: Guides the use of reclaimed water (Ministry of Environment, Lands and Parks 2001).▪ Organic Matter Recycling Regulation: Sets the standards for the beneficial re-use of composted organic matter including biosolids. <p>Public Health Act Sewerage System Regulation: Sets the construction and maintenance requirements for onsite sewage treatment systems.</p> <p>Interim Guidelines for Developing a Liquid Waste Management Plan: Describes the procedure for preparing and amending an LWMP (MOE 2011).</p> <p>Living Water Smart: British Columbia's plan to address the security and health of water resources (MOE 2008).</p> <p>Resources from Waste: A guide to recover resources from wastewater (Ministry of Community Development 2009).</p>
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An LWMP approved by the Minister of Environment (formerly, Minister of Environment, Lands and Parks) authorizes liquid waste discharge according to provisions in the plan and the associated operational certificates or waste discharge permits. The Ministry of Environment (MOE) issues operational certificates and waste discharge permits to specify monitoring and reporting requirements and conditions for authorized discharges. Operational certificates will eventually replace waste discharge permits. An approved LWMP is more than a planning document; it is a legal document which gives the local government the authority and responsibility to implement the plan.

1.1 Scope of the LWMP

The MOE's primary objectives of an LWMP are to 1) protect public health and the environment and 2) properly consult the public. Additional objectives include water conservation; drinking water source protection; recovery of resources from waste; energy conservation; climate change adaptation and mitigation; and sustainable financing and asset management (MOE 2011). The MOE's long term goals with respect to LWMPs are for existing municipal wastewater facilities to meet the MWR within a reasonable timeframe, including the provision for secondary treatment as a minimum level of effluent treatment. Because public consultation and First Nations engagement are key components of the LWMP process, an LWMP lets a community be involved with the decision-making process and develop local wastewater management solutions.

1.2 Liquid Waste Management Planning in the RDN

The Regional District of Nanaimo (RDN) completed its original LWMP in 1997 and that plan was approved by the Minister of Environment, Lands and Parks in 1999. In 2008, the RDN initiated the LWMP amendment process. An amendment is necessary because:

- The MOE requires an LWMP review every five to ten years, or sooner if recommended by the advisory committee, to determine if an amendment or update is required.
- Most of the key regulations and guidelines summarized in Table 1 (previous page) have changed since original LWMP was approved.
- The RDN already met most of the original LWMP program commitments in the first ten years of implementation.
- The RDN is requesting an amendment to the timeline for secondary treatment upgrades at GNPCC and NBPCC.

Once approved by the Minister of Environment, this LWMP Amendment will replace the 1997 LWMP.

1.3 Structure of the Amended Plan

The structure of the LWMP amendment is as follows:

- Section 1: Introduction
- Section 2: Background Information
- Section 3: Milestone Achievements Since 1997
- Section 4: Plan Amendment Process
- Section 5: Updated Programs
- Section 6: Emerging Issues
- Section 7: Costs, Financing, and Implementation Schedule
- Section 8: Monitoring, Amendments, and Updates
- Section 9: Operational Certificates
- Section 10: References.

2.0 Background Information

2.1 Regional Profile

The RDN spans approximately 207,000 hectares on the central east coast of Vancouver Island, in the Georgia Strait-Puget Sound Basin of southeast British Columbia. The RDN is bordered by the Strait of Georgia to the east, the Comox Valley Regional District to the north, the Alberni-Clayoquot Regional District to the west, and the Cowichan Valley Regional District to the south.

The RDN respectfully recognizes that RDN boundaries overlap with many First Nation Traditional Territories and that First Nation governments have jurisdiction over planning on Indian Reserves. Still, services provided under the LWMP extend to First Nations.

Resident First Nations include:

- Qualicum First Nation
- Snaw-naw-as First Nation
- Snuneymuxw First Nation.

The RDN is made up of four municipalities and seven rural electoral areas, illustrated in Figure 1. The four municipalities include:

- City of Nanaimo
- City of Parksville
- Town of Qualicum Beach
- District of Lantzville.

The seven electoral areas include:

- A: Cedar, South Wellington, Cassidy
- B: Gabriola, Decourcy, Mudge Islands
- C: Extension, Nanaimo Lakes, East Wellington, Pleasant Valley
- E: Nanoose Bay
- F: Coombs, Hilliers, Errington
- G: French Creek, San Pareil, Little Qualicum
- H: Bowser, Qualicum Bay, Deep Bay.

Islands Trust has jurisdiction over planning for the Gulf Islands including Electoral Area B. Still, many services provided under the LWMP extend to residents of Electoral Area B.

The RDN is British Columbia's third most populous Regional District, and home to more than 140,000 people. Most of the communities, which are rural or suburban, exist at lower elevations near the Strait of Georgia coastline. In 2011, 146,574 people lived within RDN boundaries. Growth represents a 5.7% increase since 2006; slightly lower than the provincial average of 7.0% (Statistics Canada 2012a). The majority of residents (74%) live in the four municipalities, while the remaining 26% live in unincorporated electoral areas (BC Stats 2012). The RDN was projected to grow at an average rate of 2% per year, to a population of 231,000 in 2036 (Urban Futures 2007)¹. Despite the projections, the area has experienced slower than expected growth, largely due to reduced natural resource extraction and processing activity (BC Stats 2011). According to BC Stats (2012), the RDN population only increased by 0.7% between 2010 and 2011 and all municipalities within the region, except for the City of Nanaimo, decreased in population within this timeframe. Still, the Board Strategic Plan acknowledges that the RDN will implement best practices for managing growth and development.

There is a national trend towards an aging population. All jurisdictions in the RDN exceed the median age for the Province and some have among the eldest populations in BC (RDN 2010). The demographic trend may be a result of the preferable climate, landscape, and amenities in mid-Vancouver Island. This trend will likely continue and will have implications for land use, housing, services, and employment. The natural areas, amenities, and climate that draw retirees to the region are the same attributes which draw tourists and there is an increasing interest in tourism in the RDN. The City of Nanaimo is linked to the Lower Mainland by two BC Ferries routes and the RDN is favoured by tourists as both a stopover and final destination. The Nanaimo Cruise Ship Terminal opened in 2011 and also has the potential to offload thousands of tourists annually.

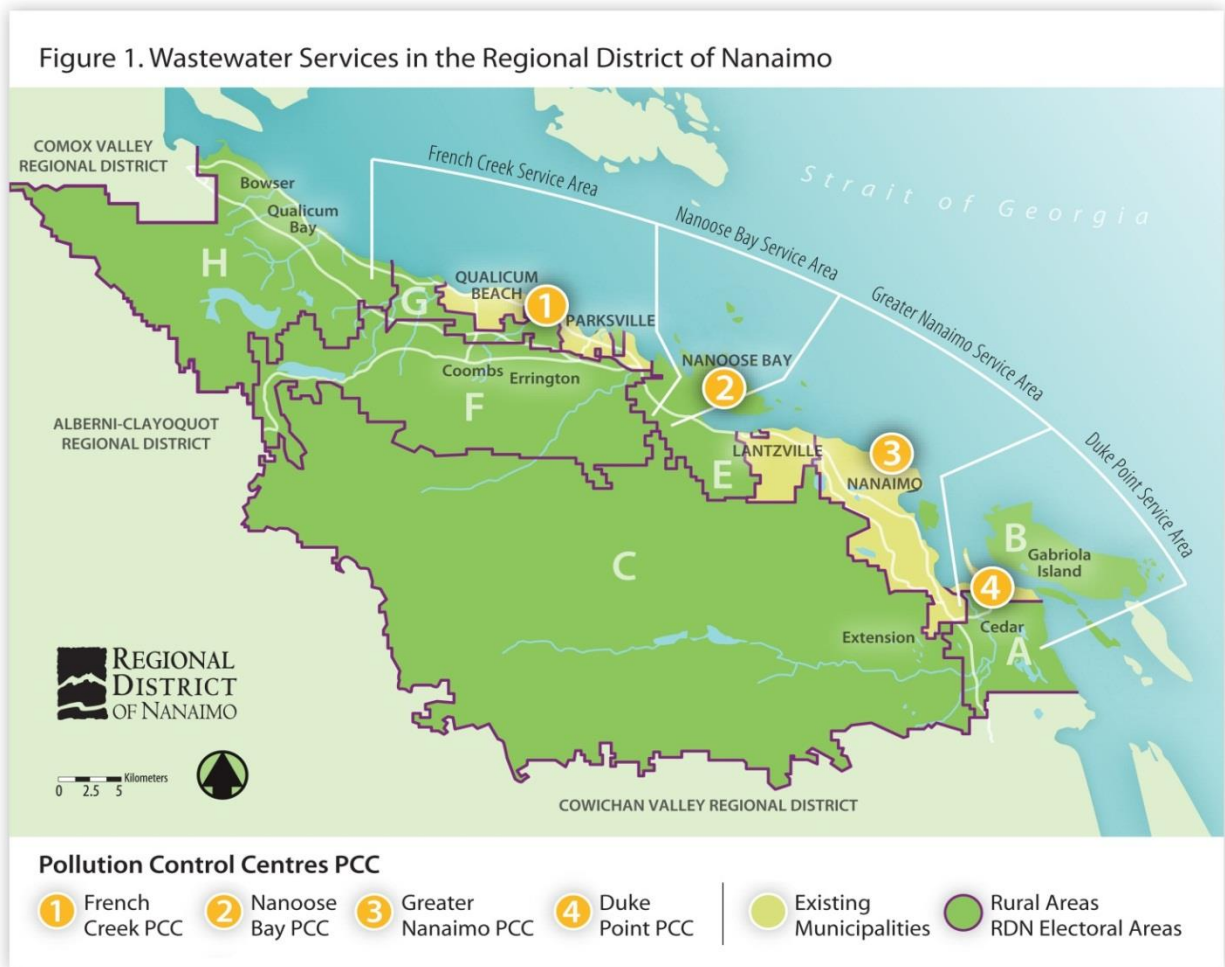
The mission of the Regional District of Nanaimo Board is to deliver services in a manner that enhances the environmental, social, and economic well-being of the residents and communities in the region. The RDN is

¹ Projections made by Urban Futures in 2007 are currently the most recent data available. However, expansion schedules based on actual population growth will be revised to reflect observed growth and revised growth projections.

recognized for its leadership among Canadian local governments in sustainable community development, improving services and quality of life for residents, while reducing the local environmental footprint and dependence on limited resources. Our vision is an environmentally, socially, and economically healthy region; resilient and adaptable to change. We will meet current residents' needs without compromising our ability to do the same for future residents. Our LWMP is an integral component of our strategy to achieve the vision and mission of the RDN.

The RDN provides regional governance and a variety of regional and local services to enhance the environmental, social, and economic well-being of residents. The RDN delivers regional services common to electoral areas and municipalities, such as wastewater treatment, recreation facilities, regional parks, watershed protection, solid waste disposal, and transit. The RDN provides additional local services to electoral areas, such as community planning, emergency planning, community recreation, community parks, and utilities. Member municipalities provide similar local services within their own jurisdictions.

Most of the RDN is resource land. The area has a strong history in coal mining and exportation; however, most of the resource land base is currently used for forestry and there are also pockets of agriculture throughout. Management of forestry and agricultural land fall under provincial jurisdiction.



2.1.1 Geography, Climate and Environmental Resources

During the last ice age, the regional landscape was covered in glaciers which created the rounded ridges of all but the highest mountains (Jungen and Lewis 1978). As a result of glaciation, soils are influenced by thick glacial deposits and exposed or shallow bedrock (Ronneseeth et al. 1993). Upland areas are characterized by unconsolidated gravel, sands, and tills. Marine silts, clays, sands, and gravels are common in areas low enough to have been affected by sea level fluctuations (Jungen 1985).

Though some of Canada's wettest climates exist on the west coast of Vancouver Island (Meidinger and Pojar 2001), much of the RDN is in a rain shadow, giving the area a mild temperate coastal climate with moderately wet winters and dry summers. Mean annual precipitation is approximately 1,100 mm. Most of the precipitation falls as rain; snow at lower elevations traditionally melts within a week of falling (Environment Canada 2011).

The RDN extends across three distinct biogeoclimatic zones: Coastal Douglas-fir, Coastal Western Hemlock, and Mountain Hemlock. Each of these zones has characteristic vegetation with associated animals, soils, and climate; however regional forests are generally dominated by Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), western hemlock (*Tsuga heterophylla*), mountain hemlock (*T. mertensiana*), and western red cedar (*Thuja plicata*). Sitka spruce (*Picea sitchensis*), yellow cedar (*Callitropsis nootkatensis*), amabilis fir (*Abies amabilis*), and shore pine (*Pinus contorta* var. *contorta*) are also common in the region. Coastal Douglas-fir is the smallest of BC's 14 biogeoclimatic zones yet it has some of the highest diversity in the province and is home to some of the province's rarest vegetation. *Arbutus* (*Arbutus menziesii*) and Garry oak (*Quercus garryana*) grow in this zone. The Coastal Western Hemlock zone covers most of the lower elevations west of the Coast Mountains and is the wettest and most productive forest zone in BC. The Mountain Hemlock zone occupies subalpine elevations along the entire BC coastline and provides habitat for the Vancouver Island marmot (*Marmota vancouverensis*), an endangered species known only to Vancouver Island (Meidinger and Pojar 2001; MOF 1997; MOF 1999a; MOF 1999b).

Major watersheds in the RDN include Big Qualicum River, Little Qualicum River, Englishman River, Nanaimo River, Millstone River, and French Creek. There are also a number of smaller rural and urban watersheds. Major RDN rivers originate in managed forests in the eastern foothills of the Vancouver Island Ranges and flow into the Strait of Georgia. Because of the steep slopes, flow levels can rise and fall quickly in response to rain and snowmelt. Soils in steep areas are prone to erosion which causes stream sedimentation (Boom and Bryden 1994). The major watersheds are fairly well contained within the administrative boundaries of the RDN. Overlaps with other regional districts are in rural communities or unpopulated mountainous areas. Aquatic and riparian habitat, surface water flows, water quality, and groundwater sustainability are important topics in these watersheds as are wetland and estuary protection, aquifer integrity, and community recreation.

2.2 Wastewater Treatment

Wastewater, liquid waste, and sewage are terms for "used" water and the wastes that it carries. Basically, they are terms for what is flushed down the toilet or washed down the drain. Wastewater can also include rain water, groundwater or snow melt (inflow and infiltration²) that make their way into sanitary wastewater pipes. Wastewater treatment is essential to protect our water resources, the environment, and human health. Treated wastewater can also produce useable resources such as water, biosolids, heat, and electricity.

The majority of wastewater in the RDN is treated by Public Wastewater Systems (see Section 2.2.1) or privately-owned onsite systems (see Section 2.2.6). A small number of properties are authorized by the Vancouver Island Health Authority (VIHA) to use pump and haul services³. The RDN receives and treats holding tank waste from these properties as well as septage from pumped septic tanks. There are also a small number of wastewater treatment facilities (and discharges) in the region which are privately-owned and not operated by the RDN.

There are no combined sewers⁴ in the RDN wastewater system or within a collection systems owned by one of the member municipalities.

Stormwater sewers are owned by the municipalities or the Ministry of Transportation and Infrastructure. The RDN does not own any stormwater sewers.

² Inflow and infiltration are explained in more detail in Section 5.7

³ Typically, pump and haul services are used by properties with failing onsite systems or by those who cannot connect to public wastewater systems and are unable to obtain Ministry of Health approval for a conventional septic disposal system. Those using pump and haul services install a holding tank on their property which must be regularly pumped out by a septage hauler.

⁴ Combined sewers are rudimentary sewer systems designed to accommodate wastewater year round in addition to stormwater during wet weather conditions. Combined sewers are no longer an accepted system of wastewater conveyance and the provincial government has a mandate to eliminate all combined sewers.

2.2.1 Public Wastewater Systems

Public wastewater systems refer to wastewater collection and treatment systems owned by the RDN or a member municipality. The RDN's Wastewater Services department provides wastewater servicing for the Greater Nanaimo, French Creek, Nanoose Bay and Duke Point service areas which cover most of the urban population in the RDN. Figure 1 (previous page) illustrates the RDN service areas and associated treatment plants. In the municipalities, wastewater collection is generally a three-tiered system. Privately owned lateral sewer pipes from private properties (tier 1) connect to sanitary sewer collection systems owned and operated by the municipalities or RDN (tier 2). The collection systems then feed into the RDN's interceptor line (tier 3) which delivers the wastewater to a pollution control centre owned and operated by the RDN.

Wastewater systems in the RDN generally follow the natural slope of land allowing gravity to transport wastewater to one of four RDN wastewater treatment plants:

- Greater Nanaimo Pollution Control Centre (GNPCC)
- French Creek Pollution Control Centre (FCPCC)
- Nanoose Bay Pollution Control Centre (NBPCC)
- Duke Point Pollution Control Centre (DPPCC).

In areas lower than adjacent lands or treatment plants, wastewater must pass through a pumping station to a treatment facility. Through treatment at a wastewater facility, resources such as water, nutrients, and energy can be recovered from effluent (the liquid product of treatment), biosolids (the solid product of treatment), and other by-products (e.g. biogas). Details on the pollution control centres are provided below and in Appendix B, Discussion Paper 4 (Current Flows and Loads, Effluent Quality and Treatment Plant Capacities).

Generally, wastewater treatment at a Pollution Control Centre involves the following processes:

1. **Preliminary treatment** – Grit tanks reduce the velocity of influent wastewater and allow sand, gravel, and other heavy materials to settle out. Mechanical bar screens (ranging from 10 to 25 mm) further remove large objects. Material collected by grit tanks and bar screens is washed and sent to the sanitary landfill.
2. **Primary treatment** physically separates the solids and grease and lowers the biochemical oxygen demand (BOD₅) and total suspended solids (TSS) to produce an effluent with BOD₅ and TSS not exceeding 130 mg/L. During primary treatment, screened wastewater is held in a settling tank for several hours so solids can settle to the bottom of the tank and fats, oil, and grease can float to the surface. The settled material, known as primary sludge, is collected and pumped to digestion or holding tanks for further treatment into biosolids. The fats, oil, and grease are skimmed from the tanks, dewatered, and sent to the landfill.

Chemical enhancement takes primary treatment a step further to improve overall water quality. During this step, a flocculent (e.g. alum) is added to the effluent to enhance the settling of solids, further reducing TSS and BOD₅ levels. Presently, GNPCC and NBPCC are chemically enhanced primary treatment facilities.

3. **Secondary treatment** uses a biological process to lower BOD₅ and TSS and produce an effluent quality with BOD₅ and TSS not exceeding 45 mg/L. In this stage, primary effluent is pumped to a trickling filter or sequencing batch reactor where microorganisms feed on organic matter in the wastewater to create secondary sludge. Secondary sludge is thickened and transported or pumped to digesters for solids processing. FCPCC and DPPCC are secondary treatment facilities.
4. **Ultraviolet disinfection** – At DPPCC, effluent from secondary treatment is disinfected with ultraviolet light.
5. **Tertiary treatment** is not currently used in the RDN. Tertiary treatment plants are needed whenever the phosphorus levels need to be significantly reduced or if there is a desire to reclaim effluent. Tertiary treatment can produce phosphorus levels less than 1.0 mg/L, BOD and TSS levels less than 5 mg/L, and low nitrogen levels (Associated Engineering 2008).
6. **Integrated resource recovery (IRR)** is an integrated approach to planning and managing infrastructure to maximize the value recovered from waste resources (MOE 2011). The Regional Growth Strategy supports resource recovery and the RDN considers resource recovery options at the planning and design phase for all upgrades and expansions. Discussion Paper 8 (Integrated Resource Management Opportunities for the

Regional District of Nanaimo) in Appendix B reviews potential IRR opportunities at the four wastewater treatment facilities. Additionally, the RDN is involved with benchmarking, an interactive process to compare our progress with other jurisdictions and learn how they are addressing IRR. Resources recovered in the RDN include:

- a. **Biogas** includes methane and carbon dioxide by-products of the digestion process. Biogas is a sustainable energy source used at GNPCC to fuel its boilers, heat on-site processes and buildings and to mix the digesters. Excess biogas may be flared (wasted) or used to create electricity (see cogeneration).
- b. **Biosolids** are humus-like products of wastewater treatment which contain nitrogen, phosphorous, and other nutrients that are vital to healthy and productive soil. The quality, production, distribution, storage, and land application of biosolids are regulated by the provincial *Environmental Management Act* and *Public Health Act* Organic Matter Recycling Regulation (OMRR).

Solids from FCPCC and NBPCC are processed at FCPCC using autothermal thermophilic aerobic digestion (ATAD) and centrifugal dewatering technology to produce 'Class A' biosolids (as defined by OMRR).

Solids from GNPCC and DPPCC are processed at GNPCC using mesophilic anaerobic digestion to produce 'Class B' biosolids (as defined by OMRR). Mesophilic anaerobic digestion processes sludge at lower temperatures over a shorter period than ATAD.

All RDN biosolids are beneficially used at the Vancouver Island University (VIU) woodlot in their Forest Fertilization Program.

- c. **Cogeneration** refers to the use of biogas to generate both electricity and heat. GNPCC is one of the first wastewater treatment plants of its size in Canada to implement cogeneration. All of the electrical power is sold to BC Hydro to supply enough power for up to 350 homes.
- d. **District heating systems** capture thermal energy from wastewater effluent to provide hot water and space heating using heat recovery technology. District heating plants can provide higher efficiencies and better pollution control than localized boilers. The RDN has an agreement-in-principle with School District 68 to provide Hammond Bay Elementary School with heat from the GNPCC outfall. This project will allow the school district to use the residual heat from the treated wastewater leaving the GNPCC as the primary heat source for the school. This unique system will reduce the school's overall carbon footprint by 78% and its operating cost by \$4,800 each year.
- e. **Reclaimed water** is effluent from a municipal wastewater facility that is suitable for use in accordance with the MWR. GNPCC and FCPCC use effluent during operation as process and wash water in place of potable water. During the summer months, FCPCC also sends up to 1,370 cubic metres per day (m³/d) of its final effluent to Morningstar Golf Course for irrigation. Beneficial effluent reuse lessens the demand on the potable water supply and reduces the volume discharged to the ocean.

2.2.2 Greater Nanaimo Pollution Control Centre

Wastewater from the Greater Nanaimo Service Area is received at the GNPCC, on 4600 Hammond Bay Road in Nanaimo. GNPCC serves an estimated population of 86,068 people (RDN 2012a) in the Greater Nanaimo Service Area, which covers the City of Nanaimo, District of Lantzville and Snuneymuxw First Nation lands (illustrated in Figure 1). Wastewater is conveyed to GNPCC from three pump stations, an interceptor, and a septage receiving facility at the Chase River Pump Station. It also provides service for BC Ferries' Departure Bay ferries to discharge from their wastewater tanks directly into the RDN's interceptor line. GNPCC provides chemically enhanced primary treatment to remove approximately 55% of BOD₅ and 76% of TSS (RDN 2012a). The RDN is authorized, under Environmental Management Permit No. PE-00338, to discharge treated effluent from GNPCC to the Strait of Georgia 2,030 m offshore at a depth of 70 m. GNPCC produces 'Class B' biosolids that are beneficially used at the VIU woodlot. GNPCC also has a cogeneration plant to produce electricity and heat from biogas and uses effluent during operations in place of potable water to suspend the flocculent in a solution.

There is potential for the Greater Nanaimo Service Area to include development in the City of Nanaimo, District of Lantzville, Snuneymuxw First Nation lands (IR 2, 3, and 4), new development in growth containment boundaries, and adjacent lands to address failing onsite systems that threaten environmental and human health. Though the

observed growth in the RDN from 2010 to 2011 was only 0.7% (BC Stats 2012), population estimates predict this service area will grow by 2% per year, reaching 130,720 people in 2036 (Urban Futures 2007).

2.2.3 French Creek Pollution Control Centre

Wastewater from the French Creek Service Area is received and treated at FCPCC, on 957 Lee Road in Parksville. FCPCC serves an estimated population of 26,047 people (RDN 2012b) in the City of Parksville, Town of Qualicum Beach, French Creek Sewer Service Area, Surfside Sewer Service Area, Barclay Crescent Sewer Service Area, and Pacific Shores Sewer Service Area (shown on Figure 1). FCPCC receives wastewater from seven pump stations, interceptor lines and forcemains, and has a septage receiving facility on site. FCPCC provides secondary treatment to remove up to 94% of the BOD₅ and TSS (RDN 2012b). The RDN has authorization under Environmental Management Permit No. PE-4200 to discharge treated effluent from FCPCC to the Strait of Georgia 2,440 m offshore at a depth of 61 m. FCPCC produces 'Class A' biosolids which are beneficially used at the VIU woodlot. From May to September, up to 1,370 m³/d of reclaimed water is pumped to ponds at Morningstar Golf Course where it is stored for irrigation. Reclaimed water is also used at FCPCC during operations in place of potable water.

There is potential to expand the French Creek Service Area to include Village Centres or problem areas in Electoral Areas F, G and H to address failing onsite systems (e.g. Hawthorne Rise). Though the 2010-2011 observed growth in the RDN was only 0.7% (BC Stats 2012), population estimates predict the service area will grow at an estimated rate of 2% per year to a population of 40,770 in 2036 (Urban Futures 2007).

2.2.4 Nanoose Bay Pollution Control Centre

NBPCC is a small treatment facility built to serve the Fairwinds subdivision on the Nanoose Peninsula (its flows represent approximately 1% of the flows treated at GNPCC). Since the facility was commissioned, a few properties outside of Fairwinds, on Dolphin Drive and Department of National Defense lands, have been added to the service area. Wastewater from residential and commercial users in the Nanoose Bay Service Area is received at NBPCC, on 3260 Schooner Cove Drive in Nanoose Bay. The extent of the Nanoose Bay Service Area is illustrated in Figure 1. NBPCC receives wastewater from nine pump stations, interceptor lines, and forcemains and serves an estimated population of 1,350 people (RDN 2012c). NBPCC provides chemically enhanced primary treatment to remove approximately 61% of the BOD₅ and 82% of the TSS (RDN 2012c). The RDN has authorization under Environmental Management Permit No. PE-7214 to discharge treated effluent from NBPCC to the Strait of Georgia 450 m offshore at a depth of 39 m. Sludge from NBPCC is trucked to FCPCC and processed into biosolids.

Expansion of the Nanoose Bay Service Area may include the Fairwinds Lakes District and Schooner Cove, Village Centres identified in the Official Community Plan (OCP) and problem areas with failing onsite systems. Though the observed growth in this service area was only 0.3% (AECOM 2010a) and the 2010-2011 observed growth in the RDN was only 0.7% (BC Stats 2012), population estimates predict the service area will grow at an estimated rate of 1.8% per year resulting in a population of 1,700 in 2025 (AECOM 2010b).

2.2.5 Duke Point Pollution Control Centre

DPPCC is located at 625 Jackson Road in Nanaimo. Duke Point Service Area, illustrated in Figure 1, includes 30 connections from the Duke Point industrial area and parts of Cedar Village. It also provides service for BC Ferries' to discharge their wastewater from Duke Point ferries into the City of Nanaimo's Duke Point collection system. Three pump stations and an interceptor convey wastewater to DNPCC, which provides secondary treatment to remove approximately 96% of the BOD₅ and 94% of TSS (RDN 2012d). Wastewater is treated with ultraviolet light to disinfect the effluent. Sludge from DPPCC is trucked to the Chase River Pump Station and processed into biosolids at GNPCC. The RDN has authorization under Operational Certificate ME-05989 to discharge effluent from DPPCC to the Northumberland Channel⁵ of the Strait of Georgia, 242 m off shore at a depth of 43 m. The service area may expand to include parts of Cedar, other Village Centres, and areas with failing onsite systems within Electoral Area A.

⁵ Marine outfall is shared with West Coast Reductions.

2.2.6 Private Onsite Systems

Most rural properties do not receive public wastewater services. Rural wastewater is typically treated with privately owned Type 1, 2, or 3 onsite systems (septic systems, private packaged treatment plants, and advanced package treatment plants; categorized based on the resulting water quality). A small number of rural properties are authorized by VIHA to use pump and haul services. Private onsite systems, if properly installed and maintained, are cost-effective options for sustainable wastewater treatment. There are an estimated 12,000 properties in the RDN with onsite sewage treatment, representing roughly one fifth of the RDN population.

Private onsite systems are currently regulated under the BC *Public Health Act Sewerage System Regulation (SSR)*. The SSR shifted responsibility for the planning, design, construction, and maintenance of onsite systems installed or upgraded after May 30, 2005 from local health authorities such as VIHA, to professionals (e.g. professional engineers and geoscientists) and registered practitioners (e.g. registered onsite wastewater practitioners). However, the responsibility to arrange for maintenance and replacement of onsite systems in accordance with their maintenance plans is the responsibility of the system owner. Poorly maintained onsite systems can fail polluting the environment, and endangering public health. Refer to Appendix B, Discussion Paper 2 (On-site Treatment Issues) and Discussion Paper 3 (Policies Regarding New Communities and Developer Installed Package Treatment Plants) for more information on private onsite systems.

3.0 Milestone Achievements Since 1997

The original 1997 LWMP developed six programs:

- **Rural Areas Program:** to extend public wastewater services in growth containment boundaries, consistent with OCPs and the Regional Growth Strategy, and address areas with failing onsite systems
- **Source Control Program:** to prevent pollution
- **Stormwater Management Program:** to manage stormwater flows
- **Volume Reduction Program:** to reduce water consumption and inflow and infiltration (I&I)
- **Odour Control Program:** to mitigate odours generated by the pollution control centres
- **Service Areas Program:** to manage capital projects at the pollution control centres.

The 1997 LWMP made commitments for each program to manage wastewater and wastewater infrastructure sustainably in ways that protect public health and the environment. The RDN met most commitments during the first ten years of implementation (see Appendix C). Specific program milestones and challenges are presented below.

3.1 Rural Areas

The RDN fulfilled all of the original commitments regarding public wastewater systems (see Appendix C). The RDN works with property owners to establish sewer service in areas where failure of septic systems is identified. Since 2000, the RDN has undertaken sewer servicing feasibility studies in several communities, and undertaken a study identifying village centres with potential for investment in wastewater infrastructure. Sewer servicing studies were completed for:

- Cedar (Electoral Area A; Associated Engineering 2000; AECOM 2011a)
- Gabriola Island (Electoral Area B; Associated Engineering 2003a)
- Extension (Electoral Area C); Madrona, Dolphin Bay, and West Bay Estates / Red Gap (Electoral Area E; AECOM 2010a)
- Shaw Hill, Deep Bay, Qualicum Bay, Dunsmuir, and Bowser (Electoral Area H; Associated Engineering 2003b; Chatwin Engineering 2011).

The RDN extended wastewater services to Barclay Crescent in 2004 and parts of Cedar in 2010⁶. Given the per-household costs associated with construction, operation and maintenance of public wastewater systems, the initiative to provide wastewater services in the other areas was not successful and those areas continue to be serviced by onsite systems.

⁶ Municipalities may also expand sewer services within municipal boundaries. These sewer expansions are not noted here.

The RDN fulfilled many of the original commitments regarding private onsite systems (see Appendix C). The RDN reviewed its role with respect to new private onsite sewage systems permits processed under VIHA and for establishing minimum standards for private onsite systems. Conclusions of the review are provided in Appendix C. In 2001, the RDN and the VIHA collaborated in a study that identified 47 areas considered at risk for failing septic systems. In response, in 2009, the RDN introduced the first increase in septage tipping fees to support a public septic education program called SepticSmart. SepticSmart informs homeowners of onsite sewage disposal regulations; encourages homeowners to properly use, maintain, and service their system; and provides tools to enable homeowners to detect a failing system. The goal of the program is to reduce the number of failing systems and to prevent the future failure of ageing systems that could impact human health and the environment. The RDN has also drafted changes to the Regional District of Nanaimo Land Use and Subdivision Bylaw (No. 500) which, if adopted, would allow the RDN to acquire privately owned communal wastewater treatment systems if petitioned to do so. Eligible systems would be limited to wastewater treatment and disposal plants, pumping stations, forcemains and outfalls which serve a minimum of 60 or more dwellings.

3.2 Source Control Program

All of the commitments in the 1997 LWMP Source Control Program were met (see Appendix C and Discussion Paper 5, included in Appendix B). Such commitments included a cost-benefit study (completed in 1998), creation of the Sewer Use Regulatory Bylaw (No. 1225), and an education program, based on the cost-benefit study, to support the bylaw. Source control outreach programs focussed on:

- The dental sector and promoting amalgam separators to address high mercury levels (2001). This program resulted in a 71% reduction of mercury in biosolids and a 96% reduction of mercury in effluent
- The restaurant and food services sector to address oil and grease (2005)
- Garburator use to address BOD₅ (2007).

The RDN also promotes the Province's pharmaceutical return program and the RDN's Team WaterSmart program delivers free workshops educating the public on chemical free gardening and green cleaning techniques. As well, the City of Nanaimo and Town of Qualicum Beach banned the cosmetic use of pesticides.

3.3 Stormwater Management Program

All of the original stormwater management commitments were met (see Appendix C). In 2008, the RDN implemented the "Drinking Water and Watershed Protection (DWWP) Program". This program is the foundation of our rainwater management commitments under the LWMP. The DWWP is an integrated watershed management approach focussed on protecting our water resources. Effective partnerships with community members, government agencies, academia, and business are key to the success of our programs.

Specific accomplishments of our DWWP and rainwater management activities include:

- **Team WaterSmart awareness and education initiatives:** participation at community events; Water Conservation workshops (including WellSmart; Xeriscaping, Rainwater Harvesting; Efficient Irrigation and Gardening; Stream Protection; Home Greywater Systems); guidebooks including Rainwater Harvesting Best Practices.
- **Incentive rebate programs including:** Low Flow Toilets; Rainwater Harvesting Systems; Well Protection Upgrades; Sustainable Development.
- **Community Watershed Monitoring Network:** Partnership between the RDN, Community groups and Ministry of Environment collect valuable water quality data from 14 watersheds across the RDN, identifying priorities for action.
- **WaterMap:** An online interactive tool that provides public access to water resource mapping.
- Expansion of the provincial observation well network in partnership with Geological Survey of Canada and the Province.

- Development of a region wide **Water “Budget” Model**, quantifying water availability and demand in order to gain an improved understanding of how population growth, land use, and climate change will impact water resources.
- Approval of a regional **“Water Conservation Plan”**.

The RDN’s role in stormwater management in the past decade has also included:

- A partnership with provincial and federal governments to produce the Stormwater Planning: A Guidebook for British Columbia (BC MWLAP 2002)
- A partnership with the Ministry of Water, Land and Air Protection and the Georgia Basin Ecosystem Initiative to develop a draft Stormwater Management Plan for the region in 2002. The 2002 draft Storm Water Management plan was not adopted by the RDN Board but a more comprehensive Drinking Water and Watershed Protection (DWWP) Program was adopted in 2008. Each municipality and Electoral Area now participate in the DWWP
- Cooperation with the City of Nanaimo on the Wexford Creek Integrated Stormwater Management Plan
- The Yellow Point Aquifer Protection Development Permit Area to protect water levels of the aquifer
- A pilot Rainwater Harvesting Incentive Program (2011-2013), offered a rebate to residential property owners installing or updating a rainwater harvesting system
- A Rainwater Harvesting Best Practices Guide informing residents of safe and effective rainwater harvesting systems
- A Sustainable Development Checklist for residential, commercial and industrial developments
- A Pilot Green Building Incentive Program promoting best management practices for rainwater management, grey water reuse, and rainwater harvesting
- Workshops and open houses offered by Energy and Sustainability Services and Water Services’ Team WaterSmart highlighted rainwater harvesting and grey water reuse options.

Many OCPs have also created a number of development permit areas (DPAs) which provide protection for the natural environment, its ecosystems and biodiversity, and support the Regional Growth Strategy goal of environmental protection. DPAs exist to protect water features, aquifers, and Sensitive Ecosystems. They also promote a reduction of impervious surfaces and the maintenance of natural hydrologic function.

Such RDN DPAs which protect watersheds and aquifers include:

- Environmentally Sensitive Features DPA (in Area A, G and H OCPs)
- Fish Habitat Protection DPA (in Area A, C, F, G and H OCPs)
- Watercourse Protection DPA (in Area C, E and F OCPs)
- Nanaimo River Floodplain DPA (in Area A OCP)
- Cedar Main Street, Cassidy, and Cedar DPAs (in Area A OCP)
- Yellow Point DPA (in Area A OCP).

Islands Trust also has an OCP for the Protection of the Natural Environment on the Gulf Islands in the trust area.

Through formation of the Wastewater and Water Collaborative (W3C) Meeting, the RDN also meets biannually with municipalities to share information related to advances in rainwater management.

In recognition of the efforts of our member municipalities:

- The City of Nanaimo:
 - Attends biannual W3C meetings
 - Requires stormwater planning in their Engineering Standards and Specifications
 - Has integrated stormwater management plans for Walley Creek and Wexford Creek watersheds
 - Works to disconnect roof leaders from the sanitary sewer
 - Uses policy to encourage homeowners not to infill ditches
 - Monitors rainfall and storm flow using rain gauges and flow meters
 - Requires that developers ensure that storm drainage flows and frequencies after development match predevelopment discharges
 - Has DPA guidelines for watercourses and environmentally sensitive areas in their OCPs
 - Has DPA guidelines for steep slopes which address stormwater management and erosion control

- Considers developing a policy for the design of developer-installed bioswales.
- The District of Lantzville:
 - Attends biannual W3C meetings
 - Discourages infilling open ditches
 - Requires new developments to provide and put in place a rainwater management system
 - Requires small residential developments to provide an enhanced stormwater system to detain water on site
 - Promotes engineered wetlands
 - Upgrades stormwater infrastructure while ensuring an ecological benefit from the upgrade.
- The City of Parksville:
 - Attends biannual W3C meetings
 - Restores and/or realigns creeks and streams to improve drainage
 - Provides a checklist with building permits highlighting sustainable rainwater management practices
 - Develops ditches into bioswales and installs flush curb mounts
 - Pursues capital projects to upgrade underground infrastructure
 - Continues to proactively implement innovative strategies to manage rainwater.
- The Town of Qualicum Beach:
 - Attends biannual W3C meetings
 - Supports the installation of rain gardens and rain barrels on public and residential lands
 - Encourages open ditches and prescribes an engineering standard for ditch infilling
 - Does not charge stormwater DCCs if 100% infiltration occurs onsite
 - Restores and/or realigns creeks and streams to improve drainage
 - Has Erosion and Sediment Control Bylaw No. 617
 - Implements proactive and innovative strategies to manage rainwater.

3.4 Volume Control Program

The 1997 Volume Reduction Program addressed the need to manage I&I and reduce potable water consumption and all of the commitments towards this program were met (see Appendix C). Water consumption was reduced by:

- Educating the public through the RDN's Team WaterSmart program, the City of Parksville's AquaStar program and the District of Lantzville's online water conservation tips and low impact development techniques
- Promoting water conservation through water metering and use of an inverted block rate structure for metered water conservation (used by the RDN and member municipalities)
- Providing rebates to encourage toilet replacements with low-flow alternatives. Rebates were offered by the RDN, City of Nanaimo, District of Lantzville, City of Parksville, and Town of Qualicum Beach
- Offering free workshops, home visits, and information on efficient irrigation.

Average water consumption in the RDN has been reduced from 331 L/day in 2009 to 281 L/day in 2013.

The RDN and member municipalities also worked to reduce volume at the treatment facility through I&I control. In 2001, 2004 and 2006, the RDN completed a three-phased strategy to manage wet weather flow (Associated Engineering 2001, 2004, 2006). The RDN also uses flow meters to measure flows entering the treatment facilities and inspects the interceptors with closed circuit television (CCTV) and smoke tests on a five year rotation cycle. Progress towards I&I reduction is shared at semi-annual meetings with the municipalities. I&I issues and reduction in the RDN are discussed further in Discussion Paper 10 (Appendix B). Some monitoring and mitigation techniques used by the municipalities are listed below.

- The City of Nanaimo:
 - Continues to establish capital plans to address I&I at critical locations within Municipal boundaries
 - Relines portions of the collection system to improve capacity
 - Uses 10 sewer and five rain flow monitoring stations to track flows through the collection system and identify problem areas
 - Plans to replace old service connection wyes at property lines, particularly in the community of Harewood
 - Inspects and seals manholes
 - Develops annual operations and maintenance plans with an I&I component

- Continues with annual CCTV inspections to identify potential problem areas
- Shares rainfall and flow monitoring data with the RDN.
- The District of Lantzville:
 - Annually smoke tests existing lines to eliminate storm drainage cross-connections
 - Monitors manholes and sewer lift stations for infiltration of ground water
 - Monitors and identifies repairs in the collection system such as, but not limited to, cracked pipe, manhole sealant degradation and manhole lid degradation
 - Monitors the outgoing flow for increased flows during the rainy season.
- The City of Parksville:
 - Targets older neighbourhoods for comprehensive repair through an established capital program
 - Installs flow and rainfall gauges at key locations within the city
 - Meets I&I standards established for the city based on the Metro Vancouver standard of 11,200 litres per hectare per day (L/ha/d) for a 5 year storm event and the Capital Regional District (CRD) design standard of 12,500 L/ha/d for new sewers
 - Repairs manholes and pipes as identified or through sanitary sewer condition assessments
 - Monitors collection system for I&I.
- The Town of Qualicum Beach:
 - Uses CCTV to inspect the collection system and potential problem areas
 - Fills manhole gaps with a foam injection system
 - Inspects the entire collection system with dye and smoke tests to identify and remedy problem areas.

3.5 Odour Control Program

All of the commitments in the 1997 LWMP Odour Control Program were met (see Appendix C). Since 1997, the RDN has implemented extensive odour control measures at wastewater treatment facilities. For example, the RDN established a hydrogen sulphide monitoring program and established “odour procedures” in the Environmental Management System (EMS)⁷ to ensure that staff eliminate or reduce odours during routine duties and respond within 24 hours to odour complaints. To further control odour at FCPCC, the RDN installed chemical scrubbers and added ferrous chloride and biological scrubbers to neutralize hydrogen sulphide and installed ion generators and enclosed odour-generating areas at Bay Avenue, Lee Road, and Hall Road Pump Stations. As a result, the number of complaints received for odours at FCPCC dropped from 227 in 1999 to none in 2011. Similarly, an odour control system was installed at the Wellington Pump Station GNPCC received only four odour complaints in 2011.

3.6 Service Areas

Greater Nanaimo Pollution Control Centre

Most of the commitments in the 1997 Service Areas Program for the GNPCC were met (see Appendix C) and only the GNPCC secondary treatment upgrade is outstanding. The 1997 LWMP projected that GNPCC would be upgraded to provide secondary treatment by 2015. Expansion and upgrade of GNPCC were topics of much discussion during the LWMP amendment process and were addressed in Discussion Papers 1, 4, 6, 7, and 8, all provided in Appendix B. Over the last decade, the RDN has initiated the upgrade process through a number of planning, engineering and capital projects. Projects completed in the past decade include:

- Introduction of chemically enhanced primary treatment to improve effluent quality (2002)
- Purchase of property to establish a buffer to Neck Point Park and to facilitate expansion and upgrades (2002)
- Relocation and enhancement of Walley Creek to facilitate secondary upgrade and expansion (2006)
- Completion of the GNPCC upgrade process selection (2011)
- Construction of a third digester (2013)
- Construction of the fourth primary sedimentation tank (2013).

⁷ An Environmental Management System is a tool used to evaluate and improve environmental performance. RDN Wastewater Services' EMS is ISO 14001 certified.

The RDN seeks an amendment to the timeline for completion of secondary treatment upgrades at GNPCC.

French Creek Pollution Control Centre

Since 1997, most of the original LWMP commitments regarding the FCPCC were met (see Appendix C), including expansion and upgrades to the Lee Road and Bay Avenue pump stations. As well, the dewatering facility was upgraded to facilitate the economic transportation of biosolids. The only commitment from the original LWMP not yet met is the expansion of the facility and outfall by 2015. Since growth in the area was slower than projected, expansion is not yet required and the projects are now scheduled for 2018-2025. As well, projects completed between 2006 and 2011, have increased plant capacity and these capacity improvements are enhanced by the volume reduction program. FCPCC expansion is addressed in Discussion Papers 1, 4 and 8, all provided in Appendix B.

Nanoose Bay Pollution Control Centre

Since 1997, all of the original LWMP commitments regarding the NBPCC were met (see Appendix C) with the exception of the upgrade to provide secondary treatment by 2010. The upgrade was discussed during the LWMP update process and addressed in Discussion Papers 1, 6, 7, and 8 (provided in Appendix B) and the Nanoose Bay Pollution Control Centre Upgrade Study (Appendix D). The RDN seeks an amendment to the timeline for secondary treatment upgrades at NBPCC.

NBPCC was built to provide primary treatment for an estimated 1,500 people, with minor improvements required to serve approximately 3,000 people. In 1997, the facility served an estimated 580 people and a goal of the 1997 LWMP was to expand service in this area to 12,000 people and upgrade the treatment process to secondary. Growth in the sewer service area was predicted to come from development of the Fairwinds subdivision and potential trunk expansions to Madrona / Wall Beach, Delanice Way, Beachcomber, Red Gap, and Garry Oaks (Dayton & Knight Ltd. Consulting Engineers 1997). With respect to sewer trunk expansion, the 1997 LWMP noted that the “final decision regarding the options will be made as part of the OCP” review process (3.6.3 page 16). The OCP supported evaluating service area expansion. The RDN completed sewer servicing studies in 2002, 2008, and 2009 for Dolphin Beach, West Bay Estates / Red Gap, and Madrona / Wall Beach, respectively. On the basis of these engineering feasibility studies, the RDN concluded that expansion of the NBPCC service area was not feasible at that time. Growth in Fairwinds has been much slower than expected and connection rates to the facility remain low.

Duke Point Pollution Control Centre

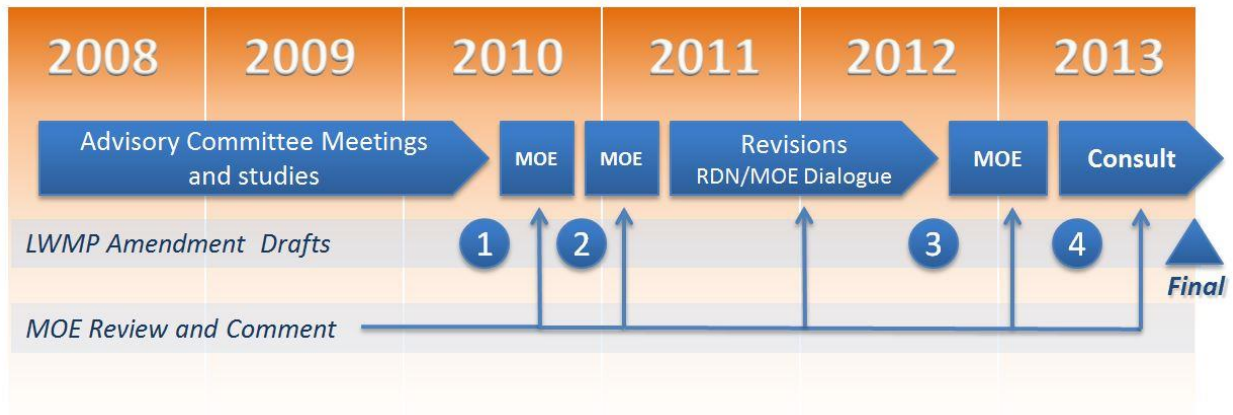
All of the commitments in the 1997 Service Areas Program for the DPPCC were met (see Appendix C). The RDN commissioned the sequencing batch reactor treatment system at DPPCC in 1998. Since then, DPPCC has provided domestic wastewater treatment for the Duke Point Industrial Park. In 2009, sewer service was extended to Cedar Village. The necessity to expand or upgrade the Duke Point Pollution Control Centre was evaluated during the LWMP update process and was addressed in Discussion Paper 1, 4, and 8, all provided in Appendix B.

4.0 Plan Amendment Process

The LWMP amendment is a result of more than five years of study and input from the public, technical specialists, MOE staff, First Nations and elected representatives of regional and municipal jurisdictions (refer to Figure 2 for a detail of amendment milestones). During that time, there were 18 Regional Liquid Waste Advisory Committee (RLWAC) meetings (see Section 4.3.1) and RDN staff submitted multiple draft amendments to MOE staff for review.

The RLWAC meetings were critical to the input process as they provided a regular venue for committee members to review progress on the update and provide feedback on plan development. The update process also includes a program for public review and consultation and First Nations engagement, explained in Section 4.3 and Section 4.4. The amended plan is consistent with the intent of the original LWMP and current Regional Growth Strategy; documents already adopted by the RDN and its member municipalities. It is also consistent with new and updated federal and provincial regulations.

Figure 2. LWMP Amendment Milestones



4.1 Guiding Principles

The 1997 LWMP established a set of principles intended to guide the decision-making process towards meeting these goals. The current guiding principles evolved from those listed in the 1997 LWMP to respect that the LWMP is a collaborative plan and to reflect the need for sustainable and affordable services. While the core values of the original principles remain, the new guiding principles provide a closer link to the fundamental objectives and scope of the plan. The guiding principles which guide the RDN's approach to wastewater management moving forward are:

Flexibility: Flexibility is necessary for the LWMP to meet future demands, new environmental criteria and evolving technologies. Infrastructure must also adapt to varying loads, flows, environmental conditions, new regulatory requirements, and new technologies.

Sustainability: The RDN must choose affordable solutions for wastewater management that respect and protect the environment and public health. Decisions to replace and upgrade infrastructure will consider potential energy generation, water conservation and reuse, nutrient recovery, greenhouse gas and odour emissions, and operational efficiency. Operational efficiency considers lifecycle costs, resource consumption, ease of operation, adaptability, and worker safety.

Collaboration: The RDN will collaborate with other levels of government including First Nations, government agencies, municipalities, businesses, the public, and other stakeholders when developing wastewater management strategies. Inter-departmental collaboration within the RDN is also essential since the success of many programs require joint services by various departments. RDN Wastewater Services will assume a coordinating role when collaboration will benefit the success of LWMP implementation.

The updated plan proposes no new discharge points; rather it provides a revised schedule for infrastructure upgrades which will improve effluent quality, meet new regulatory requirements, and provide services to a growing population. Program actions identified in Section 5.0 also support the RDN's commitment to sustainable wastewater management.

The original LWMP followed the MOE's three stage process (MOE 1992). This LWMP amendment is a revision of the Stage 3 report. While there is no guideline specifically for an LWMP amendment, this document was prepared in accordance with the Ministry's updated guidelines for developing an LWMP (MOE 2011).

4.2 Regional Priorities

The LWMP will address the needs of community by focussing on:

- Protecting human health and the environment
- Required secondary level treatment upgrades at GNPCC and NBPCC
- Preparing for growth, specifically at GNPCC and FCPCC
- Taking an integrated resource management approach to liquid waste planning

- Efficient delivery of services and management of assets
- Meaningful First Nations engagement and public consultation.

The RDN recognizes the importance of all LWMP programs and will methodically develop the programs, monitor feedback, and refine program delivery in partnership with the plan monitoring committee (discussed in Section 8.1). Emerging issues (discussed in Section 6) will be monitored and addressed as new technologies, standard practices, and grant funding become available.

4.2.1 Protect Human Health and the Environment

We will manage our liquid waste and rainwater resources in a manner that protects human health and the environment, and future generations' access to those resources.

4.2.2 Secondary Upgrades

Federal and provincial laws governing wastewater management require us to achieve a standard level of wastewater treatment that can be achieved through secondary wastewater treatment. Currently, GNPCC and NBPCC provide chemically-enhanced primary treatment and must be upgraded in the upcoming years⁸.

Through the LWMP Amendment, the RDN is requesting an extension to the timeline for secondary treatment upgrades at GNPCC and NBPCC.

4.2.3 Preparing for Growth

GNPCC and FCPCC are reaching their capacity and must be expanded to accommodate growth in the service areas. Preparing for growth, both through DCC collection and capital projects, is a priority for RDN LWMP.

4.2.4 Integrated Resource Management

We will take an integrated resource recovery approach to liquid waste planning. Our decisions will consider potential energy generation, water conservation and reuse, nutrient recovery, greenhouse gas and odour emissions.

We recognize that water is a shared and interconnected resource, and our waste management decisions affect our neighbours and the water resources we all rely upon. The RDN commits to managing our water resources in an integrated manner.

4.2.5 Efficient Services and Asset Management

Statistics Canada stated that wastewater treatment facilities were among the oldest category of infrastructure in Canada and were past 63% of their useful life in 2007 (Gagnon et al. 2008). As such, many Canadian municipalities are challenged with the need to invest in wastewater infrastructure while maintaining affordable rates.

The RDN is committed to delivering affordable and efficient services to its residents and responsibly managing wastewater infrastructure. We will perform preventative and corrective maintenance, and replace infrastructure when necessary to optimize life expectancy and system performance. To maximize efficiency, the RDN will consider lifecycle costs, resource consumption, ease of operation, adaptability, and worker safety. Capital assets will be designed and managed for the long term.

4.2.6 Meaningful Engagement and Consultation

Under the Community Charter and *Local Government Act*, a local government must seek electoral approval (i.e. hold a referendum) to borrow for capital works. However, an LWMP gives the public an opportunity to provide input with respect to the development of the LWMP and financing of the proposed projects. Therefore, the *Environmental*

⁸ According to the federal Wastewater Systems Effluent Regulations (WSER), existing wastewater treatment facilities must be upgraded to provide secondary treatment by 2020, 2030, or 2040 based on criteria defined in Schedule 2 of that regulation. According to the WSER, secondary treatment at GNPCC must be provided by no later than 2020 and secondary treatment at NBPCC must be provided by no later than 2040.

Management Act considers the need for electoral approval to be fulfilled if a local government can demonstrate that the public was adequately consulted during the LWMP development stage. There is no mechanism to appeal an LWMP once approved by the Minister of Environment. For those reasons, meaningful public consultation during plan development is essential.

4.3 Public Consultation

The Board approved the RDN's LWMP Review Public Consultation Plan in March 2008 and an updated Consultation Plan in July 2013. The plans were available on the RDN website throughout the update process. The following sections summarize the RDN's involvement with the community and First Nations during development of the LWMP.

4.3.1 Regional Liquid Waste Advisory Committee

The LWMP was updated in consultation with the RLWAC, a committee that fulfills the roles of the technical, local advisory and monitoring committees as described by the MOE guidelines. The Terms of Reference for the RLWAC are provided in Appendix E.

The RLWAC played a key role in public consultation since community, environmental, and business stakeholders and First Nations were invited to sit on the committee and have direct input into the LWMP decision-making process. RLWAC meetings were also open to the public and meeting minutes were available on the RDN website and upon request. The RLWAC includes individuals representing the following:

- RDN Board (elected officials representing the municipalities and electoral areas)
- Municipal utility managers
- RDN residents
- Local businesses
- Resident First Nations
- Environmental organizations (Georgia Strait Alliance)
- Ministry of Environment
- Vancouver Island Health Authority
- Environment Canada.

Fisheries and Oceans Canada declined the invitation to join the committee.

A list of RLWAC members is included in Appendix E. The RLWAC met on 18 occasions between February 2008 and November 2013 to evaluate options and issues related to the updated LWMP and wastewater management in the RDN. Information presented to the RLWAC included a background of Wastewater Treatment Basics and ten discussion papers, attached in Appendix B. Discussion Papers included:

- Discussion Paper 1: Review of Existing Conditions
- Discussion Paper 2: On-site Treatment Issues
- Discussion Paper 3: Policies Regarding New Communities and Developer Installed Treatment Plants
- Discussion Paper 4: Current Flows and Loads, Effluent Quality and Treatment Plant Capacities
- Discussion Paper 5: Source Control Program
- Discussion Paper 6: Options for Secondary Treatment Processes
- Discussion Paper 7: Cost Estimates of Upgrading/Expanding Treatment Capacity
- Discussion Paper 8: Integrated Resource Management Opportunities for the Regional District of Nanaimo
- Discussion Paper 9: Servicing Rural Areas
- Discussion Paper 10: Volume Reduction in Sanitary Sewers.

The RLWAC commented on discussion papers, reports, draft LWMP chapters and other issues as they emerged through the review process. Input from the RLWAC was recorded in the minutes and incorporated into the LWMP update. Meeting minutes are attached in Appendix E.

4.3.2 Public Consultation

Public Consultation provided an opportunity for all members of the RDN community to learn about and provide input towards the LWMP amendment. The RDN followed the updated Consultation Plan and created a comprehensive

framework to provide a range of opportunities for the RDN public to participate directly in the LWMP amendment process. Pathways for information distribution and feedback included:

- Engagement through an Advisory Committee
- LWMP Website
- LWMP factsheets
- Distribution of the Draft LWMP Amendment
- Public meetings
- Survey
- Mail-out to Nanoose Bay Service Area residents
- Meetings with other levels of government
- Advertising.

The public was invited to respond in person during public meetings, via phone, and through the survey, email, and standard mail. Through the widespread advertising and information campaign, the RDN was able to reach every household within regional boundaries at least once to inform residents of the LWMP amendment. To date, 1,036 people participated in LWMP events. Feedback trends are summarized below and incorporated into Section 5 of the plan. Detailed comments from residents and stakeholders are documented in a separate Consultation Summary Report.

Public Wastewater Systems Program

Program feedback included:

- In areas without sewer, sewer is generally desired where the lots are small. Sewer is not deemed necessary or feasible on large acre properties.
- Costs to connect to sewer, should it become available, should be comparable to replacing a septic system (\$20,000-\$30,000)
- The cost to connect to sewer is too expensive for some residents
- Some residents feel they should not have to connect to sewer if their septic system is working.

Private Onsite Systems Program

Program feedback included:

- Among residents with onsite systems, there is some concern of neighbours with failing onsite systems and the effects on the environment and groundwater
- There is limited desire for the RDN to adopt regulatory role regarding onsite systems
- There was some desire for the RDN to regulate and limit properties on pump and haul
- There is a broad perception that VIHA does not respond to complaints made regarding failing onsite systems.

Source Control Program

Program feedback included:

- There was a long list of suggestions for partners and pollution prevention targets
- Many residents are interested in receiving more education related to source control. Suggested ways to deliver the information included columns in the Regional Perspectives, regular newspaper ads, financial incentives, and mailed information.
- A source control program will require bylaw enforcement to be most effective.

Rainwater Management / Drinking water & Watershed Protection Program

Program feedback included:

- There was a strong interest in this topic among public meeting participants, particularly around rainwater harvesting, developing building specifications, and erosion control (particularly for steep areas)
- Many residents are concerned about the effect of upstream land use and development and the potential effects on their groundwater and the quality and quantity of water in nearby watercourses.

Odour Control Program

Program feedback included:

- Greater Nanaimo Pollution Control Centre and Duke Point Pollution Control Centre generally do not emit nuisance odours
- Odours from Nanoose Bay Pollution Control Centre are noticeable, but not a nuisance yet
- Odours from French Creek Pollution Control Centre are a significant nuisance to neighboring residents
- When asked to share ideas about tolerable levels of odours, many residents replied that no amount of odours is acceptable in residential areas. Others recognized that there is a significant cost associated with odour control and there must be a balance between investing in odour-controlling infrastructure and dealing with a moderate amount of odours.

Volume Reduction Program

Program feedback included:

- There was support for RDN workshops and educational information
- There was a strong interest in, and support for, greywater reuse as a way to conserve water.

Inflow and Infiltration Program

Program feedback included:

- Most people were unaware of what inflow and infiltration are and the problems they cause
- Most people expressed a willingness to reduce private property inflow and infiltration if they were provided enabling tools such as increased education and financial incentives.

Pollution Control Centres Program

Program feedback regarding the secondary treatment upgrades at Greater Nanaimo Pollution Control Centre and Nanoose Bay Pollution Control Centre varied widely. Feedback trends included:

Secondary Treatment

- Residents appreciate the value of protecting a “shared environment”
- Many residents support an earlier upgrade timeline because:
 - they felt that costs go up the longer you wait due to inflation and the rising costs of construction
 - it is better for the environment
- Many residents support a later upgrade timeline because:
 - it allows more time to secure provincial and federal grant funding
 - it represents the lowest tax increase
- Regardless of the date proposed, many residents felt that the project should be completed as soon as provincial and federal grant funding were secured but that support for early upgrade was contingent upon securing grant funding.

Greater Nanaimo Pollution Control Centre

When the RDN population was asked for their preference for timing options for secondary treatment at GNPCC (based on 103 responses),

- 32% preferred Option 1: 2016
- 30% preferred Option 2: 2018
- 38% preferred Option 3: 2019.

Considering the response of only residents who would pay for the project (GNPCC service area) (based on 33 responses),

- 21% preferred Option 1: 2016
- 30% preferred Option 2: 2018
- 49% preferred Option 3: 2019.

Nanoose Bay Pollution Control Centre

When the RDN population was asked for their preference for timing options for secondary treatment at NBPCC (based on 101 responses),

- 40% preferred Option 1: 2020
- 30% preferred Option 2: 2025
- 30% preferred Option 3: 2030.

Considering the response of only residents who would pay for the project (NBPCC service area) (based on 35 responses),

- 60% preferred Option 1: 2020
- 11% preferred Option 2: 2025
- 29% preferred Option 3: 2030.

French Creek Pollution Control Centre

When discussing the expansion plans for French Creek Pollution Control Centre, there was a general concern from French Creek residents that expansion would increase odour problems.

Resource Recovery Program

Program feedback included:

- Most people strongly supported economically viable resource recovery programs in the RDN
- There was support for the potential Hammond Bay Elementary district heating project and others like it.

Biosolids Program

Program feedback included:

- Biosolids reuse is a great idea, so long as storage and application areas were kept away from them due to the concern about potential effects on groundwater quality
- Residents were curious about the possibility to generate revenue from the sale of biosolids.

4.3.3 First Nations Engagement

The LWMP amendment represents an important milestone in an ongoing process of engagement with First Nations related to liquid waste management. We will continue to engage First Nations to provide ongoing opportunities to identify adverse impacts as planning and implementation moves forward in the coming months and years.

The province of British Columbia has a duty to consult with First Nations whenever it considers a decision that has the potential to affect aboriginal interests or treaty rights. For the LWMP amendment, the province has delegated procedural aspects of First Nations consultation to the RDN. To engage First Nations in a respectful and meaningful way, the RDN have provided a range of opportunities for First Nations to meet, engage, and participate directly with the RDN and others in the liquid waste management planning process. Where feasible, input was incorporated into the planning and decision-making process.

In 2010, the Province updated their First Nations consultation policy (Province of British Columbia 2010) and developed the Consultative Areas Database (CAD) Public Map Service to help proponents such as the RDN determine First Nations groups with potential aboriginal interests within the project boundaries. Accordingly, the RDN referenced the Province's updated procedures and performed a CAD query which identified the following groups (Province of British Columbia 2011):

- Cowichan Tribes
- Ditidaht First Nation
- Halalt First Nation
- Hul'qumi'num Treaty Group
- Hupacasath First Nation
- K'omoks First Nation
- Laich-kwil-tach Treaty Society
- Lake Cowichan First Nation
- Lyackson First Nation
- Nanwakolas First Nations Referrals Office
- Penelakut Tribe
- Qualicum First Nation

- Semiahmoo First Nation
- Sliammon First Nation
- Snaw-naw-as First Nation
- Snuneymuxw First Nation
- Stz'uminus First Nation
- Te'Mexw Treaty Association
- Tseshaht First Nation
- Wei Wai Kum First Nation
- We Wai Kai Nation
- Xwemalhkwa (Homalco) First Nation.

First Nations engagement included:

- Involvement in the RLWAC
- Introductory letters and information package delivered directly to the First Nations above
- Follow up letters and/or conversations, as required
- Minimum 60 day information package review period
- Meeting with First Nations, upon request, to share information and consider accommodation
- Access to information and feedback through the public consultation process listed in Section 4.3.2.

The RDN invited feedback from First Nations at RLWAC meetings, through mail, phone, e-mail, and from conversations during information meetings. Progress towards First Nations engagement is summarized in a separate First Nations Engagement Progress Report and incorporated into Section 5 of the plan.

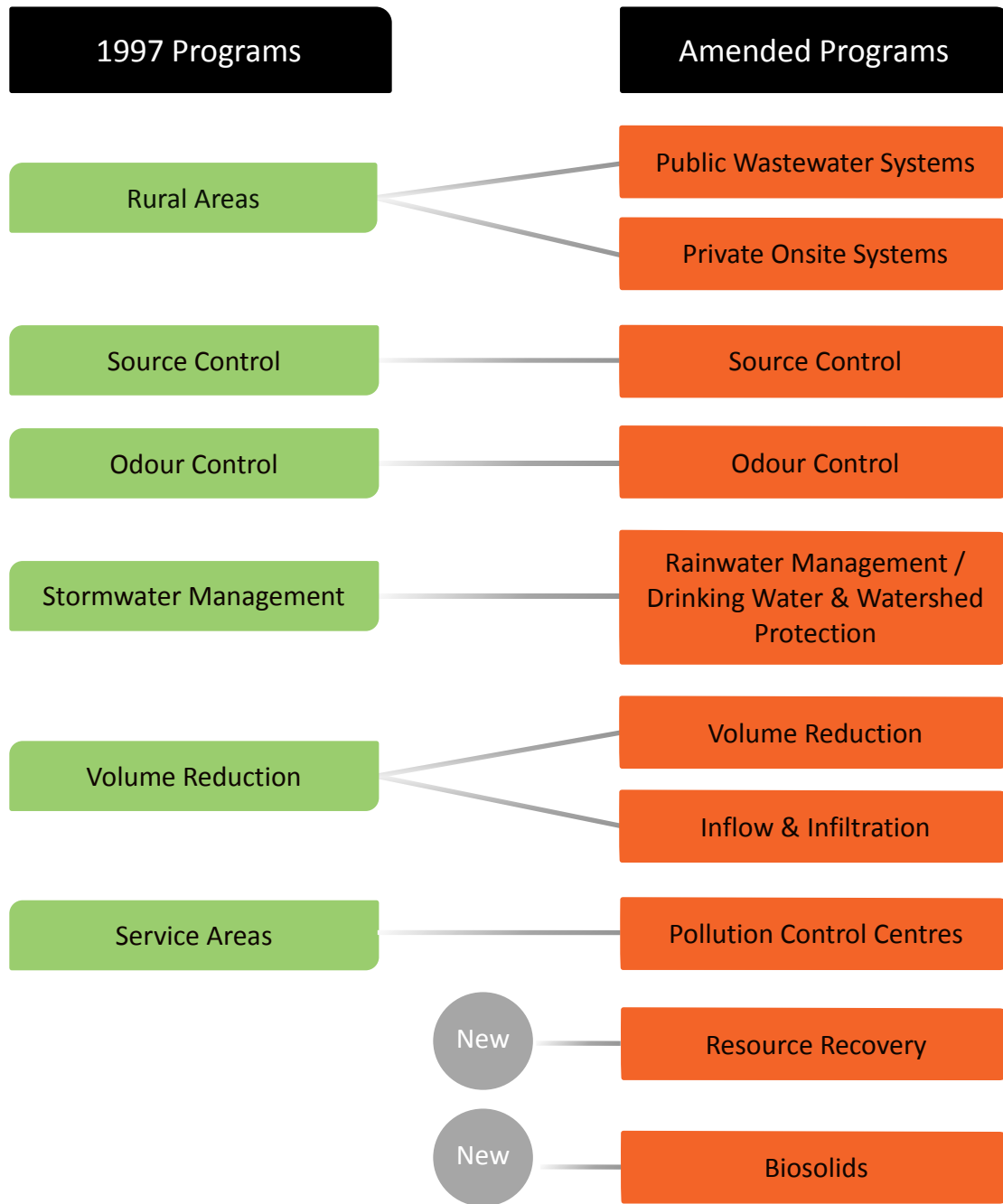
5.0 Updated Programs

During the amendment process, the original six programs were expanded, as shown in Figure 3. As well, the Biosolids Program and Integrated Resource Recovery Program were added to guide the beneficial reuse of waste resources. Biosolids management and resource recovery are not new to the RDN; however, there was no LWMP program for biosolids or resource recovery in the past. MOE guidelines recommend inclusion of these management components (MOE 2011); therefore, they were added to the amended LWMP.

The program format models the RDN's Environmental Management System with the use of objectives, targets, and actions. Objectives are the long range goals (20 years) for a program designed to meet the intent of the MWR and align with the initiatives defined in Table 1. Targets are ten-year commitments that measure progress towards the objectives. Actions are incremental strategies designed to achieve the target.

Actions will be reviewed annually and refined as necessary under the guidance of a plan monitoring committee (described further in Section 8.0) to achieve objectives of the program. Annual review and refinement will provide the flexibility to sustainably manage wastewater and respond to changes such as the pace of development, technical issues, study results, regulatory changes, and availability of funding and grants. Anticipated dates for delivery of program commitments are provided in Section 7.

Figure 3. LWMP Amendment Program Topics



5.1 Public Wastewater Systems Program

During the LWMP amendment process, the RLWAC decided the RDN should continue pursuing opportunities to establish public wastewater systems for properties in growth containment boundaries and for properties adjacent to growth containment boundaries with failing private onsite systems, as consistent with OCPs and the Regional Growth Strategy. Community wastewater systems may be provided if the full cost of service provision is paid by property owners. Public Wastewater Systems Program objectives, targets, and actions are summarized in Table 2.

Table 2. Public Wastewater Systems Program Commitments

OBJECTIVES

1. Address OCP goals of providing wastewater services in growth containment areas
2. Reduce the threat to human and environmental health from failing onsite systems

TARGETS

The RDN will:

1. Establish a strategy to provide wastewater servicing in growth containment areas
2. Establish a strategy to accept new connections to existing public wastewater infrastructure for properties adjacent to growth containment areas with failing private onsite systems

ACTIONS

1. Establish a strategy to achieve wastewater servicing in growth containment areas:
 - i. A study to identify Village Centres with the development potential to warrant an investment in wastewater infrastructure (completed 2013)
 - ii. Complete sewer servicing engineering studies for Bowser and Cedar villages
 - iii. Coordinate with Development Services through the OCP review process to identify property owners in growth containment boundaries who are interested in establishing public wastewater services

2. Establish a strategy to achieve wastewater servicing for properties with failing private onsite systems:
 - i. Draft a bylaw to allow properties with failing onsite systems to connect to sewer services, where available
 - ii. Improve public awareness of areas which may connect to RDN sewer systems for health and environmental reasons (failing onsite system) and create a guide which walks homeowners through the sewer connection application process
 - iii. Work with property owners, as needed, in locations where there are known onsite system failures to establish connections to public wastewater infrastructure
 - iv. Develop a webpage to inform the public of historic sewer servicing studies and of the criteria for the provision of future sewer services.

5.2 Private Onsite Systems Program

The Private Onsite Systems Program addresses the need to improve the condition of failing privately owned onsite systems. The Private Onsite Systems Program applies to systems covered under the Sewerage System Regulation (SSR) including privately owned and maintained Type 1, Type 2 and Type 3 onsite wastewater treatment systems. It may also apply to privately-owned holding tanks (using pump and haul services).

The Sewerage System Practice Manual recommends that Type 1 septic tanks be monitored every two years and pumped out regularly (generally three to five years) depending on household occupancy and tank volume. The manual also recommends that Type 2 and 3 systems be monitored annually or semi-annually and maintained by an authorized person according to the maintenance plan (British Columbia Onsite Sewage Association 2007). However, the SSR currently does not have a process in place to actively inform residents of the minimum maintenance requirements or to incent adherence to those recommendations. For those reasons, the RDN initiated a study in 2011 (using a Ministry of Community Services Infrastructure Planning Grant) to examine the feasibility of establishing a mandatory maintenance program for onsite systems. Results of that study will contribute to development of the Private Onsite Systems Program. The Private Onsite Systems Program objective, targets and actions are summarized in Table 3.

Table 3. Private Onsite Systems Program Commitments

OBJECTIVE

Protect the environment and human health from failing private onsite systems

TARGETS

The RDN will:

1. Enhance the SepticSmart education program content to encourage regular onsite system maintenance with the intent of prolonging the life of functioning systems and reducing the number of failing systems
2. At the request of the owner, allow RDN acquisition of privately owned onsite systems which serve a minimum of 60 parcels
3. Limit holding tanks in the RDN

ACTIONS

1. Enhance SepticSmart education program content:
 - i. Annually review the SepticSmart education program; update where necessary
 - ii. Enhance the source control component of the SepticSmart program (complete 2013)
 - iii. Work with VIHA and Water Services to develop area-specific communications or newsletters for areas at high risk for groundwater contamination
 - iv. Host at least four SepticSmart education workshops annually
 - v. Evaluate the potential for a mandatory onsite system maintenance program in the RDN (complete 2013)
2. Work with Development Services to adopt draft changes to Land Use and Subdivision Bylaw (No. 500) which would enable the RDN to acquire privately-owned onsite systems serving at least 60 parcels, if petitioned
3. Limit holding tanks in the RDN:
 - i. Review and revise the Pump & Haul Local Service Establishment Bylaw (No. 975) and the Sewage Disposal Regulation Bylaw (No. 1224) so only grandfathered properties and properties with failed onsite systems qualify for the septage receiving rate reduction
 - ii. Work with VIHA and Building Inspection Services to limit holding tanks on new developments.

5.3 Source Control Program

Source control is an economical and effective way to limit what pollutants get put down the drain. Such limits improve the quality of wastewater entering the system and subsequently improve the quality of effluent and biosolids produced after treatment. It can also protect the health and safety of the environment, the public, and RDN employees. Discussion Paper 5 (included in Appendix B) evaluated three options for the updated LWMP: 1) abandon the program, 2) maintain status quo or 3) improve the program.

The discussion paper concluded that the RDN should continue the program with minor improvements such as:

- Partnerships with other RDN departments and organizations to promote source control in the RDN
- Partnerships with the municipalities and other jurisdictions to establish a streamlined approach to source control.

The RDN will build on past successes and continue updating and delivering the source control program, which is delivered mainly through the Sewer Use Regulatory Bylaw (No. 1225) and public education programs. The Source Control Program objective, targets and actions are summarized in Table 4.

Table 4. Source Control Program Commitments

OBJECTIVE

Reduce contaminants at the source to improve the quality of influent, effluent and biosolids

TARGETS

The RDN will:

1. Enhance regional source control through a single unified bylaw similar to the Sewer Use Regulatory Bylaw (No. 1225) or through consistent municipal bylaws
2. Enhance the education and outreach strategy, as required
3. Monitor wastewater influent

ACTIONS

1. Enhance regional source control:
 - i. Work with the municipalities to develop similar source control bylaws or adopt a single bylaw
 - ii. Amend the Trucked Liquid Waste Disposal Bylaw (No. 988) to allow marinas to apply for reduced holding tank waste disposal rates if they provide free pump-out services to discourage marine dumping
 - iii. Work with municipalities, marinas, and/or harbour authorities to accept wastewater from marine vessels as opportunities arise
2. Enhance the public education and outreach strategy:
 - i. Collaborate with other RDN departments to promote pollution prevention strategies
 - ii. Liaise with other local governments to share source control strategies
 - iii. Promote source control through the SepticSmart program
 - iv. Encourage green boating practices
 - v. Target the outreach program on RDN residents, medical clinics, the hospital, and businesses to address pharmaceuticals, personal care products, organics, fat, oil, grease, and I&I
 - vi. Partner with RDN community members with an interest in promoting source control (e.g. non-governmental organizations; local stewardship groups)
 - vii. Consider publishing regular articles (e.g. newspaper or Regional Perspectives) promoting source control
 - viii. Update the RDN website information on source control
3. Monitor wastewater influent:
 - i. Monitor influent and biosolids quality and review discharge permits to assess potential contaminant sources
 - ii. Work with RDN Bylaw Services to provide enforcement as needed.

5.4 Odour Control Program

Odours refer to nuisance odours emitted by wastewater treatment facilities and associated interceptors, pump stations, outfalls, and other RDN wastewater collection and treatment infrastructure. Odour is managed at all wastewater facilities. The RDN will consider additional chemical and technological tools as they are required and will incorporate odour control infrastructure into the design phase of future capital works projects. The Odour Control Program objective, targets and actions are summarized in Table 5.

Table 5. Odour Control Program Commitments

OBJECTIVE

Reduce nuisance odours from RDN wastewater infrastructure

TARGETS

The RDN will:

1. Maintain and upgrade equipment so fewer than ten nuisance odour complaints are made per facility per year
2. Investigate, document, and respond to odour complaints within 24 hours

ACTIONS

1. Maintain and upgrade equipment:
 - i. Continue using current odour control measures and consider new control technologies as required
 - ii. Address odour at Bay Ave Pump Station (Completed 2011)
 - iii. Replace biofilter media at GNPCC and FCPCC (completed 2011 & 2012)
 - iv. Reverse the air flow through the trickling filter at FCPCC (completed 2012)
 - v. Install ion generators at Hall Road and Chase River Pump Stations (completed 2011 & 2012)
 - vi. Review the odour management system at GNPCC to identify potential improvements (completed 2013)
 - vii. Complete improvements to the odour management system at the NBPCC outfall manhole
 - viii. Incorporate odour controls into the design phase of future capital works projects including upgrade of GNPCC, NBPCC and expansion of FCPCC
 - ix. Seek resident input before upgrading or expanding facilities
2. Investigate, document, and respond to odour complaints within 24 hours.

5.5 Rainwater Management / Drinking Water & Watershed Protection Program

Rainwater management, often referred to in the past as stormwater management, refers to the management of precipitation and associated strategies to protect the health of watersheds and maintain a pre-development water balance. The RDN utilizes a wide range of management tools for rainwater, through strategic planning, Regional Growth Strategy, Official Community Plans, infrastructure engineering standards and the LWMP. Our commitments provide a methodology to move through planning, development and implementation of an effective integrated rainwater management program.

In 2008, the RDN implemented the “Drinking Water and Watershed Protection Program” (DWWP). This program is the foundation of our rainwater management commitments under the LWMP. The DWWP is an integrated watershed management approach focussed on protecting our water resources. Effective partnerships with community members, government agencies, academia and business are the key to the success of our programs. The DWWP Action Plan may be found in Appendix F.

Sewer service areas in the RDN do not have combined sanitary-and-storm sewer systems. Storm sewers are owned and maintained by member municipalities. The City of Nanaimo, District of Lantzville, City of Parksville, and Town of Qualicum Beach are responsible for stormwater management within municipal boundaries and the Ministry of Transportation and Infrastructure is responsible for stormwater management on highways. Still, the RDN permits land development and therefore has a responsibility to manage rainwater. The Rainwater Management Program will focus on execution of the DWWP Action plan, and on rainwater education and coordination throughout the region and rainwater planning in the electoral areas. Program objective, targets, and actions are summarized in Table 6.

Table 6. Rainwater Management / Drinking Water & Watershed Protection Program Commitments

OBJECTIVES

1. Use of rain as a resource
2. Promote the maintenance of hydrologic function
3. Protect the quality of water

TARGETS

The RDN will:

1. Develop a regional strategy on rainwater management in coordination with member municipalities
2. Implement rainwater management initiatives as detailed in the Drinking Water & Watershed Protection Action Plan

ACTIONS

1. Develop a regional strategy on rainwater management
 - i. Collaborate with Development Services, Water Services, Energy & Sustainability Services, and member municipalities to create a Rainwater Management Plan
 - ii. Liaise with other local governments to share rainwater management strategies
 - iii. When developing the plan, consider subdivision development standards (i.e. low impact development principles, green infrastructure policies, erosion and control standards, onsite rainwater management, watercourse protection, and wetland protection) and non-point source control (i.e. runoff pollution)
 - iv. Support Building Code changes that remove barriers to rainwater harvesting
 - v. Subject to Board approval of the Rainwater Management Plan, Wastewater Services and Water Services will coordinate the plan, administer the budget, and oversee collaboration with other departments and jurisdictions
 - vi. Establish watershed performance targets and standards to mitigate the impacts of land development

2. Implement rainwater management initiatives under the Drinking Water & Watershed Protection Action Plan:
 - i. Develop a regional Water Budget to increase our understanding of ground and surface water resources
 - ii. Monitor water quality in selected streams to study the impact of land use on watershed health (e.g. Community Watershed Monitoring)
 - iii. Monitor the impacts of climate change on hydrology in the RDN to identify flood risks
 - iv. Continue to implement the seven programs detailed in the DWWP Action Plan including integrated watershed management planning
 - v. Implement the Water Conservation Plan
 - vi. Refine the Water Balance Model to assist in land use and development decisions
 - vii. Continue to provide water education, incentive programs and watershed monitoring partnerships.

5.6 Volume Reduction Program

The MWR requires that dischargers must not overflow⁹ during storm or snowmelt events with a less than 5-year return period. To date, the RDN has never overflowed under such situations. Still, the RDN will undertake a review of the potential for overflows and develop an appropriate strategy to eliminate them. Further measures to reduce the potential to overflow include capital upgrades (e.g. pump station upgrades, increasing outfall capacity), measures

⁹ A municipal wastewater collection system overflow is defined by the MWR as a discharge from a municipal wastewater collection system to a location other than a wastewater facility, commonly referred to as a sanitary sewer overflow

taken manage flows through the Environmental Management System, and commitments within the LWMP Volume Reduction Program (this section) and the LWMP Inflow and Infiltration Program (next section).

The Volume Reduction Program promotes potable water conservation. Reducing potable water consumption i) is supported by the Regional Growth Strategy, ii) results in less water entering public wastewater systems and iii) lowers the cost to treat wastewater. The RDN will continue to address volume reduction through public education and incentives. The Volume Reduction Program objective, targets, and actions are summarized in Table 7.

Table 7. Volume Reduction Program Commitments

OBJECTIVE

To reduce wastewater production by promoting water conservation measures

TARGETS

The RDN will:

1. Promote a reduction in per capita water consumption
2. Reduce water consumption in RDN buildings and wastewater
3. Eliminate sanitary sewer overflows

ACTIONS

1. Reduce per capita water consumption:
 - i. Promote water conservation incentives like low-flow toilet rebates (complete 2009-2013)
 - ii. Work with provincial regulators to provide public with information around opportunities for greywater reuse, as supported by the BC Building code and provincial regulations
 - iii. Educate the public through free workshops and online information
 - iv. Hold semi-annual meetings with the City of Nanaimo, District of Lantzville, City of Parksville, and Town of Qualicum Beach to develop a regional volume reduction strategy
 - v. Continue to develop and implement water conservation measures through the DWWP program, with a target of reducing per capita water consumption by 25% between 2009 and 2030
2. Reduce water consumption used in RDN buildings and wastewater treatment operations
 - i. Install low-flow or dual flush toilets and other water-saving devices in RDN buildings
 - ii. Consider water efficient technology when designing infrastructure upgrades and expansion
 - iii. Promote the use of reclaimed water when practicable
3. Identify potential sources of sanitary sewer overflows and develop a strategy to eliminate.

5.7 Inflow & Infiltration Program

Inflow refers to rainwater or snowmelt that enters the sanitary sewer system from a direct stormwater connection (e.g. roof leaders, basement sump pumps, or foundation drains). Homes built before the 1970s can be major sources of inflow since building permits at the time allowed property drainage to connect to the sewer system. Infiltration refers to groundwater (marine or freshwater) that enters the sewer system. Infiltration can occur via pipeline cracks, leaky joints or deteriorated manholes. I&I is a term to collectively describe inflow and infiltration. I&I are regulated under the MWR and are measured in reference to the average dry weather flow (ADWF), the daily municipal flow to a wastewater facility after an extended period of dry weather such that I&I is minimized to the greatest extent practicable.

Inflow and infiltration are problems because they:

- Reduce capacity at the treatment plant, interceptors, forcemains, and pump stations and accelerate the need to replace and upsize infrastructure
- Have the potential to lower groundwater levels
- Can transport soil into the sewers and cause structural damage
- Can accelerate corrosion if marine waters enter the pipes
- Disrupt the treatment process by causing dramatic changes in influent volume, concentration or salinity
- Can lead to sewer overflows
- Result in increased operational and capital costs.

The RDN's wastewater infrastructure has the capacity to accommodate peak wet weather flows in excess of five times the ADWF. Historically, even under severe storm events, the RDN's infrastructure has functioned well without significant backups, flooding or overflows (Associated Engineering (B.C.) Ltd. 2001). However, the MWR requires that LWMPs address I&I reduction and the RDN has committed to work with the municipalities to develop a regional strategy to lower I&I rates to the treatment facilities in addition to reducing I&I in RDN-owned infrastructure.

Inflow and infiltration can be difficult for local governments to manage since as much as 70% or more of the inflow and infiltration volume can come from private building connections (National Guide to Sustainable Infrastructure 2003). Notably, most of the regional public collection system is owned by the City of Nanaimo, City of Parksville, District of Lantzville, or Town of Qualicum Beach. While it is not economically feasible or necessary to eliminate all inflow and infiltration into a sewer system, I&I can be managed with a cost benefit approach so dollars spent bring the best value to the community. Vapour tests (also called smoke tests) and dye tests are two simple and cost effective ways of identifying inflow. CCTV inspections and manhole inspections are two more ways of identifying I&I. Objectives, targets, and actions for the Inflow & Infiltration Program are summarized in Table 8.

Table 8. Inflow & Infiltration Program Commitments

OBJECTIVES

1. Reduce inflow and infiltration entering the wastewater collection and treatment system
2. Meet MWR standards for I&I

TARGETS

The RDN will:

1. Monitor I&I entering RDN infrastructure
2. Reduce I&I directly entering RDN owned infrastructure
3. Provide secondary treatment for flows up to 2 times ADWF and at least primary treatment for flows beyond 2 times ADWF during storm or snowmelt events with less than a 5-year return period
4. Develop a regional strategy on I&I management
5. Encourage I&I reduction on private land through public education

ACTIONS

1. Monitor I&I entering RDN infrastructure:
 - i. Set up an I&I monitoring function for GNPCC and FCPCC in FlowWorks (flow monitoring system)
 - ii. Evaluate flow data to understand system reaction to rainfall and high flow events
 - iii. Use CCTV to inspect GNPCC and FCPCC interceptors on a 5-year cycle
 - iv. Maintain and install flow meters and rainfall gauges as needed

2. Reduce I&I into RDN owned infrastructure:
 - i. Repair manholes as needed; perform regular maintenance of interceptors
 - ii. Investigate grant funding opportunities (e.g. Gas Tax Fund) for infrastructure rehabilitation
3. Design upgrades to RDN infrastructure so flows up to 2 times ADWF will receive secondary treatment and all flows in excess of this amount will receive primary treatment
4. Develop a regional strategy on I&I management:
 - i. Hold semi-annual meetings with the municipalities to develop regional monitoring and reduction targets for inflow and infiltration
 - ii. Share flow and rainfall data with municipalities
 - iii. Consider requiring replacement or disconnection of private laterals when granting demolition permits
 - iv. Consider providing municipal or regional staff to witness or perform service connections
 - v. Work with the member municipalities to continue to reduce flows due to I&I and to eliminate sewer overflows
5. Help landowners manage private property I&I:
 - i. Enhance the source control program to encourage landowners to check gutters and outside drains for connection to the sewer system, avoid planting trees and shrubs over sewer laterals, ensure basement drains and sump pumps are not connected to the sanitary sewer, and replace broken or leaky pipes located on private property
 - ii. Consider providing incentives to enable residents to reduce private property I&I.

5.8 Pollution Control Centres Program

Greater Nanaimo Pollution Control Centre

Asset management (outfall replacement) and secondary treatment upgrades are both priorities for GNPCC.

Between 2009 and 2012, the GNPCC outfall that discharges to the Strait of Georgia experienced 11 breaks in the marine and intertidal sections even though the outfall was designed to last until 2040. The RDN repaired all but the three deepest breaks, which are difficult and expensive to repair. Replacement, though not planned in the 1997 LMWP, must be addressed as it contravenes our discharge permit. Since 2010, the RDN has been investigating options for rehabilitation and replacement of the outfall (AECOM 2010c; AECOM 2011b). The RDN has recently committed \$18 million to replace the GNPCC effluent outfall by 2015. For more information, refer to Section 7.3.1.

The 1997 LWMP projected that GNPCC would be upgraded to provide secondary treatment by 2015. Secondary treatment at GNPCC is estimated to cost those in the Greater Nanaimo Sewer Service Area \$61.8 million (2012 dollars). Over the last decade, the RDN has prepared the facility for major expansion and upgrades (refer to Section 3.6). However, with the additional need to also replace the outfall the RDN is proposing to amend the date for completion of secondary treatment to reflect the increased cost and complexity and manage the resulting tax burden.

For that reason, the RDN consulted the public on three secondary upgrade timeline options: 2016, 2018, and 2019. Feedback generated through consultation is summarized in the separate Public Consultation Summary Report.

Based on an evaluation of technical, environmental, social and economic considerations (see Appendix G) and results of public consultation, the RDN is requesting to amend the LWMP to provide secondary treatment at GNPCC by 2018.

This date was recommended because it:

- Was supported by public feedback
- Provides reasonable time to address technical, environmental, social and economic considerations
- Meets provincial and federal requirements within a reasonable timeframe
- Aligns well with completion of the outfall project
- Provides time to collect funds to complete the project

- Provides time to apply for grant opportunities
- Aligns with the timing for major treatment upgrades by Metro Vancouver and the Capital Regional District.

French Creek Pollution Control Centre

Capital projects planned for FCPCC include the replacement of existing works as well as the expansion of the plant to accommodate population growth.

Nanose Bay Pollution Control Centre

The provision of secondary treatment at NBPCC in a manner that considers the capacity of residents to fund the proposed upgrades and consideration of the impact of the primary plan on our environment in comparison to other municipal wastewater treatment facilities are priorities for the RDN. Secondary treatment at NBPCC, without solids handling, is estimated to cost those in the Nanose Bay Sewer Service Area an estimated \$4.1 million (2012 dollars).

The RDN funds services based on a user pay principle by establishing service area bylaws. This means that the entire cost of upgrading the NBPCC must be borne by residents living in the service area. The approved 1997 LWMP contemplated an upgrade from primary to secondary treatment by 2010. This timeline was not met since projected growth and service area expansion to a NBPCC population of 6000 did not occur. Instead, NBPCC currently provides serves a population of approximately 1,350 (discharging roughly 273 m³/day) resulting in too few residents in the service area to support the additional tax.

For those reasons, the RDN consulted the public on three secondary upgrade timeline options: 2020, 2025 and 2030 for NBPCC. Feedback generated through consultation is summarized in the separate Public Consultation Summary Report. Based on an evaluation of technical, environmental, social and economic considerations (see Appendix G) and results of public consultation, the RDN is requesting to amend the LWMP to provide secondary treatment at NBPCC by 2023.

This date was recommended because it:

- Was supported by public feedback
- Provides reasonable time to address technical, environmental, social, and economic considerations
- Meets provincial and federal requirements within a reasonable timeframe
- Aligns well with completion of GNPCC secondary treatment
- Aligns with growth projections
- Provides time to collect funds to complete the project
- Provides time to apply for grant opportunities.

Duke Point Pollution Control Centre

No major changes are proposed for the DPPCC for the next 20 years.

The Pollution Control Centres Program manages capital upgrade and expansion projects associated with the four RDN-operated pollution control centres. Program objective, targets, and actions are summarized in Table 9.

Table 9. Pollution Control Centres Program Commitments

OBJECTIVE

Meet MWR standards and sustainably manage wastewater treatment

TARGETS

The RDN will:

1. Comply with permit or operational certificate
2. Manage assets to maintain the quality and integrity of existing infrastructure
3. Expand and provide secondary treatment at GNPCC by 2018
4. Provide secondary treatment at NBPCC by 2023
5. Expand capacity in wastewater infrastructure to respond to demands created by an increasing population
6. Develop a sewer servicing strategy for the Nanoose Bay Peninsula
7. Develop a DCC bylaw to allow new connections to use existing capacity at DPPCC
8. Review DCC plan every year and revise bylaws where necessary to fund anticipated projects

ACTIONS

1. Comply with permit or operational certificate:
 - i. Manage wastewater collection and treatment using the RDN's EMS to meet permit requirements
 - ii. Work with MOE staff to establish reasonable timelines and scope of any required receiving environment monitoring programs
2. Maintain existing infrastructure:
 - i. Update and evaluate asset management and preventative maintenance plans
 - ii. Systematically inspect, detect, and correct incipient failures
 - iii. Replace the GNPCC effluent outfall line by 2015
 - iv. Prepare an Environmental Impact Study for the GNPCC outfall
 - v. Monitor the condition of the Departure Bay forcemain
 - vi. Improve the odour management system at the NBPCC outfall manhole
3. Expand and provide secondary treatment at GNPCC:
 - i. Commission a third digester (complete 2013)
 - ii. Construct a fourth primary sedimentation tank (complete 2013)
 - iii. Upgrade the facility to provide secondary treatment by 2018
 - vi. Explore federal and provincial grant options to fund secondary treatment
4. Provide secondary treatment at NBPCC:
 - i. Upgrade the facility to provide secondary treatment by 2023
 - ii. Explore federal and provincial grant options to fund secondary treatment
5. Expand capacity at FCPCC:
 - i. Expand the treatment plant capacity

6. Work with Development Services to complete a sewer servicing strategy for Nanoose Bay:
 - i. Coordinate with Development Services through the OCP review process to identify property owners in growth containment boundaries who are interested in establishing public wastewater services
 - ii. Consider resource recovery, visual, and olfactory buffers and the number of pump stations required
 - iii. Review and update the Fairwinds sewer servicing agreement and DCC bylaw for the Nanoose Bay area
7. DCC Bylaws:
 - i. Develop a DCC bylaw to allow properties in the growth containment area to purchase capacity at DPPCC
8. Review DCC plan every year and revise bylaws when necessary to adequately fund growth-related projects
 - i. Revise DCC bylaws at GNPCC, NBPCC, and FCPCC.

5.9 Resource Recovery Program

We recognize that water is a shared and interconnected resource, and our waste management decisions affect our neighbours and the water resources we all rely upon. The RDN commits to managing our water resources in an integrated manner and will take an integrated resource recovery approach to liquid waste planning. Our decisions will consider potential energy generation, water conservation and reuse, nutrient recovery, greenhouse gas and odour emissions. Program objective, targets, and actions are summarized in Table 10.

Table 10. Resource Recovery Program Commitments

OBJECTIVE

To economically recover and utilize resources in wastewater

TARGETS

The RDN will:

1. Reduce resource consumption at wastewater treatment facilities
2. Recover resources from wastewater

ACTIONS

1. Reduce resource consumption at wastewater treatment facilities:
 - i. Complete a study to review resource recovery opportunities at RDN wastewater facilities
 - ii. Evaluate wastewater treatment operations which require energy, water, chemicals or fuel and identify activities that can be run more efficiently, if any
2. Recover resources from wastewater:
 - i. Commission a cogeneration facility for biogas recovery and energy generation at GNPCC (complete)
 - ii. Continue to beneficially use biosolids according to the Biosolids Program
 - iii. Reclaim water for use onsite in compliance with MOE guidelines (MOELP 2001)
 - iv. Discuss future opportunities for reclaimed water use with Morningstar Golf Course
 - v. Consider potential resource recovery options for new projects, particularly through process selection
 - vi. Examine opportunities for a district heating project at Hammond Bay Elementary using the GNPCC outfall
 - vii. Examine opportunities for using reclaimed water for the Fairwinds Golf Course.

5.10 Biosolids Program

Biosolids management was not a component of the 1997 LWMP; however, biosolids management is not new to the RDN. Since 1999, RDN biosolids have been beneficially used in agriculture, landfill closures, mine reclamation, and forestry. Currently, about 4,500 bulk tonnes of biosolids are produced annually by the RDN (RDN 2012a, 2012b).

In partnership with VIU and SYLVIS Environmental, RDN biosolids are applied and managed on VIU woodlot as part of the Forest Fertilization Project. Land application of biosolids is beneficial. Not only does it provide an economical alternative to disposal at the RDN landfill (in an emergency, or if biosolids do not meet OMRR requirements, biosolids can still be sent to the RDN landfill), but VIU researchers have reported a 50 to 400% increase in tree growth at the woodlot site since the application of biosolids began (Wickman 2010). As well, the RDN and partners VIU and SYLVIS Environmental won the Excellence in Management of Biosolids Award in 2013.

Safe application of biosolids is a priority for the RDN. The RDN produces, stores and applies biosolids with strict adherence to provincial regulations. Some safeguards include:

- Only sites without steep slopes are chosen for application
- A 30 m buffer between water courses is maintained
- An additional 30 m buffer is implemented around areas to which biosolids were applied in the previous year to ensure no overlap of application areas
- Stockpile sites have been carefully chosen to ensure regulatory compliance, and are a minimum of 15 m from any permanent watercourse
- Clear signage and communication with local user groups.

The VIU woodlot is a popular area for outdoor recreation, particularly mountain biking. Each year, biosolids are applied to approximately 50 hectares of the woodlot's total 1,073 hectares. Before biosolids applications, the RDN, SYLVIS and VIU provide maps to the Nanaimo Mountain Bike Club, indicating where biosolids will be applied. Signs are also posted at application sites to notify the public where biosolids have been applied. The signs are designed according to criteria set out in the OMRR.

The Biosolids Program objective, targets and actions, are summarized in Table 11.

Table 11. Biosolids Program Commitments

OBJECTIVE

Continue producing and beneficially using biosolids

TARGETS

The RDN will:

1. Produce, at minimum, 'Class B' biosolids
2. Enhance the biosolids-based education and outreach program

ACTIONS

1. Produce, at minimum, 'Class B' biosolids:
 - i. Develop a Biosolids Management Plan to assess options for the beneficial use of RDN biosolids, including land application, energy generation, and other possible resource recovery strategies (completed in 2011)
 - ii. Improve the quality of biosolids through upgrades to wastewater treatment infrastructure and innovative technologies and techniques (i.e. decrease volatile solids content and pathogen concentrations)
 - iii. Monitor and report biosolids quality according to operational certificate/discharge permit and OMRR
 - iv. Establish a contingency plan for temporary storage or application of biosolids if the VIU site is not useable

2. Expand biosolids-based education and outreach activities targeted at RDN residents:
 - i. Develop and distribute communication information on source control in order to improve biosolids quality
 - ii. Develop material to increase awareness of precautions taken to ensure the storage and application of biosolids do not negatively impact groundwater
 - iii. Continue working with local user groups to communicate plans for biosolids application areas
 - iv. Provide educational material and outreach at open houses and other events.

6.0 Emerging Issues

The RDN recognizes that new issues may emerge from innovations in water quality monitoring and from an evolving regulatory environment. Regarding the emerging issues listed below, the RDN will keep informed of current research and continue implementing strategic initiatives to improve effluent quality and the health of the receiving environment.

6.1 Shellfish Harvesting Areas

The Canadian Shellfish Sanitation Program (CSSP) is a federal food safety program, jointly administered by the Canadian Food Inspection Agency, Environment Canada, and Fisheries and Oceans Canada (DFO). The purpose of the program is to provide assurance that bivalve molluscan shellfish (e.g. mussels, oysters, and clams) meet food safety and quality standards for both domestic and international markets, thereby protecting the public from the health risks of consuming contaminated shellfish. The program is also in line with Regional Growth Strategy Policy 7.15 to work collaboratively with the provincial and federal government to protect the shellfish aquaculture leases from wastewater or industrial runoff contamination.

Under the CSSP, Conditional Management Plans may be developed to allow shellfish harvesting in areas that may be periodically at risk for poor water quality. These plans clearly identify what events will trigger a temporary closure of the area and what response protocol would follow if a trigger event was to occur. The RDN has a Conditional Management Plan for shellfish harvesting areas near two pump stations that have uncontrolled bypasses. The bypasses are designed to allow untreated wastewater to discharge to the marine environment if the volume of wastewater entering the interceptor exceeds the capacity of the pump station. Bypasses prevent damage to infrastructure and reduce the risk of flooding private residences. These bypasses have been in place since the system was built in the 1970's and during this time there has been no reported need to bypass the flow. Furthermore, pump redundancy, back-up power, and a Supervisory Control and Data Acquisition System make it unlikely that an overflow would occur at these locations. RDN's Conditional Management Plan clearly outlines the roles and responsibilities of each partner, as well as immediate actions to be taken to close these conditionally classified areas should a discharge of untreated wastewater occur from the pump station bypasses. The agreement would be signed by the RDN, Canadian Food Inspection Agency, Environment Canada, DFO and BC MOE.

6.2 Contaminants of Emerging Concern

Contaminants of emerging concern, sometime called emerging contaminants, refer to an array of pharmaceuticals, personal care products, and industrial contaminants (CCME 2009). Once standards are established by higher levels of government for the identification, testing, and measurement of contaminants, the RDN will develop a strategy to mitigate their impact on the wastewater stream. Recognizing that most of the contaminants entering the wastewater stream originate from private residences and businesses, the RDN will continue to work to improve the quality of effluent through the Source Control Program, the Sewer Use Regulatory Bylaw (No. 1225), and through strategic investments in critical infrastructure. In the future, the RDN may wish to establish codes of practice to address contaminants of concern.

6.3 Heritage Resources

The Province protects heritage sites through the *Heritage Conservation Act*. This protection applies to both private and Crown land and a provincial heritage permit is required before altering or developing a heritage site. Projects near known or suspected heritage sites will obtain a Heritage Permit before ground disturbing construction begins and ground disturbing activities will be monitored by a qualified archaeologist. If potential artifacts are discovered, construction activities will be stopped or modified according to the advice of the archeologist.

6.4 Climate Change

Since the late 1800s, global sea level has risen more than 20 cm, primarily as a result of glacial melting and the expansion of water as it warms. The annual rate of sea level rise increased from about 1 mm per year in the early part of this period to more than 3 mm per year over the past decade. Expected changes in sea level for the BC coast by 2100 are not uniform and differ from the global projections. The most probable sea level rise around Nanaimo is estimated at 11 cm while an extreme global rise rate could raise the sea level 80 cm for this area (Bornhold 2008). In addition to sea level rise, winter precipitation is expected to increase in the Nanaimo area by 10 to 20% by 2050 relative to mean values from the period 1961-1990 (Thomson et al. 2008). Changes to the frequency and magnitude of precipitation events may also cause changes to peak flows in rivers and creeks. Weston et al. (2003) predict that, in 2080, peak annual flows on the Englishman River will be 17% greater than present, with more frequent flood events. Weston et al. (2003) also modeled that, by 2080, the magnitude of the 10-year flood will be equal to today's 20-year flood based on a predicted decrease in snowfall and increase in rainfall in the watershed.

Coastal erosion, storm surge, and flooding are among the risks of a rise in sea level. Addressing climate change and its growing impact on our environment and quality of life is an increasingly important topic. The RDN and its member municipalities have voluntarily agreed to develop climate change and energy plans for their respective operations and community. RDN initiatives implemented to address climate change include:

- Reducing the demand on wastewater treatment infrastructure from privately owned buildings through:
 - Increased water conservation awareness via the Team WaterSmart program
 - Discouraging garburators in new development
 - Reducing potable water consumption
 - Lawn-watering restrictions (reduce I&I and demand on wastewater treatment infrastructure)
 - A rebate program on ultra-low-flow toilets.
- Promoting efficient upgrades during renovation and development of corporate infrastructure through:
 - Installing low-flow toilets, dual flush toilets, and other water-saving devices in corporate buildings
 - Investigating the optimization of wastewater treatment motors and pumps
 - Designing all new construction and renovation projects (including the upgrade of GNPCC) with energy efficient technology, according to the RDN's Green Building Policy B1.16.

Preparing for climate change is Goal #1 of the Regional Growth Strategy and the Regional Growth Strategy supports adaptation and emergency planning measures to mitigate the potential impacts of climate change such as sea level rise and flooding. Much of the wastewater infrastructure is near tidally influenced land to take advantage of the low elevation and allow for gravity transport. Therefore, the RDN will pursue grant funding to complete a Vulnerability Analysis to estimate the effect of sea level rise and inundation on infrastructure. As well, future engineering decisions will consider the potential to handle an increase in storm frequency and intensity and a possible sea level rise.

6.5 Non-point Sources of Pollution

Non-point sources of pollution come from sources other than an outfall pipe. Some examples of non-point pollution include agricultural and stormwater runoff, onsite sewage systems, and discharges from vessels. The LWMP Private Onsite Systems Program begins to address pollution from onsite sewage systems.

Management of marine pump out facilities is cross-jurisdictional and vessel pump out facilities are located within municipalities, marinas, and harbour authorities. The RDN regulates wastewater from marine sewage reception facilities through the Trucked Liquid Waste Disposal Bylaw (No. 988). In 2008, the RDN, through Bylaw No. 988, provided the Nanaimo Port Authority with reduced holding tank waste disposal rates so their Eco-Barge can provide free services to discourage marine dumping. As mentioned in Section 5.3, the RDN will amend this bylaw to allow reduced rates for similar requests and the RDN will work with municipalities, marinas, and/or harbour authorities to accept wastewater from marine vessels as opportunities arise.

The RDN also has agreements with BC Ferries to establish a pump ashore program to accommodate the wastewater produced on BC Ferries vessels at GNPCC and DPPCC. Further management of non-point sources of pollution will be considered in future amendments.

7.0 Costs, Financing, and Implementation Schedule

In accordance with the *Municipal Act*, RDN services are funded based on the user pay principle. That is, only those benefitting from the service are required to pay for it. Tax revenue from one service area must stay in that service area; funds cannot be transferred to pay for services out of that area.

All cost estimates in this section, unless otherwise stated, are Class C (2013 dollars) taken from the Wastewater Services Ten Year Capital Plan (Appendix H). Refined cost estimates (Class A or Class B) become available as project design reaches completion.

7.1 Program Funding

The LWMP and the programs within are funded by a variety of sources. Overall administration of the plan is funded through the Liquid Waste Management Planning Service Establishment Bylaw (No. 1543) which establishes a long range budget for the planning and implementation of the updated LWMP. Annual revenue from this bylaw is relatively constant and is generated through property taxes at a rate of \$0.0063 per one thousand dollars of net taxable value of land (approximately \$2/household) for a total of \$152,625 per year. Funds generated from Bylaw No. 1543 pay for one full-time staff member to administer the plan. They also pay for some of the non-capital program costs including the public education programs, consulting fees for studies, and plan amendments.

In 2008, the RDN implemented an increase in septage receiving fees from \$0.16/gallon to \$0.18/gallon to create and deliver the septic education program, SepticSmart, to inform homeowners of onsite sewage disposal regulations and to encourage regular care and maintenance of their systems. The annual revenue generated from septage receiving fees, and therefore for this service, is variable but estimated at \$30,000. The SepticSmart program falls under the Private Onsite Systems Program.

The RDN Water Services department and their Team WaterSmart run programs to protect water quality and promote efficient water use and the use of rainwater as a resource. These programs fall under the scope of Drinking Water & Watershed Protection Action Plan and are funded by the Action for Water program. This revenue source funds many projects outside the scope of the LWMP but also supports initiatives within the scope of the LWMP (under the Source Control, Rainwater Management and Volume Reduction Programs) and should be noted.

Operation and maintenance of the wastewater collection and treatment infrastructure (including odour control, I&I management, and biosolids management) are financed with tax requisitions for wastewater services. Revenue from resource recovery offsets the costs of wastewater treatment.

Capital projects, such as upgrades to and expansion of the pollution control centres are funded through a combination of capital charges and DCCs (for expansion), property taxes, tax reserves, long term debt, and/or grant funding.

The RDN pursues grant funding when grant programs are available. For example, the RDN received \$10,000 Infrastructure Planning Grants from the Ministry of Community Services to complete the Biosolids Management Plan and the Mandatory Maintenance Feasibility Study. The RDN also received \$350,000 in federal grant funds from the Federation of Canadian Municipalities and \$2.3 million from the Union of British Columbia Municipalities under the Gas Tax Program to construct a cogeneration facility at GNPCC. An additional \$2 million in Gas Tax funds is allocated to the future GNPCC outfall replacement project.

7.2 LWMP Program Deliverables

Cost estimates and proposed timelines for key LWMP program deliverables are provided in Table 12.

Table 12. Cost Estimates and Timelines for Key LWMP Program Deliverables

Program	Report or Deliverable	Cost Estimate	Target Date
Public Wastewater Systems	Village Centre Review	\$10,000	complete
	Review and update DCC bylaws where necessary	\$8,000	2014
Private Onsite Systems	Mandatory Maintenance Feasibility Study	\$15,000	complete
	Revise Pump & Haul Bylaw (No. 975)	\$2,000	2014
Source Control	Enhanced Public Education Program	\$10,000	2013-2015
Odour Control	Review the odour management system at GNPCC	\$15,000	complete
Rainwater Management	Revised Rainwater Management Plan	\$15,000	2014-2016
Volume Reduction	Study of overflow potential and elimination strategies	\$10,000	2016
Inflow and Infiltration	CCTV monitoring of the GNPCC Interceptor	\$15,000	annual
	CCTV monitoring of the FCPCC Interceptor	\$23,000	every 5 years (next in 2015)
	Set up an I&I monitoring function for FCPCC	\$5,000	2014
	I&I Study	\$15,000	2014-15
Biosolids	Biosolids Management Plan	\$15,000	complete
Resource Recovery	Resource Recovery Options Study	\$25,000	2014-15
Emerging Issues	Climate Change Vulnerability Study	\$15,000	2015-16
LWMP	5-year Audit	\$5,000	2019 (every 5 years)

7.3 Major Capital Projects

The RDN builds and maintains infrastructure to meet the needs of RDN communities and enhance the health of people and our environment. To date, the RDN has invested millions of dollars in the construction, operation, maintenance, and upgrade of wastewater infrastructure. Further investments are necessary to protect the value of these assets, support the RDN's growing population and meet increasingly stringent federal and provincial requirements for secondary treatment. Major wastewater projects are captured in the Wastewater Services Ten Year Capital Plan (Appendix H) and Table 13. The Ten Year Capital Plan is integrated into the RDN's current five year financial plan which is prepared in accordance with the *Local Government Act*. While the *Local Government Act* only requires the RDN to report five years, the RDN considers a ten year timeframe when developing budget forecasts. The financial plan is reviewed annually at which time greater precision regarding current costs are incorporated into the projections. When planning major capital projects, the RDN considers the costs of design and construction, operating and maintenance, and future replacement, as well as the potential social and environmental benefits.

Table 13. Cost Estimates and Timelines for Major Wastewater Capital Projects

Service Area	Major Capital Projects	Cost Estimate	Target Date
Greater Nanaimo	Biofilter media replacement for odour control	\$15,000	complete
	Third Digester	\$10,000,000	complete
	Sedimentation tank expansion (completion)	\$2,700,000	2014
	Outfall replacement	\$18,000,000	2015
	Secondary Treatment (total \$61,800,000; 2012 dollars)		
	Engineering – Predesign and Detailed Design	\$4,200,000	2018
	Construction	\$42,600,000	
	Contingencies	\$15,000,000	
Departure Bay Forcemain Replacement and Expansion	\$18,000,000 ^a	monitor	
Departure Bay Pump Station Upgrade	\$3,052,600 ^b	2016	
French Creek	Biofilter media replacement for odour control	\$15,000	complete
	Reversal of the air flow through the trickling filter	\$600,000	complete
	Seacrest Place forcemain repairs	\$660,000	complete
	Lee Road Pump Station Expansion and Upgrade	\$659,000	complete
	Grit Channel Expansion	\$677,000	complete
	Outfall repairs	\$600,000	complete
	Hall Road Pump station upgrade	\$900,000	complete
	Increasing effluent pumping capacity	\$350,000	2018-2025
	Commission 5 th digester cell	\$200,000	2018-2025
	Chemically Enhanced Primary Treatment works	\$930,000	2018-2025
	Interceptor / pump station expansion	\$5,000,000	2025
	Treatment plant capacity expansion, outfall replacement	\$32,000,000	2018-2025
Nanoose Bay	Odour management improvements at NBPCC outfall manhole	\$10,000	complete
	Secondary Treatment for 2,000 residents	\$4,100,000 ^{a,c,d}	2023
Duke Point	No major changes planned for the next 20 years	–	–

NOTE: a. Not included in the 2013-2022 Ten Year Capital Plan due to its preliminary planning stage; b. Project not required if Departure Bay Forcemain is replaced and expanded; c. Cost estimates provided by AECOM (2012); d. 2012 dollars.

The estimated average annual household levies for major wastewater capital projects, operations, and maintenance are discussed in sections below. Actual levies are based on net taxable value of land and the examples provided describe approximate levies for an average house in the RDN with an assessed value of \$350,000. The cost of operation and maintenance, which increases with upgrades to secondary treatment, is incorporated into the average household levies. Given the importance of secondary treatment, the RDN will explore provincial and federal government funding partnerships to reduce the amount financed through the Municipal Finance Authority's Long Term Debt Financing Program.

7.3.1 Greater Nanaimo Pollution Control Centre

The RDN has recently committed \$18 million to replace the GNPCC effluent outfall by 2015. As well, the RDN will provide secondary treatment at GNPCC, at a cost of \$61.8 million dollars (2012 dollars)¹⁰. The outfall replacement and secondary upgrade and expansion will benefit existing and future users, therefore RDN plans to finance both project with DCC funds, reserves, tax requisitions, and debt (amortized over 20 years). Through prudent asset management practices, the RDN has established significant reserve and DCC funds to support capital projects. Still, those reserves will be largely depleted with the completion of the outfall replacement project and borrowing will be necessary. Where there is a DCC shortfall, the remainder of the costs will be funded by general reserves and long term debt. However, the RDN will continue to collect DCCs which may be used to cover a portion of the debt.

Grant Funding

The RDN has secured \$2 million in Gas Tax funds for the future GNPCC outfall replacement project. The RDN will continue to pursue federal and provincial grant options to fund secondary treatment at GNPCC.

DCCs Collected

The RDN started collecting DCCs in the Greater Nanaimo Service Area in 1997 to help fund expansion projects including the secondary treatment upgrade. DCC revenue was lower than projected in the DCC collection plan due to the low observed growth rate. In July 2013, the GNPCC DCC reserve balance was approximately \$4.2 million.

Reserves Collected

The 1997 LWMP approved an average tax increase of \$100 (in 1997 dollars) for users in this service area. This service area observed only a minor tax increase since 1997. Still, approximately \$22 million was collected over the past 16 years. Of this, approximately \$3.5 million was used to purchase property required for secondary upgrades. Another \$1.5 million was spent on projects required at GNPCC to maintain facility integrity. The balance in the GNPCC general reserve fund was approximately \$16.8 million in July 2013.

Future Property Taxes

The average annual sewer tax for wastewater capital projects, operations, and maintenance at GNPCC is currently about \$104. To fund the major capital projects at GNPCC, property taxes must increase over the next nine years. The average household will see an average annual tax increase of \$6-18/year, as shown in Table 14. The RDN will explore provincial and federal funding opportunities to reduce the amount required from local taxpayers.

Table 14. Potential Average Annual Sewer Tax Increase for Residents in the Greater Nanaimo Service Area, Based on Three Timing Options and Three Cost Sharing Scenarios

Cost sharing scenario	2013 Tax (average)	Potential tax increase phased in from 2014-2022					
		Option 1. 2016		Option 2. 2018		Option 3. 2019	
		Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2022	Average Annual Increase	Tax in 2022
No Grant	\$104	\$18	\$268	\$15	\$238	\$13	\$224
1/3 Grant		\$12	\$213	\$10	\$194	\$9	\$185
2/3 Grant		\$8	\$179	\$7	\$167	\$6	\$161

Note, tax increase is phased in incrementally from 2014-2022. Amounts are based on an average house in Nanaimo, with an assessed value of \$350,000. Cost-sharing (grants) apply only to construction costs and do not cover the costs of operation.

¹⁰ The cost estimate rose from \$35 million in 1997 to \$61.8 million in 2012. The discrepancy is a result of inflation in the past 15 years due to the rising costs of skilled labour and materials, and the strong market for residential and non-residential building construction (Statistics Canada 1999-2011, 2012b). As a result, the cost estimate has risen greatly even though the project scope is the same.

7.3.2 French Creek Pollution Control Centre

Capital projects planned for FCPCC include the replacement of existing works as well as the expansion of the plant to accommodate population growth. These projects will cost an estimated \$32 million and are scheduled for 2018-2025. Based on current population estimates, 85% of the expansion will accommodate new population growth and 15% will benefit existing users. In a similar manner to the GNPCC projects, FCPCC expansion and upgrades will be financed by a combination of DCCs, accumulated capital reserves, long term debt, and property taxes. Due to low growth in the past four years, DCC collection was considerably lower than expected. As well, \$2 million in DCC have been applied to projects at FCPCC since 2008. As a result a DCC shortfall is expected and the remainder of the costs will be funded by general reserves and long term debt. DCCs will continue to be collected after borrowing and may be used to cover a portion of the debt. Additionally, DCC rates are reviewed approximately every five years to ensure they reflect the most recent project estimates as well as changes in growth projections.

DCCs Collected

As mentioned above, DCC collection in recent years was considerably lower than expected. As well, \$2 million in DCC have been applied to projects at FCPCC since 2008. The balance in the FCPCC DCC reserves was \$4.1 million in July 2013.

Reserves Collected

For users in this service area, the 1997 LWMP did not propose an increase in taxes over the 1997 levels. The balance in the FCPCC general reserves was \$3.2 million in July 2013.

Future Property Taxes

The average annual sewer tax for wastewater capital projects, operations, and maintenance at FCPCC is currently about \$246. To fund the major capital projects at FCPCC, property taxes must increase over the next nine years, by \$11 to 14 per year, starting in 2014, for a total of \$99 to 126 over nine years, shown in Table 15. Currently, provincial and federal grant funding is not applicable to expansion projects.

Table 15. Average Annual Sewer Tax Increase for Residents in the French Creek Service Area

Grant Funding	2013 Tax (average)	Potential tax increase phased in from 2014-2022		
		Average Annual Increase	Total 9-year Increase	Tax in 2022
Not applicable	\$246	\$11-14	\$99-126	\$245-372

Note, rates listed are approximations based on an average City of Parksville and Town of Qualicum Beach average household rates and an average assessed value of \$350,000. Estimates assume debt is amortized over 20 years.

7.3.3 Nanoose Bay Pollution Control Centre

NBPCC serves a very small population, estimated at 1,350 people. The flow produced by this population is approximately 1% of that produced by the population contributing to GNPCC. Current growth projections estimate that this service area may grow at a rate of 1.8% per year even if no trunk extensions are completed (AECOM 2010b). If growth occurs at the predicted rate, the population will reach 1,700 by 2025 and 2,000 by 2034. However, the observed growth rate in this service area remains quite low at 0.3% (AECOM 2010a); therefore it is likely that it will take longer to achieve the predicted population growth. Accounting for the population estimates and observed growth, and given that secondary treatment upgrades are required at NBPCC, it is reasonable to upgrade the treatment facility to provide secondary treatment for 2,000 people.

The provision of secondary treatment at NBPCC, without solids handling, will cost those in the Nanoose Bay Sewer Service Area an estimated \$4.1 million (2012 dollars). Revenue from resource recovery will offset the costs of wastewater treatment wherever feasible and the RDN will explore provincial and federal infrastructure funding opportunities to reduce the amount that must be borrowed.

DCCs Collected

The NBPCC DCC reserve balance was approximately \$249,000 in July 2013. Currently, all of the DCCs for NBPCC are collected from outside of the Fairwinds subdivision. Under the existing sewer servicing agreement, properties within the Fairwinds subdivision do not pay DCCs for the primary treatment facility (unless expansion or upgrades are required) since Fairwinds constructed the collection, treatment, and marine outfall facilities at its own expense before transferring ownership to the RDN.

Reserves Collected

The 1997 LWMP intended for users in the Nanoose Bay Service Area to see an average tax increase¹¹ of \$240 (above their 1997 taxes; in 1997 dollars), phased in from 1999 to 2004, to pay for secondary treatment. Between 1997 and 2012, there has been an average per household tax increase of \$304 to cover increasing operational and maintenance costs and to repair ageing infrastructure such as the forcemain. The NBPCC general reserve balance was approximately \$358,000 as of July 2013.

Future Property Taxes

The average annual sewer tax for wastewater capital projects, operations and maintenance at NBPCC is currently about \$622. To fund the secondary treatment upgrade at NBPCC, property taxes must increase over the next 18 nine years. The average household will see an average annual tax increase of \$12-27/year, as shown in Table 16. The RDN will explore provincial and federal funding opportunities to reduce the amount required from local taxpayers.

Table 16. Potential Average Annual Sewer Tax Increase for Residents in the Nanoose Bay Service Area, Based on Three Timing Options and Three Cost Sharing Scenarios

Cost sharing scenario	2013 Tax (average)	Potential tax increase phased in from 2014-2031					
		Option 1. 2020		Option 2. 2025		Option 3. 2030	
		Average Annual Increase	Tax in 2031	Average Annual Increase	Tax in 2031	Average Annual Increase	Tax in 2031
No Grant	\$622	\$27	\$1,115	\$20	\$983	\$19	\$966
1/3 Grant		\$20	\$982	\$16	\$916	\$15	\$885
2/3 Grant		\$14	\$863	\$13	\$852	\$12	\$833

Note, tax increase is phased in incrementally from 2014-2031. Cost-sharing (grants) apply only to construction costs and do not cover the costs of operation.

7.3.4 Duke Point Pollution Control Centre

No major capital projects are planned for DPPCC at this time.

8.0 Monitoring, Amendments, and Updates

8.1 Monitoring

Upon approval of the LWMP amendment, the RDN will establish a new committee to oversee and evaluate plan implementation and fulfills the role of the plan monitoring committee, as outlined in the Interim Guidelines (MOE 2011). RDN staff will meet with the plan monitoring committee to complete an annual review of LWMP progress. During the review, the committee will evaluate progress towards each program objective. When necessary, the committee will recommend refinements to the actions to keep implementation on track with the overall objectives and targets. Refinements may also reflect lessons learned from other jurisdictions through communication and benchmarking exercises. Refinements are not considered an amendment or update. Rather, annual review and

¹¹ The 1997 taxation model assumed borrowing would be necessary and that not all the required funds would be available in reserves.

refinement will provide the flexibility to sustainably manage wastewater and respond to changes such as the pace of development, technical issues, study results, regulatory changes, requests from the public and Board, and availability of funding and grants.

RDN staff will prepare an annual report which will be available to the MOE and public and will:

- Document implementation of the LWMP programs
- Track progress towards program actions, targets, and objectives
- Revise expansion schedules to reflect actual growth rates
- Explain deviations and adjustments to actions and targets, if any.

There will be an independent audit of the plan every five years.

8.2 Amendments and Updates

The RDN will initiate periodic amendments or updates to the LWMP as required.

- The MOE requires that local governments review their LWMPs every five to ten years to determine if an amendment or update is required
- The RDN will issue an amendment or update if significant changes are made to the cost or timeline of facility expansion or upgrade, or if there are new discharges, or major changes to a program objective or targets
- The RDN LWMP monitoring committee may wish to initiate the plan amendment process at more frequent intervals over the life of the plan, based on regional needs and initiatives.

At the beginning of an amendment or update, a scope of work will be completed and submitted to MOE staff. The scope will guide the completion of the report for that update. This will be followed by a public and First Nation review and comment period.

9.0 Operational Certificates

Operational certificates are issued by the MOE to replace waste discharge permits. They specify the requirements and conditions for authorized discharges, the monitoring and reporting requirements, and other conditions. Draft operational certificates for all four facilities were submitted to the Ministry of Environment, Lands and Parks in 2001. Currently, DPPCC operates under an approved operational certificate. The RDN has redrafted an operational certificate for the other three facilities which currently operate under waste discharge permits. Appendix I contains the approved operational certificate for DPPCC and the draft operational certificates for GNPCC, FCPC, and NBPC. Draft operational certificates are subject to change.

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Appendix A:

RDN Wastewater Services Environmental Policy

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Prepared by:	J. Dorzinsky , EMS Coordinator
Approved by:	R. Alexander, GM, WWS

PM-03.2 WWS ENVIRONMENTAL POLICY

The Regional District of Nanaimo's (RDN) Wastewater Services (WWS) Environmental Policy reflects the values and priorities of the RDN's Board Strategic Plan 2013-2015, Regional Growth Strategy and Liquid Waste Management Plan.

The RDN's WWS is committed to providing reliable, high quality, and cost-effective wastewater services to the people and communities we serve. We strive to optimize our treatment and re-use processes and employ state-of the art pollution prevention strategies at our facilities. In fulfillment of this commitment, it is the WWS policy:

- To do our utmost to comply with the letter and spirit of relevant environmental laws and regulations. There shall be thorough and accurate measurement and reporting of our environmental compliance.
- To prevent pollution. This includes avoiding or reducing environmental pollution produced directly from WWS operations, or indirectly by the consumption of power, fuel, chemicals, and other resources.
- To identify and monitor environmental impacts and set measurable objectives and targets to reduce those impacts on the environment.
- To foster openness and dialogue with employees and the public, and respond to their concerns about potential hazards and impacts of our operations.
- To continually improve our performance relevant to this environmental policy.

This policy will be communicated regularly to all WWS staff and will be made available to regulatory agencies, the public, or other interested parties upon request.



Randy Alexander

General Manager, Regional and Community Utilities

Date: 25 April 2013

Appendix B:

Discussion Papers

Report

Regional District of Nanaimo

Wastewater Treatment Basics

March 2008

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REPORT

Abbreviations

Wastewater	water contaminated with organic and inorganics based on human activities, as discharged to a sewer system for conveyance to a facility for treatment and disposal/reuse.
Sewage	wastewater (sewage is the older term)
Sewerage System	the wastewater (sewage) collection system
Combined sewer	a pipe system to convey stormwater and wastewater in one pipe
Separate sewer	a dual pipe-system, one for stormwater, one for wastewater
Sanitary wastewater	the wastewater in a non-stormwater collection system
Infiltration	the leakage of groundwater into a sewer system
Inflow	the flow of rainwater or snow melt into a sewer through manholes covers and roof leaders
CSO	combined sewer overflow, wastewater overflow from a combined sewer system
SSO	sanitary sewer overflow, wastewater overflow from a separate sanitary sewer system
BOD	biochemical oxygen demand, a measure of the biodegradability
COD	chemical oxygen demand
TSS	total suspended solids
NH ₃	ammonia gas, dissolved in water
NH ₄ ⁺	ammonium ion, dissolved in water
Preliminary Treatment	the first level of treatment, screening and/or grinding
Primary Treatment	settling of solids, skimming of scum
Secondary Treatment	biological treatment to remove dissolved and colloidal organics

Advanced treatment	additional removal of BOD and TSS
Tertiary Treatment	biological or chemical treatment to remove nutrients, nitrogen (N) and phosphorus (P)
Disinfection	destruction of pathogenic organisms, typically through chlorination or the use of ultraviolet (UV) light irradiation
Grit	the sandy, heavy particulate organics and inorganics that are the first materials to be removed in a large scale treatment plant
Sludge	the materials that settle in a primary clarifier (sedimentation) tank (primary sludge) and secondary clarifier (secondary sludge) prior to treatment, e.g. digestion.
Biosolids	sludges after they have been treated, e.g. after digestion or chemical treatment.

1 Wastewater Sources and Sewer Types

Wastewater contains organic, inorganic, soluble and particulate materials and micro-organisms that are diluted, dissolved and/or suspended in water. The materials come from a wide range of sources including domestic, commercial, institutional, and industrial sources. Most of these materials can be measured in milligrams per litre (mg/L) (or “parts per million” (ppm)) concentrations, either directly or through surrogate parameters. Some of the organics present, including some persistent organics and some endocrine disrupting chemicals, are present in the microgram per litre (parts per billion) or nanogram per litre (parts per trillion) concentration range.

Wastewater is sometimes called sewage. The wastewaters from domestic, commercial, institutional and industrial sources are collectively called sanitary sewage or municipal wastewater. While the “sanitary” part would seem to be a misnomer, it is meant to describe the wastewater from domestic, commercial, institutional and industrial sources that is flowing in a separate collection system, one that does not include stormwater. Sanitary sewage or wastewater is relatively concentrated, when compared to combined sewage which is diluted with rainwater or snow melt and, therefore, is easier to control and treat and, thereby, protect the environment, including drinking water sources, hence the term “sanitary”.

The first wastewater collection systems, e.g. those in Rome, Paris, London, Montreal, New Westminster, parts of Vancouver, parts of Victoria, part of Port Alberni, etc. were single pipe system combined sewers, designed to accommodate stormwater during the rainy season and sanitary wastewater all year round. While such sewers were better than sewage running in open ditches, by today’s standards they create problems when the system cannot handle high rainfall or snow-melt induced flows and there are CSOs.

Even with separate sanitary sewer systems, there is the possibility of SSOs when there is significant rainfall or snow-melt induced infiltration and inflow (I&I). Infiltration is when groundwater leaks into the sewer system through leaky pipe joints or leaky manhole barrels or pipe connections. Inflow is direct inflow of stormwater into the sanitary sewer system, through manhole lids (in flooded intersections), cross-connected catch basins (that should have been connected to the storm sewer system) and roof drain leaders (both commercial buildings and residential buildings) (which is often illegal).

2 Measuring Wastewater Strength

While there are many parameters that could be used to describe the strength of a given wastewater, the most common parameters include the following:

- BOD
- COD
- Total suspended solids (TSS)
- Ammonia nitrogen
- Total inorganic phosphorus
- Fecal coliforms

BOD is basically a bacterial bioassay test that provides an estimate of the biodegradability of the organic content of the wastewater. A known volume, e.g. 10 mL, of the wastewater in question is placed into a 300 mL bottle that is then filled with nutrient-rich dissolved oxygen saturated water and mixed. The stoppered bottle is put away in the dark, in a 20°C incubator for five days. The change in dissolved oxygen content from the start of the test to the end of the test is measured and the results used to calculate the BOD. Typical raw sewage (wastewater) has a BOD in the 180 to 220 mg/L range. Some industries can, without out pre-treatment, discharge wastewaters in the 6000 mg/L range, e.g. a milk processing or fish processing plant. Leachate from a landfill can have BODs from 500 mg/L to 25,000 mg/L depending on the age of the landfill (younger = stronger). If there is no wastewater treatment and very little dilution in the receiving environment, wastewaters can cause the dissolved oxygen levels in the receiving body to drop to the point that fish are unable to survive. As a result, treatment standards usually set effluent BOD requirements. Effluent from a secondary wastewater treatment plant like the French Creek treatment plant needs to be less than 45 mg/L BOD or less, whereas that for a primary treatment plant like the Greater Nanaimo treatment plant on Hammond Bay Road needs to be less than 130 mg/L (dilution helps to prevent problems in this case). The Duke Point secondary treatment plant needs to have an effluent less than 30 mg/L BOD. Advanced secondary treatment plants typically need to have BODs less than 10 mg/L. Such wastewaters can often be reused in beneficial ways.

COD is a much more severe test that uses chemicals, e.g. acids, and heat, to digest and oxidize both organic and inorganic compounds that are in the wastewater. COD should always be greater than BOD for the same sample. Since BOD is a measure of the biodegradability of the wastewater,

the ratio of BOD to COD can help further assess the type of biological treatment that is appropriate. For BOD/COD ratios above 0.7 or 0.8, the wastewater contains very biodegradable materials, indicating that anaerobic treatment should be explored because aerobic treatment would have a very high energy requirement to provide the aeration needed to destroy the BOD-causing compounds. Such high BOD/COD wastes include dairy wastes, fish processing wastewater and, in some cases, landfill leachate. When the BOD/COD ratio is in the 0.4 to 0.6 range, aerobic biological treatment, like that at the French Creek and Duke Point treatment plants, is appropriate. When the BOD/COD ratio is down in the 0.1 range, biological treatment is very unlikely to be of benefit. This is true of some leachates from older landfills.

TSS is a measure of the floating particulate content of the wastewater and, in some ways, is an indicator of the clarity of the wastewater. The test is done by filtering a known volume of the wastewater through a glass fibre filter and then drying the filter in a special drying oven at 103°C and measuring the increase in mass for the given volume of wastewater. Typical municipal wastewaters will have a TSS in the 180 to 220 mg/L range. Settling, as in primary treatment, can remove about 35 to 50% of the influent TSS without additional chemicals. Adding chemicals, e.g. alum, as a coagulant, can increase the removal efficiency in a primary sedimentation tank up to the 60% to 80% range, depending on the wastewater. Effluent requirements for TSS for primary plants are in the range of 100 to 130 mg/L TSS. Effluent requirements for TSS for secondary treatment plants, like the French Creek plant are based on secondary solids from the biological treatment process and must typically be less than 45 mg/L. The Duke Point treatment plant effluent must be less than 30 mg/L. In this case, the lower TSS level reflects the fact that the Duke Point treatment plant has effluent disinfection via UV disinfection, which requires a high clarity effluent in order to be effective.

Ammonia is a wastewater constituent that results from the degradation of proteins. Raw wastewater typically has ammonia concentrations in the 20 to 30 mg/L range, as N, nitrogen. Ammonia in wastewater exists in two states, the ammonium ion NH_4^+N and dissolved ammonia gas, NH_3 . Lower pHs (measure of the strength of the dissolved hydrogen ion, H^+), in the pH 6 to 7 range favour the ammonium ion and higher pHs, say above pH 8, favour the dissolved ammonia gas. The problem is the dissolved ammonia gas, NH_3 , affects fish gills and can cause acute mortality. Environment Canada is developing a new acute mortality fish bioassay test protocol using pH stabilization that will favour treatment plants like the French Creek secondary treatment plant that have effluent pHs in the 7 range and relatively low effluent ammonia concentrations. The same Environment Canada standards will require concentrations of less than 0.019 mg/L (19 parts per billion) ammonia^{-N} at the edge of the initial dilution zone around an ocean (or river) outfall, in order to prevent chronic ammonia toxicity problems in fish.

Phosphorus, P, is nutrient found in most foods and typically is the range of 6 to 10 mg/L as Total P in influent wastewaters. As nutrient, phosphorus can stimulate algae growth, causing the receiving water quality to deteriorate if there is inadequate flushing. The BC Municipal Sewage Regulation requires that discharges to embayed ocean waters have less than 1 mg/L Total P. Fortunately, none of the RDN's treatment plants fit this requirement and are able to discharge without having to

meet any Total P requirement. In contrast, the treatment plants on Okanagan Lake, e.g. Vernon, Kelowna, Westbank, Summerland and Penticton, must remove Total P down to effluent levels in the 0.15 to 0.25 mg/L range using a complicated biological nutrient removal (BNR) process, in order to protect the lake water quality.

Fecal coliforms are a group of bacteria that inhabit gastro-intestinal tracts. As result, they can be used as an indicator of fecal contamination of water and the likelihood of pathogenic micro-organisms being present. When wastewater needs to be disinfected, the standard is based on the number of fecal coliforms per 100 mL. Effluent standards, when disinfection is required, are often in the 200 to 400 fecal coliforms per 100 mL range from an influent fecal coliform concentration of 107 to 108/100 mL

Unless there is a high degree of flushing or dilution, discharge of raw sewage will likely result in some form of environmental problem. This is especially true when the discharge is to fresh water and the background water quality is very high. Without any treatment, the risk of a problem due to oxygen depletion in the receiving water or ammonia toxicity is much higher than with treatment. As a result, there is typically some form of treatment that is required by the regulatory agencies involved, e.g. the Ministry of Environment or Federal Fisheries.

3 Levels of Wastewater Treatment

The levels of wastewater treatment that are available include the following:

- Preliminary (screening to remove gross solids)
- Primary (settling to remove grit and heavier solids, also floatable oils and greases)
- Secondary (to remove soluble and colloidal organics)
- Advanced (to remove specific “problem” chemicals or materials)
- Tertiary (to remove nutrients)

Preliminary treatment is the most basic of treatment types. At best, it includes fine screening to remove gross solids. At worst, it means grinding or macerating to make the gross solids unrecognizable. Preliminary treatment can only be used as the final treatment step when the ocean currents are very strong and the dilution and flushing rate quickly disperse the preliminary treated wastewater. The CRD’s Clover Point and Macaulay Point treatment facilities are examples of preliminary treatment using screening. Tofino is an example of preliminary treatment using grinders. Preliminary treatment is generally no longer acceptable, even in such high energy environments like the Strait of Juan de Fuca. There are no effluent standards for preliminary treatment.

Primary treatment is the next level of treatment, following preliminary treatment. Primary treatment relies on gravity and the differential buoyancy between materials that are heavier than water and materials that are lighter than water. Primary treatment occurs in large tanks with hydraulic retention times in the 2 to 4 hour time frame. During this time, heavy organic and inorganics settle

to the bottom as primary sludge. Congealed oils and greases float to the top as scum. Both primary sludges and scum are removed from the primary settling tank and typically are sent to digestion for further treatment. The Greater Nanaimo Pollution Control Centre (GNPCC) is a primary treatment plant. Primary treatment plants typically must have effluents that are less than 130 mg/L BOD and 130 mg/L TSS. In some cases, additional chemicals are required, in chemically-enhanced primary treatment to achieve these requirements, particularly in the summer months when the levels of wastewater dilution from infiltration and inflow are diminished. GNPCC uses chemically-enhanced primary treatment during some months of the year to meet its discharge permit requirements for BOD and TSS.

Secondary treatment is designed to remove dissolved and colloidal organics, measured as BOD, that remain after preliminary or primary treatment. To do so, the dissolved and colloidal organics need to be converted into a settleable form. This is accomplished by feeding the preliminary or primary treatment effluent into an aerobic liquid environment and allowing naturally occurring bacteria in the wastewater to convert the soluble and colloidal organics to new bacterial cells that can subsequently be settled out and removed from the system. Secondary treatment can use either fixed film biological processes like the trickling filters at French Creek treatment plant or a suspended growth aerobic process like that at the Duke Point treatment plant, the CRD's Saanich Peninsula wastewater treatment plant on Manwaring Road or the Regional District of Comox-Strathcona's Comox Valley treatment plant in Comox. In all cases, the aerobic biological step is followed by secondary sedimentation where the bacterial cells are removed from bulk of the liquid. In the case of the French Creek treatment plant, the trickling filter effluent is first passed through a short retention time suspended growth "solids contact" system to condition the trickling filter biomass to settle better before being sent to secondary sedimentation. The sludge that settles in the secondary clarifiers (sedimentation tanks) is typically sent to some form of digestion in preparation for some type of beneficial reuse. Typical secondary effluent in BC must never exceed 45 mg/L BOD and 45 mg/L TSS.

Advanced secondary treatment plants usually are just concerned with achieving additional BOD and TSS removals so the effluent will not exceed 10 mg/L BOD or 10 mg/L TSS (or 5 turbidity units). This can be accomplished by designing and running a secondary treatment plant to achieve less than 20 mg/L BOD and 20 mg/L TSS and then adding some type of effluent filter, e.g. a sand or cloth filter, to remove particulate BOD and TSS. Alternatively, membrane bioreactors that substitute membrane barriers for sedimentation tanks can be used to make advanced secondary standards. There are several small advanced secondary treatment plants on Vancouver Island, e.g. Sooke Harbour house and the Mt. Washington ski resort both had membrane bioreactors systems followed by UV disinfection.

Tertiary treatment plants are needed whenever the phosphorus levels need to be less than 1.0 mg/L. Typically, in BC this means the treatment plants on Okanagan Lake. These plants use some form of BNR including nitrification and denitrification (conversion of ammonia N to nitrate and then the nitrate to nitrogen gas) and preferential-bacteria excess-phosphorus uptake and removal. As such, BNR plants typically produce effluents with less than 5 mg/L BOD and less than 5 mg/L

TSS as well as very low effluent N and P levels, e.g. less than 0.25 mg/L Total P. In some cases, such plants require the addition of alum and filters to remove particulates and phosphorus precipitates in order to meet the effluent standards. There are no major BNR plants on Vancouver Island.

4 The Need for Levels of Treatment

The current state of wastewater treatment with in the RDN is as follows:

- Greater Nanaimo Pollution Control Centre (GNPCC) – Primary treatment
- French Creek Pollution Control Centre (FCPCC) – Secondary treatment
- Nanoose Pollution Control Centre (NPCC) – Primary treatment
- Duke Point Pollution Control Centre (DPPCC) – Secondary treatment

At this point in time, GNPCC is scheduled to be upgraded to secondary treatment, as is NPCC. Both the FCPCC and DPPCC will likely remain secondary treatment plants. The only foreseeable reason why any of these treatment plants would need to go beyond secondary treatment at some point in the future would be chronic water shortages and a desire to reclaim some of the effluent for non-potable uses, e.g. lawn irrigation.

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REPORT

Discussion Paper No. 1

Draft

**Regional District of
Nanaimo**

**Liquid Waste Management Plan -
Review and Amendments**

Review of Existing Conditions

January 2008

Regional District of Nanaimo Liquid Waste Management Plan – Review and Amendments

Review of Existing Conditions

Issued: January 31, 2008
Previous Issue: November 28, 2007

The Regional District of Nanaimo (RDN) has an approved Liquid Waste Management Plan (LWMP) that was completed in November 1997. The LWMP is a region-wide, long-range (20 years and beyond), strategy to provide a comprehensive approach to managing liquid waste reduction, treatment, utilization, and disposal. The Environmental Management Act allows municipalities and regional districts to develop LWMP for approval by the Minister of Environment. The LWMP consists of Operational Certificates, which replace waste discharge permits; a strategy to ensure liquid waste disposal conforms to Ministry objectives; an implementation schedule; and measures to accommodate future development. An approved plan, such as the one the RDN has, authorizes the discharge of waste in accordance with Operational Certificates, other provisions of the waste management plan, and the Minister's requirements.

The RDN has retained the services of Associated Engineering for reviewing and amending the existing LWMP to reflect current conditions. As part of this work, several discussion papers on various topics pertaining to the LWMP will be prepared and circulated to the RDN's LWMP Advisory Committee for review and discussion.

This discussion paper, Discussion Paper No. 1, provides an overview of existing service areas for each of the four treatment plants, capacities of the existing treatment plants, effluent quality and flow requirements for each treatment plant as per Operational Certificates or permits, and milestone dates for scheduled treatment plant upgrades.

1 Existing Service Areas and Treatment Plants

Created in 1967, the RDN is comprised of four incorporated municipalities and seven unincorporated electoral areas. The four municipalities consist of:

- City of Nanaimo,
- City of Parksville,
- Town of Qualicum Beach, and
- District of Lantzville.

The seven unincorporated electoral areas are:

- A (Cedar, South Wellington, and Cassidy),
- B (Gabriola, Decourcy, and Mudge Islands),

- C (Extension, Nanaimo Lakes, and East Wellington/Pleasant Valley),
- E (Nanoose Bay),
- F (Coombs, Hilliers, and Errington),
- G (French Creek, San Pareil, and Dashwood), and
- H (Bowser, Qualicum Bay, and Dunsmuir).

The RDN provides a range of services for the municipalities and electoral areas, depending on local needs and interests. The RDN's responsibilities and services include regional and community planning, transit, liquid and solid waste treatment, recreation and parks, building inspection and bylaw enforcement, water and sewer utilities, general administration, and emergency planning. The RDN's Liquid Waste Management Department provides sewer servicing for the Greater Nanaimo, French Creek, Nanoose Bay, and Duke Point Service Areas that serve the urban containment areas within the District. A map of the entire RDN sewer service area and treatment plants is provided in Sketch 1. Local service areas are comprised of areas within the 'sewer benefiting area' that are currently provided with community sewer service. The 'sewer benefiting area' is the area that the wastewater treatment plant is engineered and planned to service.

1.1 Greater Nanaimo Service Area

The Greater Nanaimo Service Area (see Sketch 2) includes the City of Nanaimo Urban Area as defined by the Regional Growth Management Plan and the Lantzville Sewer Local Service Area; and possibly future Village Centres and problem areas in some or all of Electoral Areas 'A', 'B', and 'C'.

Future sewer service in the Greater Nanaimo area will include the currently expanding development in Lantzville and possible addition of the Sandstone Development in southeast Nanaimo.

The wastewater from the Greater Nanaimo Service Area is treated at the Greater Nanaimo Pollution Control Centre (GNPCC). The RDN took over operational responsibility of GNPCC in 1972. The GNPCC provides preliminary and primary treatment of incoming raw wastewater. The treated primary effluent is discharged to the Strait of Georgia through a 2000 m long marine outfall that discharges at a depth of approximately 70 m. In 1988, a Stage II expansion of the GNPCC was commissioned to improve plant efficiencies and support increasing flows due to development. To accommodate future expansion of the GNPCC to secondary treatment, Walley Creek was relocated in 2006 and 2007. According to the LWMP, the GNPCC will need to have secondary treatment by 2015.

1.2 French Creek Service Area

The French Creek Service Area (see Sketch 3) includes the Town of Qualicum Beach, the French Creek Sewer Local Service Area, Surfside, Barclay Crescent, Pacific Shores, and the City of Parksville; and possibly future Village Centres and problem areas in Electoral Areas 'F', 'G', and 'H'.

Potential future sewer service in the French Creek area may include the Church Road Transfer Station and surrounding area, proposed expansion in the Surfside/Dashwood Area, and possibly Madrona, and Wall Beach.

The wastewater from the French Creek Service Area is treated at the French Creek Pollution Control Centre (FCPCC). The FCPCC was originally constructed in 1977 (Stage 1). A major upgrade and expansion completed in 1997 (Stage 2) provides preliminary, primary, and secondary treatment of incoming wastewater. Stage 3 upgrades are currently underway and consist of interim upgrading strategies to prolong the useful life of the existing capital infrastructure to the year 2012. Stages 4 and 5 would involve major facility changes and expansions. Stage 4 implementation is scheduled for Year 2012. The treated effluent is discharged into the Strait of Georgia through a 2075 m long outfall with an additional 78 m long steel diffuser section at a depth of 61 m to ensure rapid and complete mixing. Some of the effluent is diverted to the Morningstar Golf Course for irrigation.

1.3 Nanoose Service Area

The Nanoose Service Area (see Sketch 4) includes the Fairwinds Development, and the Delanice Way, Beachcomber, Dolphin Drive, Garry Oaks, and Red Gap areas.

The wastewater from the Nanoose Service Area is treated at the Nanoose Pollution Control Centre (NPCC). The NPCC provides preliminary and primary treatment of incoming raw wastewater. The treated primary effluent is discharged via an outfall into the Strait of Georgia at a depth of 39 m, and 450 m offshore.

1.4 Duke Point Service Area

The Duke Point Service Area (see Sketch 5) includes the industrial development at Duke Point, and possibly future Village Centres and problem areas within Electoral Area 'A' that require community sewers.

Future sewer service in the Duke Point area will include Cedar Village (sewer servicing currently under construction), and possibly future connection from Cable Bay Lands and First Nations lands (IR 2, 3 and 4).

The wastewater from the Duke Point Service Area is treated at the Duke Point Pollution Control Centre (DPPCC). The DPPCC was originally constructed in 1981 and equipped with rotating biological contactors (RBC) technology. In 1997, the RBC technology was replaced with sequencing batch reactor (SBR) technology. The DPPCC was intended to treat domestic wastewater generated within the industrial park, consistent with the November 1997 Stage 3 LWMP. The RDN commissioned SBR plant in 1998.

The DPPCC provides preliminary and secondary treatment of incoming raw wastewater. The treated effluent is discharged via a shared outfall with West Coast Reduction to the Northumberland Channel at a depth of 43 m, 242 m off shore.

2 Capacities of the Existing Treatment Plants

2.1 Greater Nanaimo Pollution Control Centre

The GNPCC primary treatment plant was designed and constructed to process up to 110,000 m³/day of flows of typical residential strength wastewater based on typical overflow rates. The overflow rate is a measure of the rate at which the wastewater effluent flows through the clarifier (settling tank). A smaller overflow rate means that the wastewater is in the clarifier longer and therefore, there is more time for solids to settle out. A larger overflow rate means that there may not be sufficient time for all solids of a certain diameter to settle out and, as result, the effluent quality may not be as good. Based on an overflow rate of 122 m³/m²-day, with all three clarifiers in service, the theoretical capacity of the GNPCC would be 160,000 m³/day (Associated Engineering, 1999). However, at these higher overflow rates, the removal performance of the primary clarifiers could be expected to drop off dramatically. Fortunately, given the highly diluted influent flow that would occur during peak wet weather flows, typically during winter storm events, the plant would still likely meet the permit BOD and TSS effluent criteria under this extreme condition. However, operating at this level provides no factor of safety, e.g. if one clarifier was out of service at that time, the chances of going out of compliance would increase significantly.

2.2 French Creek Pollution Control Centre

The FCPCC was designed and constructed to process up to a maximum of 16,000 m³/d of typical residential strength wastewater. The FCPCC is currently at “Stage 3” of its development. A number of potential constraints or “bottle necks” exist at the FCPCC. The constraints of these individual unit operations and processes ultimately limit the capacity of the facility to service a larger equivalent population. Associated Engineering, in a December 2006 Report, developed a list of short-term tasks and works that the RDN should implement to help alleviate these constraints. The following list only includes tasks that expand the capacity of unit processes and operations. The replacement of assets due to age or failure has not been included.

- Task 1 - TF/SC Expansion - Completed
- Task 2 - Influent Screens Upgrade - Completed
- Task 3 - Final Effluent Pump Upgrades – Partial completion
- Task 4 - Power Supply Upgrade - Completed
- Task 5 - Grit System Upgrade (2008)
- Task 6 - Increase the Digested Sludge Storage Capacity
- Task 7 - Install Second Waste Biological Sludge (WBS) Drum Thickener
- Task 8 - Implement Short-term Chemical-Enhanced Primary Treatment (CEPT)
- Task 9 - Commission the Fifth ATAD Reactor

- Task 10 – Install the Second Dewatering Centrifuge
- Task 11 - Add Return Biological Sludge (RBS) Pumping Capacity
- Task 12 – Secondary Clarification Expansion

2.3 Nanoose Pollution Control Centre

The NPCC is designed and constructed to process up to 2270 m³/d of wastewater as per discharge permit. A draft Operational Certificate has been prepared.

2.4 Duke Point Pollution Control Centre

The DPPCC plant is designed and constructed to process up to 910 m³/d of typical residential strength wastewater.

2.5 Average Daily Flows

The average daily flow for each treatment plant is provided in the table below.

Treatment Plant	Average Daily Flow (m ³ /day)
Greater Nanaimo Pollution Control Centre	34,380
French Creek Pollution Control Centre	8,485
Duke Point Pollution Control Centre	21
Nanoose Bay Pollution Control Centre	450*

NOTE: *This is an estimated flow based on water use. Daily flows are currently being recalculated.

3 Effluent Quality and Flow Requirements for Each Plant as per the Operational Certificates/Permits

Effluent quality and flow requirements for each treatment plant are outlined in Operational Certificates or permits. Draft Operational Certificates for all four-treatment plants were submitted to the Ministry of Environment on October 29, 2001. Each Operational Certificate outlines maximum and average daily-authorized rates of discharge and the effluent quality characteristics of the discharge from the treatment plant. To date, the Ministry has only approved the Operational Certificate for the Duke Point Pollution Control Centre. The Greater Nanaimo, French Creek, and Nanoose Bay Pollution Control Centers, await approval of their draft Operational Certificates and continue to operate using discharge permits.

The effluent quality and flow requirements as per the Operational Certificates or permits, draft or approved, are described below.

- Greater Nanaimo Pollution Control Centre: Permit issued June 2, 1994. The plant operates according to the permit, which specifies the maximum authorized rate of discharge as 80,870 m³/d. The characteristics of the discharge shall be equivalent or better than: 5-day Biochemical Oxygen Demand – 130 mg/L and Total Suspended Solids - 130 mg/L.

The Draft Operational Certificate, submitted to the Ministry in 2001 for approval, specifies the maximum authorized rate of discharge as 160,000 m³/d. The characteristics of the discharge shall be equivalent or better than: 5-day Biochemical Oxygen Demand – 130 mg/L, Total Suspended Solids - 130 mg/L, and pH - 6-9 pH units.

- French Creek Pollution Control Centre: Permit issued July 10, 1990. The plant operates according to the permit, which specifies the maximum authorized rate of discharge to Strait of Georgia as 16,000 m³/d. The maximum authorized rate of discharge to Morningstar Golf Course is 1,370 m³/d. The characteristics of the discharge to the Strait of Georgia shall be equivalent or better than: 5-day Biochemical Oxygen Demand - 45 mg/L and Total Suspended Solids - 60 mg/L. The characteristics of the discharge to the Morningstar Golf Course shall be equivalent or better than: 5-day Biochemical Oxygen Demand - 20 mg/L and Total Suspended Solids - 30 mg/L.

The Draft Operational Certificate, submitted to the Ministry in 2001 for approval, specifies the maximum authorized rate of discharge to Strait of Georgia as 25,300 m³/d and the maximum authorized rate of discharge to Morningstar Golf Course as 1,370 m³/d. The characteristics of the discharge to the Strait of Georgia shall be equivalent or better than: 5-day Biochemical Oxygen Demand - 45 mg/L, Total Suspended Solids - 45 mg/L, and pH - 6-9 pH units. The characteristics of the discharge to the Morningstar Golf Course shall be equivalent or better than: 5-day Biochemical Oxygen Demand - 20 mg/L, Total Suspended Solids - 30 mg/L, and pH - 6-9 pH units.

- Nanoose Bay Pollution Control Centre: Permit issued March 8, 1988. The plant operates according to the permit, which specifies the maximum authorized rate of as 2,270 m³/d. The characteristics of the discharge shall be equivalent or better than: 5-day Biochemical Oxygen Demand - 100 mg/L and Total Suspended Solids - 100 mg/L.

The Draft Operational Certificate, submitted to the Ministry in 2001 for approval, specifies the maximum authorized rate of discharge as 2,260 m³/d. The characteristics of the discharge shall be equivalent or better than: 5-day Biochemical Oxygen Demand – 130 mg/L, Total Suspended Solids - 130 mg/L, and pH - 6-9 pH units.

- Duke Point Pollution Control Centre: Operational Certificate ME-05989, approved August 12, 2004.

The maximum authorized rate of discharge is 1,800 m³/d. The characteristics of the discharge shall be equivalent or better than: 5-day Biochemical Oxygen Demand - 30 mg/L, Total Suspended Solids - 30mg/L, and pH - 6-9 pH units, and Fecal Coliform Bacteria - 1000 colonies/100 mL.

4 Milestone Dates for Scheduled Upgrades

On-going operational and capacity requirements necessitate upgrades at the four treatment plants and pump stations, which convey wastewater to the treatment plants. Scheduled upgrades at each of the treatment plants, complete with year of implementation, are provided below.

Greater Nanaimo

Projects

- GNPCC - New Operations Building: Construction (2008)
- GNPCC - Gravity Thickeners (two sludge thickeners will increase digester capacity): Design (2007), Construction (2007/2008)
- Departure Bay Pump Station - Upgrade: Design and Construction (2008/2009/2010)
- GNPCC- Cogeneration Field Test: (2008/2009)
- GNPCC- Replace Non-potable Water Lines: Construction (2008)
- GNPCC - Stand-by Generator (2008)
- GNPCC - Third Digester: Design (2008), Construction (2009/2010)
- GNPCC - Existing Operations Building Internal Renovations (2009)
- GNPCC - Sedimentation Tank Expansion (4th primary sedimentation tank): Preliminary Design (2009), Construction (2010)
- GNPCC – Upgrade Scum Pumping Equipment: Upgrade (2010)
- GNPCC - Digester #2 Upgrade: Detailed Design (2009), Upgrade (2010)
- GNPCC - Outfall Expansion – Land Section: Preliminary Design (2009), Construction (2010)
- GNPCC - Modify Outfall Diffuser: Design and Construction (2010)
- GNPCC - Secondary Treatment Upgrades: Preliminary Design (2011), Detailed Design (2012), Construction (2013)
- Departure Bay Pump Station - Upgrade – Stage 2: Upgrade (2012)
- GNPCC – Cogeneration Facility: Upgrade (2013)

Studies

- Treatment Plant Annual Report (on-going)
- GNPCC - Wastewater Characterization Program: (2007)
- GNPCC - Liquid Waste Management Review and Amendments: (2007/2008)
- GNPCC - Secondary Treatment Geophysical Study: (2008)

- GNPC - Secondary Treatment Upgrades, Stage III: Process Alternatives and Layout Study (2008), Process Selection (2010)

French Creek

Projects

- FCPCC – Dewatering Building Odour Control: Technology Review and Pilot Test (2008)
- FCPCC – Grit Channel Expansion: Upgrade (2007/2008)
- FCPCC – Skimming System Upgrade: Preliminary Design (2007), Design and Construction (2008)
- FCPCC – Morningstar Creek Bank Protection: Stage 1 (2007), Stage 2 (2008), Stage 3 (2009)
- FCPCC – Second Waste Biological Sludge (WBS) Drum Thickener: Conceptual Design (2007), Install (2009)
- FCPCC – Hauled Waste Receiving Upgrade: Preliminary Design (2007), Design and Construction (2010)
- FCPCC – Pave Road to Septage Area: (2008)
- Lee Road Pump Station – Electrical Upgrade: Upgrade (2008)
- Lee Road Pump Station – Odour Control: (2008)
- FCPCC – Washroom and Change Area Renovation: Preliminary Design (2008), Design and Construction (2009)
- FCPCC – Add RBS Pumping Capacity: Preliminary Design (2008), Construction (2009)
- FCPCC – Odour Control Upgrade: Trickling Filter Odour Control (2008), Dewatering Odour Control (2009)
- FCPCC – Secondary Treatment Ventilation Upgrade: Preliminary Design (2006), Stages 2 and 3 Upgrades (2009)
- FCPCC – Add Effluent Pumping Capacity: Preliminary Design (2006), Upgrade (2009)
- FCPCC – 5th ATAD (5th ATAD to be commissioned, actually is the 2nd ATAD): Design and Construction (2009)
- FCPCC – Stage 3 Phase 2 - Solids Contact Tank Expansion: Preliminary Design (2009), Design and Construction (2010)
- FCPCC - Additional Secondary Clarifier: Preliminary Design (2009), Design and Construction (2010)
- FCPCC – Expand Sludge Dewatering System (Second Centrifuge): Preliminary Design (2009), Design and Construction (2010)
- FCPCC – Replace Trickling Filter Down Pipes With PVC: Design and Construction (2009)
- FCPCC – Implement Chemically Enhanced Primary Treatment (CEPT): Implement (2009)
- Hall Road Pump Station – Odour Control: Implement (2009)
- Parksville Sanitary Sewer Overflow Tank: Preliminary Design (2009), Design and Construction (2010)
- FCPCC – Stage 4 Expansion: Preliminary Design (2010)

- Bay Avenue Pump Station - Odour Control: (2010)
- Qualicum Interceptor / Pump Station Upgrades: Stage 1 Upgrade (2011), Stage 2 Upgrade (2012), Stage 3 Upgrade (2013), Stage 4 Upgrade (2014), Stage 5 Upgrade (2015), Stage 6 Upgrade (2016)
- FCPCC – Stage 4 Expansion: Construction (2012)

Studies

- Treatment Plant Annual Report (on-going)
- FCPCC – Liquid Waste Management Plan – Review and Amendments: (2007/2008)
- Qualicum Interceptor: Wet Weather Flow Analysis (2008), Dynamic Model (2009)
- FCPCC – Stage 4 Expansion: Process Selection (2009)
- Qualicum Interceptor / Pump Station Upgrade: Feasibility Study (2010)

Duke Point

Projects

- DPPCC – Pump Upgrade: Preliminary Design (2008), Upgrade (2009)
- Several residential areas around the Cedar Secondary School region may connect to the treatment plant over the next several years.
- As flows increase, a second pair of Sequencing Batch Reactor basins may need to be added.

Studies

- Treatment Plant Annual Report (on-going)

Nanoose Bay

Projects

- NPCC - Odour Control: Preliminary Design (2007), Implement (2008)
- Nanoose Pump Station No. 1 – Genset: Design and Construction (2008)
- Nanoose – SCADA Strategy for NPCC and Pump Station: Preliminary Design (2008)
- NPCC – Inlet Screen: Design and Construction (2008)
- Nanoose Pump Station No. 6 – Genset: Design and Construction (2010)
- NPCC – Secondary Treatment Upgrade and Expansion: Preliminary Design (2012), Upgrade and Expansion (2013)

Studies

- Treatment Plant Annual Report (on-going)

5 Summary

The RDN has an approved LWMP that was completed in November 1997. The LWMP provides a comprehensive approach to managing liquid waste reduction, treatment, utilization, and disposal. An approved plan, such as the one the RDN has, authorizes the discharge of waste in accordance with Operational Certificates, other provisions of the waste management plan, and the Minister's requirements.

Currently the RDN is in the process of reviewing and amending the existing LWMP to reflect current conditions. This discussion paper reviewed existing service areas for each of the four treatment plants, capacities of the existing treatment plants, effluent quality and flow requirements for each treatment plant as per Operational Certificates or permits, and milestone dates for scheduled treatment plant upgrades to meet on-going operational and capacity requirements.

Draft Operational Certificates for all four-treatment plants were prepared by Associated Engineering and submitted to the Ministry of Environment on October 29, 2001. To date, the Ministry of Environment has only approved the Operational Certificate for the Duke Point Pollution Control Centre. The Greater Nanaimo, French Creek, and Nanoose Bay Pollution Control Centers continue to operate using permits.

6 References

- 1 Associated Engineering. Report: Greater Nanaimo Pollution Control Centre Performance Audit. March 1999.
- 2 Associated Engineering. Report: Duke Point WWTP Expansion Assessment Study. November 2000.
- 3 Associated Engineering. Report: French Creek Pollution Control Centre Performance Evaluation and Upgrading Plan Update. December 2006.
- 4 Regional District of Nanaimo. Website: <http://www.rdn.bc.ca>
- 5 Associated Engineering. Budget Management Spreadsheets. October 2007.

Draft Discussion Paper No. 2



Regional District of Nanaimo

Liquid Waste Management Plan - Review and Amendments

On-site Treatment Issues

March 2008

Regional District of Nanaimo Liquid Waste Management Plan – Review and Amendments

On-site Treatment Issues

Issued: March 25, 2008

Previous Issue: March 19, 2008

1 Background

The Regional District of Nanaimo (RDN) has an approved 1997 Liquid Waste Management Plan (LWMP) that is currently being reviewed to determine if amendments to the plan are required at this time. As part of this work, discussion papers are being developed and circulated to the Liquid Waste Advisory Committee for discussion and comments. This discussion paper covers aspects of on-site wastewater treatment.

Within the RDN, there are many residences, some multifamily developments, some commercial establishments and some institutions that are not on a sewer system. As a result, they are on some type of on-site treatment system. In most cases, on-site treatment means a septic tank and disposal field (“Type 1” treatment). In some cases, on-site treatment means a small mechanical-biological packaged treatment plant and disposal field (“Type 2” treatment). In rare cases, on-site treatment means an advanced mechanical-biological packaged treatment plants (“Type 3” treatment) that produce very high quality effluents. (Further details of Type 1, 2 and 3 systems are found in Appendix A). Also, in rare cases, on-site “treatment” really isn’t treatment at all, but a holding tank for pump and haul while waiting for a sewer connection or because of poor soil or high groundwater issues. Overall, there are approximately 12,000 on-site systems within the RDN. With numbers of this magnitude, on-site treatment warrants some discussion within this LWMP review.

Previously, under the 1997 LWMP, with respect to on-site treatment, the RDN committed to the following:

- “The RDN will proactively and cooperatively work with the Central Vancouver Island Health Region to monitor and to assess sewage system requirements and develop solutions for failed on-site systems that are under Ministry of Health jurisdiction.”
- “The RDN, in consultation with stakeholders and the Central Vancouver Island Health Region, will investigate alternate minimum standards for on-site systems to supplement existing Ministry of Health sewage disposal regulations.”

With 12,000 on-site systems within the RDN, even if the 2008 situation was the same as the 1997 situation, there would still be a potential need for the RDN to be involved with the control and

operation of on-site treatment systems. However, with the 2005 Sewerage System Regulation, the situation did change significantly with respect to responsibilities towards on-site treatment systems. Since 2005, the Ministry of Health, i.e. the Vancouver Island Health Authority (VIHA) is no longer actively involved in approval or monitoring on-site systems. As a result, Regional Districts and some District Municipalities within BC have had to or have elected to take on more responsibilities to ensure that there are no major problems with the on-site systems within their jurisdiction. Therefore, the issue of on-site wastewater treatment systems needs to be reviewed within the context of the overall LWMP review.

The questions that need to be answered or discussed in this discussion paper include:

- How does the new Health Act regulation differ from the old one with regard to on-site systems?
- Who approves on-site systems?
- What are the different types of on-site systems?
- What is the purpose of holding tanks and pump and haul?
- How can the maintenance of on-site systems be ensured so there aren't problems now and in the future?

This discussion paper will provide an overview of the new British Columbia Ministry of Health Sewerage System Regulation; Type 1, 2 and 3 wastewater treatment systems, including holding tanks; RDN policies regarding on-site treatment including Type 1 and 2 systems; on-site treatment system management options; and proposed RDN on-site sewage disposal system educational program.

2 Sewerage System Regulation

The British Columbia Sewerage System Regulation under the Health Act applies to the construction and maintenance of holding tanks, sewerage systems that serve single family residences or duplexes, and sewerage systems with a combined design daily flow of less than 22,700 L that serve a single parcel or one or more parcels or strata lots (BC Health Act, 2004).

When the 1997 LWMP was developed, on-site wastewater treatment systems fell under the 1985 Health Act and the associated Sewage Disposal Regulation. Under the Act and the regulation of the day, the Ministry of Health was responsible for the approval, inspection and monitoring of on-site sewage systems. At some point in time, this level of responsibility eventually became unmanageable for the remaining Ministry of Health staff. With the mandate by the Provincial Government to reduce regulations in the early 2000's, the Ministry of Health was directed to develop a new, more streamlined and less prescriptive, Sewerage System Regulation.

Under the British Columbia Health Act, the new Sewerage System Regulation was approved on July 6, 2004 and came into effect May 31, 2005. The Sewerage System Regulation applies to the construction and maintenance of the following:

- (a) holding tanks,
- (b) sewerage systems that serves a single family residence or a duplex,
- (c) sewerage systems or combination of sewerage systems with a combined design daily domestic sewage flow of less than 22,700 litres that serves structures on a single parcel, and
- (d) a combination of sewerage systems with a combined design daily domestic sewage flow of less than 22,700 litres that serves structures on one or more parcels or strata lots or on a shared interest and discharges to ground.

For context, the Ministry of Environment has jurisdiction over wastewater treatment and disposal for any wastewater flows that are greater than 22,700 litres per day or for any wastewater flows that are discharged to surface waters. For this reason, in the past, there have been numerous strata subdivisions developed around 16 homes and a common septic tank and disposal field system because the theoretical flow was just below the 22,700 litre per day threshold, resulting in Ministry of Health jurisdiction.

In general, the intent of the new Sewerage System Regulation is to have all new on-site systems designed, installed, and maintained better than they would have been under the previous regulation. This new regulation is a non-prescriptive, outcome-based, industry-driven, approach. The new regulation has shifted resources, costs, and responsibility from the Ministry of Health, e.g. VIHA, to property owners and industry professionals. The Ministry of Health no longer approves new on-site systems but does accept and file the registrations of the new systems. Registered practitioners and/or qualified professionals are now responsible for planning, installing, registering and maintaining the on-site wastewater systems.

To assist these registered practitioners and/or qualified professionals, the Ministry of Health has issued a Sewerage System Standard Practice Manual, now into its second version. This Standard Practice Manual provides detailed guidance on most aspects of on-site system design, installation and maintenance. The Standard Practice Manual has extensive information about Type 1 (septic tank and disposal field) systems, but less information about Type 2 and Type 3 mechanical-aerobic biological systems that must be designed by qualified professionals, typically Professional Engineers.

Although VIHA may not be as involved with new systems as it was before, VIHA's roles and responsibilities under the new regulation continue to include the authority to inspect and take corrective action to alleviate health hazards related to onsite wastewater systems. If a health hazard exists or a system is likely to cause a health hazard, the Health Officer has the authority to hold liable the owner of the system and/ or the registered practitioner or professional that designed, installed, or was contracted to maintain the system. While existing on-site systems installed prior to May 31, 2005, do not have to comply with the new regulation, if any significant alteration or repair is to be made to an existing system, i.e. adding a bedroom to a house, relocating a tank for a garage, replacing a failed/ruined system, etc., the alterations or repairs have to comply with the new

regulation. Otherwise, for systems older than May 31, 2005, unless they fail and the failure is reported, no one is required to actively ensure that they are operating correctly.

Due to the transfer of overall liability onto the registered practitioner, professional, and property owner, the RDN may want to ensure that existing systems, systems constructed prior to May 31, 2005 which are not regulated by the new regulation, are operated and maintained in a safe and effective manner and according to the established LWMP. It is likely that some of the older systems within the 12,000 systems within the RDN may not be operated and maintained properly. This could potentially impact human health and the environment. With VIHA not required to monitor any on-site systems, there is a void that the RDN might have to fill with respect to managing the on-site systems and ensuring that they are in proper working order and are not causing any issues, e.g. failed septic systems contaminating surface or ground water supplies.

It may be beneficial for the RDN to develop a collective program with VIHA to investigate and remedy non-compliant/failed septic systems. A public education program covering location, construction, and care and maintenance of on-site sewerage systems for all owners - regardless of whether their systems are new or existing, can further protect the environment. Since it is likely that some existing wastewater treatment systems are not functioning correctly, a public education program would ensure that owners are informed to make decisions to safeguard surface and groundwater sources and the surrounding environment from non-compliant, non-maintained systems. To this end, the RDN has developed an education program that has been approved and scheduled for implementation in 2008. This is discussed further in Section 6.

To further assist the RDN in complying with its LWMP goals, the RDN may want to develop and implement a management program to monitor and address non-compliant systems. As such, it may be appropriate for the RDN to review and revise, if required, the current zoning bylaws in order to protect the environment from poorly sited systems by preventing development in areas with known or likely on-site treatment problems unless there is a sewer system. Additionally, the RDN may want to develop formal procedures to identify non-compliant/failed septic systems and implement measures to amend these systems such as mandating replacement of the existing septic tank system, upgrading the level of treatment, or connection to a municipal treatment system.

3 Holding Tanks and Their Role in Liquid Waste Management

The 2005 Sewerage System Regulation regulates the construction and maintenance of holding tanks. According to the regulation, holding tanks are defined as “a watertight container for holding domestic sewage until the domestic sewage is removed for treatment.” More generally, holding tanks are tanks that are connected to the plumbing system of the house or commercial establishment. They are different from septic tanks in that, in theory, there is no discharge from holding tanks other than through removal by a “pump and haul” contractor using a vacuum-type pumping truck. In contrast, a septic system includes a tank, wherein solids settle and oil and grease scum floats, and a perforated pipe effluent disposal system. While septic tanks are pumped

out every two to four years to remove the settled solids and scum, holding tanks have to be pumped out every time they are full, which could be a matter of days, depending on the size of tank and usage.

Holding tank pump outs would likely cost in the multiple of \$100's per pump out and many \$1,000's per year. As a result, owning and operating a holding tank can be very expensive. Therefore, holding tanks are usually the option of last resort when no other sewage disposal means are available, e.g. on-site septic systems or connection to a wastewater collection system.

A typical valid reason for using a holding tank is when a residential-sized lot, one too small for a septic tank and disposal field system is developed in anticipation of connection to a sewer system, but for some reason, the sewer system development is delayed. Similarly, the sewer system could be in place but the capacity of the wastewater treatment plant has been reached and, until the capacity is expanded, no further sewer connections are permitted. In such cases, the intent of the holding tank would be to bridge the need for service for a few months, but not on a permanent basis. It should also be noted that in the latter example, when the treatment plant capacity has been reached, the pumped out holding tank contents cannot be discharged at that treatment plant and must be hauled to another treatment plant.

Often, people have no idea of the volume of wastewater that they generate (or will generate) or the total cost of using a holding tank for wastewater disposal. Even when people are presented with the facts about wastewater generation and their likely costs, they often tend not to believe the information and still desire to use a holding tank. This is likely because their only other option is not being able to occupy their often newly-built home.

Once the homeowner is into the holding tank situation and they begin to experience the real cost of using a holding tank, there may be temptation for the homeowner to let the tank overflow, i.e. spill raw sewage to the ground, without the benefit of pre-treatment or distributed disposal as in a septic tank system. As a result, some jurisdictions do not allow the use of holding tanks, given past experiences with some people succumbing to the temptation to dispose of the wastewater from the tanks improperly or illegally because of economic pressures.

Although not allowing holding tanks might seem harsh to the individual homeowners, the real intent is to protect their public health and economic interests. This prevents the homeowner being faced with repetitive orders to dispose of the wastewater properly and legally, the possible declaration of a residence unfit for human habitation, or the inability to sell a property which is not attractive to potential purchasers because of the cost of sewage disposal. Instead, whenever possible, the property owner should provide an appropriately sized and designed on-site sewage disposal system or a connection to a sanitary sewer system should be used.

While the wholesale approval of permanent holding tanks is suggested above to be less than wise, there are reasons for approval of a temporary sewage holding tank under certain conditions. For example, if a permit has been issued for an on-site sewage disposal system, the local health

authority might permit the installation and use of the septic tank as a holding tank until soil conditions permit the installation of the absorption field. Another situation would be if the owner has written verification from the sewer utility that a sanitary sewer system connection will be available to the property within one year. In this case, the approving agency could issue approval for the use of a temporary holding tank until connection to the sewer is secured. Finally, a temporary sewage-holding tank may be used to eliminate the discharge from a failing on-site sewage disposal system until a new on-site system has been constructed, or connection to sanitary sewer is secured. In fact, in some cases, it is recommended that local health officers immediately require "pump and haul" as the first action whenever a sewage discharge from a failed septic system has been documented.

Holding tanks and "pump and haul" does exist within the RDN, particularly in the Horne Lake area where soil and groundwater issues make on-site disposal systems difficult to impossible. Under existing RDN bylaws, the RDN provides a function for holding tanks within the District. Lower "pump and haul" sewage disposal rates are provided for properties within the Pump and Haul Service Areas. The Horne Lake Pump and Haul Service Area has been established in response to historic problems with on-site systems in the Horne Lake area. Outside of the Horne Lake area, individuals must apply to be included in the Pump and Haul Service Area. To be included in the Pump and Haul Service Area, the following requirements must be met:

- The parcel is greater than 700 m².
- The parcel is for existing uses and the disposal system has failed, or the parcel is currently vacant and will only be used for the construction of a single family residence
- The parcel cannot be further subdivided or stratified according to existing zoning or a restrictive covenant.
- A community sewer system is not available.
- A holding tank permit has been obtained.
- The parcel will not facilitate development of any additional units on the property.
- The development conforms to zoning bylaws.

The Pump and Haul function is not available in Electoral Area A or C (except for defined properties in Area C).

4 RDN Policies Regarding On-site Treatment Systems and Lot Sizes

The RDN has policies in place regarding on-site wastewater treatment including where on-site waste disposal is supported. These "policies" include the LWMP, the Regional Growth Strategy (RGS), official community plans (OCPs) and on-site wastewater treatment-related bylaws.

The RDN enforces minimum lot size requirements using bylaws. The Land Use and Subdivision Bylaw No. 500, 1987 (RDN, 1987) and the Zoning and Subdivision Bylaw No. 1285, 2002 (RDN, 2002) set out lot size requirements depending on the location of the property and whether a community water and/or sewer system is in place. Generally, minimum lot sizes in unserved areas are larger than the minimum lot sizes in served areas. One reason for the larger lot sizes in

unserved areas is to ensure that new lots have sufficient area to install on-site wastewater treatment systems. Typically, Type 1 systems - on-site septic tank and disposal fields, are used. However, these types of systems require suitable soils and percolation rates for effective treatment. If such parameters are not met, Type 2 systems, which are small packaged mechanical wastewater treatment systems, can be used to achieve higher quality effluent prior to discharge to ground. (Refer to Appendix A for more details on Type 1, 2 and 3 systems).

The RDN also has bylaws to regulate areas that may use holding tanks and as a result may use pump and haul services. The Pump and Haul Local Service Establishment Bylaw No. 975, establishes a local service area within the RDN for the purpose of collection, conveyance, treatment and disposal of sewage from holding tanks. In addition to Bylaw No. 975, Bylaw No. 988 regulates the discharge of trucked liquid wastes, including wastes from holding tanks and septic tanks, to RDN septage disposal facilities.

There are also two bylaws related to the Horne Lake Pump and Haul Local Service Areas. The first of these two bylaws is No. 1217, the Horne Lake Pump and Haul Local Service Establishment Bylaw that establishes the specific area for holding tanks in a defined portion of Electoral Area H. The second bylaw is No. 1218, the Horne Lake Service Area Sewage Disposal Regulation Bylaw which establishes a local service for the collection, conveyance, treatment and disposal of sewage within parts of Horne Lake Pump and Haul Service Area.

There is also Bylaw 1224, Sewage Disposal Regulation Bylaw from December 2000 that establishes a local service for the collection, conveyance, treatment and disposal of sewage from holding tanks within a defined portion of the RDN.

Bylaws 500, 975, 988, 1217, 1218, 1224 and 1285 are discussed in further detail in Appendix B.

5 On-site Wastewater System Management Options

All on-site wastewater treatment systems require regular inspection and maintenance to operate effectively. The manner in which an on-site treatment system is taken care of will influence how long the system will last, how well it functions, and how well the environment is protected. In order for homeowners to avoid the inconvenience and cost associated with the repair or replacement of a prematurely failed on-site system, the treatment system should be regularly inspected and maintained to help the system perform well for many years. Typically, the frequency for septic tank clean outs and system inspections is in the two to five year time frame.

Under the new Sewerage System Regulation, VIHA is not going to actively inspect on-site systems. While the newer systems, developed under the new regulations, are supposed to have a regular inspection and maintenance program, the older systems developed before May 31, 2005 have no such requirement. As a result, the RDN may elect to ensure that the on-site systems within its jurisdiction are actively and regularly inspected and maintained.

Three management programs are available to the RDN that can ensure on-site systems are regularly inspected and maintained. They include the following options:

- Privately-owned and maintained on-site systems and privately-operated inspection program.
- Privately-owned and maintained on-site systems and publicly-operated inspection program.
- Publicly-owned and maintained on-site systems and publicly-operated inspection program.

These options will be discussed in greater detail in the following sections.

5.1 Privately-Owned and Maintained On-site Systems and Privately-Operated Inspection Program

This management program would involve renewable operating licences. Under this management program, the RDN would issue licences upon proof of performance monitoring, pumping, or service by a qualified person. The licence would authorize the owner of the system to use the on-site system for a specified period, as long as the conditions on the licence were met.

If the system were not performing properly, the licence would not be issued until the problems are corrected. Property owners would be responsible for contracting and paying a specialist qualified by an industry association, e.g. the BC On-site Sewage System Association (BCOSSA), for the inspections. In addition, owners would pay a fee for the operating licence and would assume all costs associated with pump-outs, repairs, upgrades, or replacement of systems. At the end of the licensing period, the licence may be renewed based on the property owner paying a renewal fee and submitting an inspection report prepared by a qualified person indicating the system is performing properly.

Under this management program, the RDN's involvement would be enacted under a Regional District bylaw and would include:

- Development of licence conditions and reporting requirements,
- Mailings of licence requirements and application forms (possibly in a phased schedule),
- Receiving payments,
- Maintaining a database and file system,
- Enforcement activities (for failure to obtain licence, spot-checks on inspectors), and
- Licence renewals.

A public information program, i.e., educational pamphlets, advertising, and open houses would be used to initiate the program. Letters would be mailed to property owners explaining the program requirements, deadlines, fees, and penalties. The property owner would then be required to retain a qualified person to conduct an inspection of their system, typically once every three years, and prepare a report detailing the inspection results. The RDN would be required to determine the degree of the inspection. The inspections could include the following:

- A description of the on-site treatment and disposal system, including age of the system and number of occupants it normally serves.
- Uncovering the septic tank to measure the scum, sludge, and liquid level in the tank.
- Inspection of the general condition of the tank, outlets, distribution box, etc.
- Inspection of all mechanical parts, including pumps, valves, etc.
- A general site evaluation documenting evidence of any malfunction including lush vegetation, saturated ground surface, seepage, etc.
- A dye test, to assess leakage, at the discretion of the inspector.

Septic tank pump-outs would be required on a regular frequency, e.g. every three years, and possibly more frequently, depending on the occupancy of the residence. The property owner would then submit the inspection report with a licence application. If the property owner's system were non-compliant, there would be provisions for submitting the report with a plan and schedule to bring the system into compliance and a completion report.

Property access issues would not be an issue under this management concept because the property owner would be responsible for contracting the pump out and inspection. The RDN could also enact a bylaw permitting RDN staff to access private property to conduct spot checks of the inspection reports.

Disadvantages of this type of program include the following:

- Difficulty issuing permits if there are incomplete records of the system.
- Property owner has to take the responsibility to get an inspection done and submit an application.

One way to help ensure that the inspection is completed regularly would be to charge the property owner approximately one-third of the pump-out and inspection cost each year, plus an administration fee, on their annual property tax bill. Once the pump out and inspections were completed, the property owner would submit the inspection report and subsequently be given a rebate for the cost of the pump-out and inspection, less the administrative fees.

5.2 Privately-Owned and Maintained On-site Systems and Publicly-Operated Inspection Program

This "Private-Public" management program is similar to the first "Private-Private" one but differs on one big point: the RDN would provide the systematic inspection of on-site systems. These inspections would be conducted by either RDN staff or an inspection company under contract to the RDN. System deficiencies would be noted and the property owner would be responsible for hiring a qualified person to complete any required maintenance or repairs. The property owners would be charged a service fee for the inspection and would assume all costs associated with required repairs, upgrades, or system replacement.

The RDN would be involved in:

- Developing the permit conditions and reporting requirements,
- Carrying out or contracting out the pump outs and inspections,
- Mailing licences, or development of correction orders,
- Receiving payments,
- Maintaining files and a database,
- Enforcing compliance, and
- Renewing permits.

The main drawback with this management program is opposition from residents toward RDN-authorized inspectors entering their property. This may be resolved by enacting a bylaw providing inspectors with the right to access private property for the sole purpose of conducting an inspection of the on-site wastewater treatment system.

Another drawback with this type of management scenario is the timing of fee collection for the licence. For this option, there is no obvious trigger, such as the submission of a licence application. This issue could be addressed by sending an invoice after an inspection takes place. However, if the system is in non-compliance, the property owner may be disgruntled and less likely to pay the inspection fee. A better way to resolve this issue would likely be to put the inspection fee directly on the annual property tax notice.

5.3 Publicly-Owned and Maintained On-site Systems and Publicly-Operated Inspection Program

Under this management program, the RDN would be regarded as the septic system “owner”. As “owner” the RDN would be responsible for the installation, upgrading, and management of all on-site systems within the Regional District by agreement to operate and maintain systems with access by easement. The RDN would pay for all inspections (typically once every three to five years), repairs, upgrades, and scheduled maintenance. To recover costs, the RDN would charge user fees. The property owner would pay fees to cover the cost of the treatment and disposal system and an annual operation fee.

The main drawback of this type of management program is the overall risk and high cost associated with transferring responsibility of inspecting, maintaining, and upgrading on-site systems from individual property owners, to the RDN.

The small community of Port Maitland, Nova Scotia, is trying this type of management program. Port Maitland uses a publicly-owned and publicly-managed program to manage the wastewater generated by 135 households and several businesses. The community voted to establish a Wastewater Management District. The Wastewater Management District installed four cluster

systems and some private systems, as well as upgraded 31 individual systems. Port Maitland has experienced the following problems with this management program:

- General population believes that they can manage their own systems at a less expensive cost.
- Port Maitland must remediate contaminated properties.
- Even though there was a resident education program, improper disposal of wastes is a common occurrence likely due to the loss of individual ownership, i.e. they don't care about the system anymore. This has resulted in expensive repairs, which are charged back to the user through higher taxes.
- Port Maitland is responsible for the disposal of waste they have no control over, i.e., pump-out and disposal of contaminated waste.

Taken as a whole, this "Public-Public" septic system management model is very problematic and cannot be recommended for the RDN situation.

5.4 Summary of Management Options

In order to ensure that the 12,000 on-site treatment systems are functioning properly, the RDN will likely need to implement an on-site wastewater treatment system management program. Three different management programs were discussed in the previous sections. Only the Private-Private and Private-Public options are viable. The fundamental differences between the management programs are the delegation of responsibilities for inspection and maintenance; ownership of the systems (i.e., the property owner or the RDN); and whom the on-site system inspector is employed by (i.e., the property owner or the RDN).

No matter which program is selected, the following are required to ensure the management program is successful:

- An education program for on-site system users.
- Inspection and maintenance of on-site systems at regular intervals.
- A record of each on-site system, in a database and its condition, pump-out history, etc.

It should be noted that the CRD had to include on-site management as part of its LWMP. After considering the management options, the CRD has opted for the Private-Private on-site system management option for Saanich, Colwood, Langford and View Royal, i.e. the municipalities with septic systems in their Core Area Liquid Waste Management Plan area. A bylaw will require owners of a basic septic tank and disposal field (Type 1 system) to pump out their tanks by the end of 2010 and every five years thereafter. Owners of a package treatment plant (Type 2 or 3 system) will be required to have their system maintained by a professional by the end of 2009 and annually thereafter to ensure it continues to function properly and does not cause or contribute to a health hazard. The homeowners will have to keep their receipts and send them in to the CRD as proof of compliance. Those who have pumped out their tanks since 2007 or later, and who can show proof

to the CRD, will be able to pump five years from their last pump-out date. An annual parcel tax of approximately \$25 to \$30 will be charged to owners of on-site sewage systems to administer the program. This fee is intended to cover maintenance of a database to keep track of where systems are, new installations and connections to sanitary sewer. It will also include notification to homeowners when their due-date is approaching and follow up enforcement costs with those who are not complying.

Reference: <http://www.crd.bc.ca/wastewater/septic/onsite.htm>

6 RDN's Approved On-site Treatment Educational Program

The RDN currently estimates that there are 12,000 individual private on-site septic systems in operation in the Regional District. On-site systems require proper operation and maintenance to ensure they are in good working order. Systems, which are not properly operated or maintained, may fail due to a variety of reasons and as such, may potentially threaten human health and the environment.

The RDN will be implementing an on-site sewage disposal system educational program to help prevent septic system failures, and minimize the impacts of the failures that do occur. By educating homeowners about septic system regulations, homeowner responsibilities under the regulations, private on-site systems, how the systems operate, required system maintenance, and signs of system failure, homeowners can become informed and capable of making important decisions regarding their systems. As such, homeowners can avoid costly repairs to their system, while preventing health and environmental damage from occurring.

The approved RDN education program will consist of mail outs, an article in Regional Perspectives (an RDN publication), as well as information provided at public information meetings / workshops, and pollution control centre open houses. The program will be fully developed in 2008.

7 Conclusions

This discussion paper set out to answer or discuss the following questions:

- How does the new Health Act regulation differ from the old one with regard to on-site systems?
- Who approves on-site systems?
- What are the different types of on-site systems?
- What is the purpose of holding tanks and pump and haul?
- How can the maintenance of on-site systems be ensured so there aren't problems now and in the future?

This discussion paper has hopefully provided readers with answers to these questions.

The 2005 Health Act Sewerage System regulation eliminated the Ministry of Health as the approval agency for on-site systems by shifting the responsibility for design, installation and maintenance to qualified professionals and registered practitioners. While the Ministry of Health still has the powers to step in and inspect systems and order their repair, they are very unlikely to do so unless informed of problematic situations. This leaves a significant need for inspection of older, pre-May 2005 systems, as well as new systems, in order to find and eliminate potential problems.

Types 1, 2 and 3 on-site treatment systems were discussed with more detailed information provided in Appendix A.

Holding tanks and pump and haul were discussed and were shown to have a role when connection to a sewer system will be made within a year or where there are very poor soils or groundwater problems. Bylaws related to on-site systems, including pump and haul holding tanks, and related lots sizes, within the RDN were briefly discussed. More detailed bylaw information is provided in Appendix B.

This discussion paper has also provided information on management programs for on-site systems. These programs included a privately-owned and maintained system and privately-operated (Private-Private) inspection program, a privately-owned and maintained system and publicly-operated (Private-Public) inspection program, and a publicly-owned and maintained systems and publicly-operated (Public-Public) inspection program. It was noted that the CRD has recently opted to go with a Private-Private program to ensure the continued safe operation of on-site systems in its jurisdiction.

The RDN is planning the implementation of an educational program regarding on-site sewage disposal systems. The RDN currently estimates 12,000 individual private on-site septic systems in operation in the Regional District. The educational program is a proactive step by the RDN to help prevent septic system failures, and minimize the impacts to human health and the environment from the failures that do occur. This does not necessarily preclude the need for a more active management program such as that adopted by the CRD.

8 References

- .1 BC Health Act. Sewerage System Regulation 326/2004. Available at: www.qp.gov.bc.ca/statreg/reg/H/Health/326_2004.htm
- .2 Regional District of Nanaimo. Liquid Waste Management Plan (Stage 3 Report), November 1997. Available at: www.rdn.bc.ca/cms/wpattachments/wpID1131atID1130.pdf
- .3 Regional District of Nanaimo. Memorandum: On-Site Sewage Disposal System Education Program. June 2007.

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- .5 Regional District of Nanaimo. Zoning and Subdivision Bylaw No. 1285. 2002. Available at: www.rdn.bc.ca/cms.asp?wpID=262
- .6 Regional District of Nanaimo. Trucked Liquid Waste Bylaw No. 988. 1995.
- .7 Regional District of Nanaimo. Pump and Haul Local Service Establishment Bylaw No. 975. 1995.

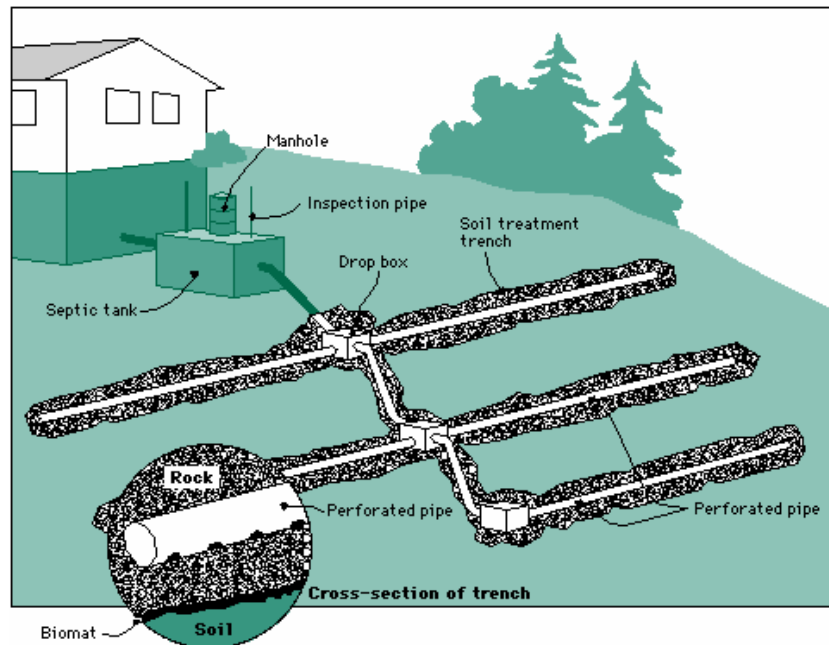
APPENDIX A - TYPES OF ON-SITE TREATMENT

Under the new 2005 Sewerage System Regulation, there are three types of on-site treatment, Type 1, Type 2 and Type 3. The following sections describe these treatment types.

A.1 Type 1 Systems

According to the Sewerage System Regulation, a Type 1 system consists of treatment by septic tank only. A properly functioning septic system receives all the wastewater created from household use (including toilets, showers, sinks, dishwasher, washing machine, etc.), treats the wastewater to a primary level, and returns the treated effluent to the groundwater. A conventional septic system is composed of a septic tank and a soil filter called an absorption field.

Figure A-1
Septic Tank and Absorption Field



The purpose of the septic tank is to separate liquid from solids and to provide some breakdown of organic matter in the wastewater. A septic tank is a buried, watertight container made from concrete, polyethylene or fibreglass. The size of the septic tank will depend upon the size of the house (number of bedrooms) and household water use.

As wastewater from the house enters the septic tank, its velocity slows, allowing heavier solids to settle to the bottom and lighter materials to float to the surface. The accumulation of settled solids at the bottom of the tank is called “sludge” while the lighter solids (greases and fats), which form a mass on the surface, is called “scum”. Anaerobic bacteria, which are always present in wastewater, digest some of the organic solids in the tank. Clarified wastewater in the middle of the tank flows by displacement into the leaching bed for further treatment in the soil layer.

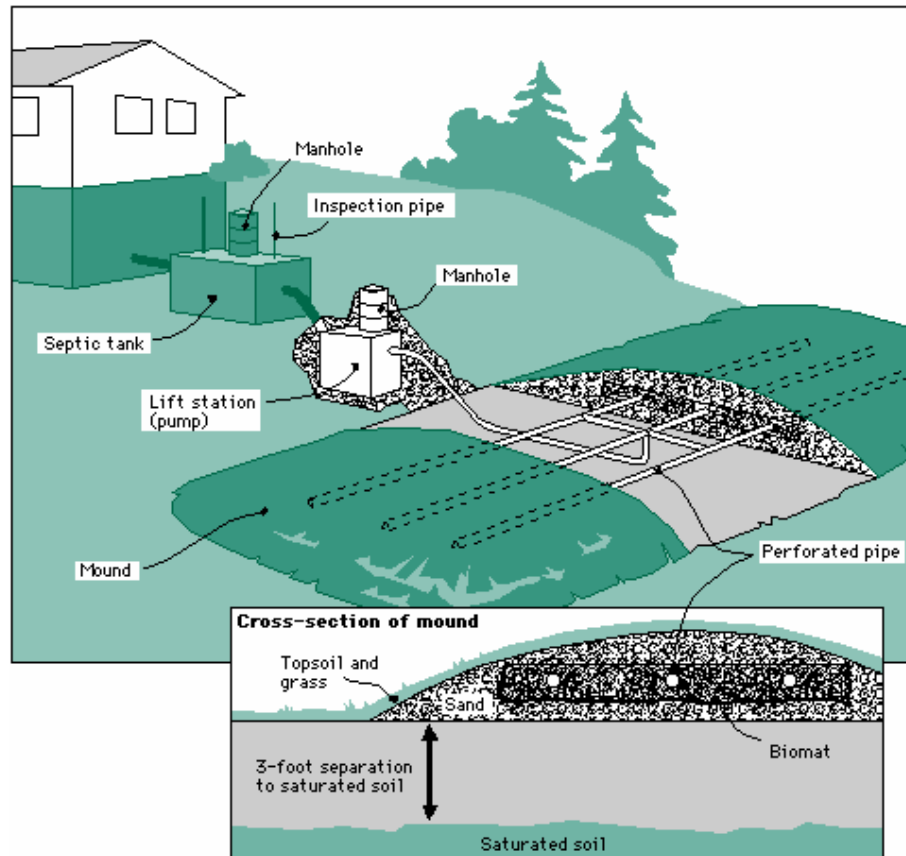
The partially treated wastewater from the septic tank flows into the absorption field. The absorption field is typically a network of perforated plastic distribution pipes laid in sandy-gravel trenches over a layer of soil. Typically, the soil layer must be a minimum depth above the ground water table or a restrictive layer such as bedrock or clay, and have a certain permeability (absorptive capacity). Conducting a percolation test can test the soil permeability. A percolation test determines the absorption rate of soil by observing how quickly a known volume of water dissipates into the subsoil of a drilled hole of known surface area. In general, sandy soil will absorb more water than soil with a high concentration of clay or where the water table is close to the surface.

Older septic systems may have been constructed with clay tiles instead of plastic pipes, while new systems may use plastic chambers to replace the gravel trenches and perforated piping. The actual size, design and layout of the absorption field is based upon the volume of sewage generated, the absorptive capacity of the underlying soils, and the depth to the high groundwater table or limiting/ restrictive layer. Wastewater can flow by gravity from the septic tank to the distribution pipes, or where required, can be collected in a pump chamber and pumped to a absorption field at a higher elevation.

The absorption field is a soil filter, which uses natural processes to treat the wastewater from the septic tank. Contaminants in the wastewater include solid and dissolved organic matter (carbon compounds), nutrients (nitrogen and phosphorus), beneficial bacteria and fungi, and harmful bacteria and viruses. A slime layer of bacteria, called a “biomat” layer, forms at the bottom and sidewalls of each distribution trench; and it is in this layer where much of the treatment occurs. The soil bacteria, which perform the treatment, require oxygen to function, therefore; the absorption field must be installed in soils that are not saturated by surface water run-off or a high groundwater table, and should not be paved or covered over with hard surfaces.

The absorption field soil must be the right type to retain the wastewater long enough for treatment to occur, while at the same time allowing the wastewater to infiltrate into the ground. In cases where there is a sufficient separation from either the high groundwater table or bedrock, the network of drainage piping is installed directly in the native soil or in imported sand if the permeability of the native soil is not suitable. This is called a conventional system. In cases where the high groundwater table or bedrock is close to the surface, the absorption field must be raised so that there is sufficient unsaturated soil under the drainage piping. This is called a raised bed system or a mound system.

Figure A-2
Raised Bed or Mound System



A.2 Type 2 Systems

Type 2 systems are on-site secondary wastewater treatment systems that produce effluent consistently containing less than 45 mg/L of total suspended solids and having a 5-day biochemical oxygen demand of less than 45 mg/L. Type 2 systems are generally used where site conditions make it impractical or even impossible to install a conventional septic system such as: high groundwater table, bedrock, poor soil conditions (i.e. clay, silt, till) or inability to meet the setback distances from surface water, wells or property boundary lines.

In these cases, an aerobic treatment technology is often used. These treatment technologies are proven technologies used to treat the wastewater to a higher level (secondary and tertiary) than a septic tank, permitting the treated effluent to be discharged into a much smaller area than is required for treatment by a conventional absorption field.

Aerobic treatment technologies typically have three components: a settling tank (this may be smaller than a conventional septic tank), the aerobic treatment unit, which removes much of organic matter from the wastewater, and a dispersal system, which is often a small absorption field.

Aerobic treatment technologies rely on aerobic micro-organisms to break down the organic matter in the wastewater. In order to optimize treatment, the treatment units either include a material to support the growth of micro-organisms (called attached growth media), or a continuous mixer or aerator to keep micro-organisms in suspension (called suspended growth). Many technologies utilize either an air pump or blower to provide oxygen to the micro-organisms, while some technologies are designed as “trickling filters”, where effluent is dosed onto an unsaturated media and the micro-organisms use the oxygen in the air, which surrounds the media.

The treated effluent is typically discharged into a small absorption field, although there are alternative methods in some jurisdictions including pressure distribution systems near the soil surface or even discharge to surface waters.

A.3 Type 3 Systems

Type 3 systems are advanced secondary treatment systems that can meet an effluent standard of less than 10 mg/L BOD, 10 mg/L TSS and less than 400 fecal coliform forming units per 100 mL. The treatment process would either include Type 2 treatment followed by some type of fabric or sand filter or a membrane bioreactor, both followed by disinfection (either chlorination/ dechlorination or ultraviolet (UV) irradiation). The effluent from such systems would be very clean and clear. Type 3 treatment systems are relatively expensive to build and operate. Type 3 treatment systems would typically only be used in very unique situations with a sensitive receiving environment or a high water table that would make a Type 1 or Type 2 system impossible.

APPENDIX B - RDN BYLAWS THAT AFFECT ON-SITE TREATMENT

B.1 Land Use and Subdivision Bylaw No. 500, 1987

The RDN's Land Use and Subdivision Bylaw No. 500, 1987 provides land use regulations for properties within all Electoral Areas except Electoral Area 'B' (Gabriola Island) and 'F' (Errington, Coombs, Whiskey Creek & Hilliers). Under Bylaw 500, minimum parcel sizes for new lots created through subdivision have been established for Electoral Areas 'A', 'C', 'E', 'G', and 'H'. Minimum lot sizes vary depending on location and whether the lot is serviced by a community water system and/or a community sewer system. Generally, smaller lots are permitted if both community water and sewer is available. If no services are available, then the minimum lot size for subdivision is generally larger.

Section 4.7 of Bylaw 500 specifies that a parcel not served by a community sewer system must obtain the approval of the jurisdictional authority and they must be satisfied as to the sewage disposal capability of the parcel. The RDN has no approval authority for on-site sewage disposals systems.

With respect to new community sewer systems, to service new subdivisions that will be connected to an RDN trunk sewage main, they must be constructed and installed at the expense of the owner of the land being subdivided and be carried out in accordance with the standards and specifications set out in Schedule '4D' of Bylaw 500 (RDN, 1987).

The overall Planning function for Electoral Area 'B' (Gabriola Island) is administered by the Islands Trust.

B.2 Zoning and Subdivision Bylaw No. 1285, 2002

RDN's Zoning and Subdivision Bylaw No. 1285, 2002 provides zoning and subdivision regulations for properties within Electoral Area 'F' (Errington, Coombs, Whiskey Creek & Hilliers). Bylaw No. 1285 specifies minimum lot sizes depending on land use. With one exception, the minimum parcel size for all new lots in Electoral Area F is 1 ha or larger and on-site sewage disposal is currently the only available form of sewage disposal.

Similar to Bylaw 500, where a lot is proposed and not served by a community sewer system, the jurisdictional authority must be satisfied with the sewage disposal capability of the lot.

The Area F OCP and the RGS only permit the establishment of a community sewer system to service lands within the designated village centres within the urban containment boundary. Bylaw 1285 includes the following requirement for new community sewer systems:

- Any community sewer system, or part thereof, provided within the subdivision, to service the subdivision, or to connect the community sewage collection system within the subdivision to a trunk sewer main is to be designed, constructed, and installed at the expense of the owner of the land being subdivided.

B.3 Pump and Haul Local Service Establishment Bylaw No. 975

RDN Bylaw 975, adopted in December 1995, establishes a local service area within the RDN for the purpose of collection, conveyance, treatment and disposal of sewage from holding tanks within a defined portion of the Regional District. The boundaries of the local service area are the boundaries of the parcels established in Schedule A of the bylaw. Schedule A includes parcels in the following areas: Electoral Areas B, C (defined properties), E, F, G, H, City of Nanaimo, and District of Lantzville.

B.4 Trucked Liquid Waste Bylaw No. 988

RDN Bylaw No. 988, adopted in December 1995, regulates the discharge of trucked liquid waste into septage disposal facilities operated by the RDN. Bylaw No. 988 oversees septage disposal facilities and has the power to acquire, construct, maintain, operate, and regulate these facilities. Schedule A of Bylaw No. 988 lists prohibited wastes, which include amongst others flammable or explosive waste, biomedical waste, and corrosive wastes. Schedule B to Bylaw 988 indicates approved septage receiving facilities. Schedule C sets out required fees, while Schedule D sets out rules for use of the septage disposal facilities.

B.5 Horne Lake Pump and Haul Local Service Establishment Bylaw No. 1217

RDN Bylaw 1217, adopted in November 2001, establishes a local service area within the RDN for the purpose of collection, conveyance, treatment and disposal of sewage from holding tanks within a defined portion of Electoral Area H. The boundaries of the local service area are the boundaries of the parcels established in Schedule A of the bylaw.

B.6 Horne Lake Service Area Sewage Disposal Regulation Bylaw No. 1218

RDN Bylaw 1218, adopted in December 2001, establishes a local service for the collection, conveyance, treatment and disposal of sewage within parts of Horne Lake Pump and Haul Service Area. Schedule A to this bylaw is the holding tank disposal permit application form. Schedule B to this bylaw sets out fees.

B.7 Sewage Disposal Regulation Bylaw No. 1224

RDN Bylaw 1224, adopted in December 2000, establishes a local service for the collection, conveyance, treatment and disposal of sewage from holding tanks within a defined portion of the RDN. Schedule A is the holding tank disposal permit application form.

Regional District of Nanaimo

Policies Regarding New Communities and Developer Installed Treatment Plants

Issued: May 22, 2008

Previous Issue: May 20, 2008

1 Background

The Regional District of Nanaimo (RDN) is undertaking a review of its Liquid Waste Management Plan (LWMP) to determine if amendments to the plan are required at this time. As part of this work, discussion papers are being developed and circulated to the RDN Liquid Waste Advisory Committee for their input and comments. Previous discussion papers have reviewed existing conditions and on-site treatment issues. This discussion paper takes a look at policies regarding new communities and developer-installed treatment plants. These treatment plants are more commonly known as package wastewater treatment plants.

1.1 Package Wastewater Treatment Plants and Regulatory Requirements

A package wastewater treatment plant is a pre-fabricated or pre-built wastewater treatment plant, which uses a process involving energy, and mechanical, biological, chemical, or physical treatment of the wastewater to reduce the following wastewater constituents:

- biological oxygen demand,
- suspended solids,
- nitrogen,
- bacteria, and
- other wastewater constituents.

Package treatment plants typically provide a secondary level of treatment and are smaller than conventional treatment plants. Package treatment plants are privately owned, and serve specific uses or new housing developments, rather than entire cities or regional districts.

In 1996, the RDN Board requested the Ministries of Health and Environment cease approval of package treatment plants for strata and other private developments within the RDN, except where the application had first been referred to the RDN for review and approval. The RDN passed this resolution because it was concerned about the following:

- Package treatment plants may be approved on a site-by-site basis with no assessment of the cumulative impact of such approvals.
- Package treatment plant approval might conflict with the RDN's strategy to provide community sewer service.

- Package treatment plant approval may conflict with the RDN's capital plans to provide community sewer service.
- The inadequacy of bonds required for package treatment plants.
- The insufficiency of measures to monitor and maintain package treatment plants.

The RDN's request to the Ministries of Health and Environment was not accommodated. As such, properties are able to utilize package treatment plants based on applicable provincial legislation e.g. the Ministry of Environment's Municipal Sewage Regulation (MSR), which does not recognize individual local government policies. Properties currently using packaged treatment plants continue to use them based on the legislation governing them. However, the current legislation does not establish a government body responsible for monitoring the ongoing operation and maintenance, but imposes this responsibility on the owners of these systems.

In 2005, the provincial government passed the new Sewerage System Regulation under the Health Act, which amends the process by which independent residential septic systems and package treatment systems with daily flows of less than 22,700 litres/day are approved. The regulation is locally administered by Vancouver Island Health Authority and applies to developments such as new homes on existing lots, strata developments with multiple units, new residential subdivisions (under approximately 20 lots), new subdivision lots, and other sources generating less than 22,700 litres/day of domestic sewage. The regulation requires that "authorized persons" approve and inspect treatment systems, including both conventional septic fields and package treatment plants.

Under the Ministry of Environment's regulations, the MSR applies to management of wastewater treatment systems larger than 22,700 litres/day or any systems that discharge to surface water. Larger single-family subdivisions, strata developments over about 16 units and non-residential developments fall under this category. The MSR registration process generally requires more effort and expense compared to applying for a permit under the Health Act. A registration under the MSR effectively becomes a contract with the provincial government. It specifies the required level of wastewater treatment and other compliance items such as submitting regular monitoring results. The Ministry does not inspect the facility or monitor the effluent on a regular basis but has the ability to audit. If the audit found that the proponent was not fulfilling the requirements of the approved MSR registration, penalties could result.

1.2 Objectives of Discussion Paper 3

This discussion paper will provide an overview of RDN policies regarding developer installed package treatment plants, implications of package treatment plants on the RDN's Regional Growth Strategy (RGS), and administrative issues the RDN should consider regarding ownership and operation of developer installed package treatment plants.

It is the intent of this discussion paper to answer or discuss the following questions:

- Should the RDN enter into ownership, operation, and maintenance of package treatment systems?
- To what degree should the RDN be involved in the operation and maintenance of package treatment systems acquired (i.e. RDN staff or contracted out)?
- What standards of wastewater treatment should be established?
- Which wastewater treatment technologies should be acceptable for use?
- What is the acceptable minimum size of the package treatment system?
- When a developer constructs a package treatment system, should there be a requirement to provide additional treatment plant capacity for servicing of adjacent existing homes?

2 RDN Policies Regarding Developer Installed Package Treatment Plants

The RDN provides a range of services for the municipalities and electoral areas, depending on local needs and interests. Private individual on-site systems and packaged treatment plants service most properties outside of these existing service areas. The RDN's Environmental Services Department has received requests to takeover newly constructed packaged treatment plants located outside the urban containment areas. To date, such requests have been turned down since the RDN's RGS does not allow the RDN services to extend outside urban containment areas, unless it is to mitigate problem areas (i.e. failed on-site septic tank systems). The RDN Board made a motion to develop a policy, as part of the Liquid Waste Management Plan Review, regarding the acquisition of new package treatment systems within the RDN's Urban Containment Boundary.

The RDN's RGS is an initiative adopted in January 1997 and reviewed in 2001-2002 to respond to concerns about the impacts of growth in the region. The RGS has the following goals:

- **GOAL 1: STRONG URBAN CONTAINMENT:** To limit sprawl and focus development within well defined urban containment boundaries.
- **GOAL 2: NODAL STRUCTURE:** To encourage mixed-use communities that includes places to live, work, learn, play, shop and access services.
- **GOAL 3: RURAL INTEGRITY:** To protect and strengthen the region's rural economy and lifestyle.
- **GOAL 4: ENVIRONMENTAL PROTECTION:** To protect the environment and minimize ecological damage related to growth and development.
- **GOAL 5: IMPROVED MOBILITY:** To improve and diversify mobility options within the region – increasing transportation efficiency and reducing dependency on the automobile.

- **GOAL 6: VIBRANT AND SUSTAINABLE ECONOMY:** To support strategic economic development and to link commercial and industrial strategies to the land use and rural and environmental protection priorities of the region.
- **GOAL 7: EFFICIENT SERVICES:** To provide cost efficient services and infrastructure where urban development is intended, and to provide services in other areas where the service is needed to address environmental or public health issues and the provision of the service will not result in additional development.
- **GOAL 8: COOPERATION AMONG JURISDICTIONS:** To facilitate an understanding of and commitment to the goals of growth management among all levels of government, the public, and key private and voluntary sector partners.

The approval, operation, and maintenance of package wastewater treatment plants may result in development, which is not consistent with the RGS land use or servicing strategies, and or a development that may threaten the environment. As such, the following items have been implemented in the LWMP as a result of the RGS:

- Services will not be extended outside of Urban Containment Boundaries, Village Centres, and Present Status Lands (lands outside the Urban Containment Boundary where the present zoning may continue to control the development potential of the land) except where existing developments threaten public health or the environment.
- Servicing decisions will be linked to the land use elements of the RGS and local official community plans.
- Servicing decisions of the LWMP will be consistent with the goals of growth management.

3 Implications of the RGS on the LWMP and Package Treatment Plants

The RDN's LWMP supports the goals, policies and guidelines of the RGS. It also supports efficient use and management of services and resources as well as cooperation among jurisdictions. There are specific initiatives within the LWMP that pertain to rural areas, including the RGS's goal to exclude rural areas from urban type development. The LWMP should anticipate the sewer servicing needs of future village centres, identify areas with failing septic systems and other potential problems, and provide solutions to address these problems.

The demand for community sewer services outside the Urban Containment Boundaries impact the RDN because existing capital plans and servicing areas were not created to include these areas. Providing services outside the Urban Containment Boundary could facilitate more intensive development than intended by the RGS. In some instances, packaged treatment plants enable development to occur in areas that may not have otherwise occurred with standard septic systems.

This also impacts the rural character of unincorporated areas and may result in unplanned impacts such as increased traffic congestion, noise, and odours. However, if rural development in the RDN is inevitable, small-scale collection and treatment systems, such as packaged treatment plants based on conventional or new technologies, may provide more cost-effective alternatives to individual on-site systems, or community wastewater treatment plants.

Achieving the RGS goals of supporting development within the established village centres may require a flexible servicing approach. If these facilities were operated by the RDN and served more than one parcel they would be considered a community sewer system. As the package treatment systems are modular, it should be possible to have new development serviced by an existing package treatment system provided that the expansion of the package treatment system is planned for and land and receiving environment requirements can be accommodated. In that way, each new development pays for upgrades and rather than a package treatment system on each parcel or for each development, a reduced number of package treatment systems to serve a village centre may be possible.

This approach would be predicated on the basis that a land base is available for package treatment plant expansion and disposal capacity (to land, to surface water, etc) for the treated wastewater is available for future development. New developments that receive sewer servicing from existing package treatment systems must pay for the portion of capacity that is used; a capital charge bylaw or latecomers fee would need to be established for these developments.

If a rezoning is required the RDN has the option of requiring that a community amenity be provided in the form of extra capacity in the package treatment system or installation of infrastructure to connect some of the existing adjacent property owners. For areas outside of the Urban Containment Boundary, community sewer services are not supported except in cases where there is an environmental or health concern, but not to facilitate new development.

4 Issues Regarding Ownership and Operation of Developer Installed Package Treatment Plants

The ownership and operation of developer-installed package treatment plants present issues that require resolution prior to consideration and adaptation. This section will explore issues pertaining to recommended package treatment plant requirements including bonding requirements, staffing requirements, and type of treatment system and minimum size.

4.1 Bonding Requirements

If the RDN assumes ownership of a developer installed package treatment systems, the developer avoids the Ministry of Environment's financial security requirements under the MSR registration process. In addition, RDN ownership may allow the developer to avoid stratifying the development to create an ongoing management entity for the treatment facility. Avoiding Ministry security

requirements and the ability to market fee simple properties (vs. strata properties) may provide significant financial benefit to the developer.

If the RDN were to take over developer installed package treatment systems, bonding requirements must be established. Maintenance bonds should be required to guarantee the performance of a package treatment plant after it is constructed and before it is taken over by the RDN. The role of a maintenance bond is to protect the RDN against design defects and/or failures in workmanship, and to guarantee facilities constructed are adequately maintained during the commissioning period. Maintenance bonds are often valid for a limited time, at which time the responsibility for facility upkeep must be transferred to either a private party or local government, i.e. the RDN. Due to the limited time frame of maintenance bonds, they are often not a solution to ensure long-term maintenance. As such, the RDN may wish to explore longer-term security options.

4.2 Staffing Requirements

Many package treatment systems end up failing due to factors such as inappropriate management, lack of maintenance, and insufficient funds to meet operation and maintenance requirements. The RDN is not currently staffed to take on additional wastewater systems, so supplementary resources would be required.

The staffing requirements to operate and maintain the package treatment plants will vary by the number of package treatment plants the RDN decides to operate, the complexity of the treatment plants, and the capabilities of the current staff in meeting the operational and maintenance demands.

Staff requirements are estimated at approximately one full-time employee for every two to four systems, depending on their size, technology and location.

In addition to staffing there will also be vehicle, equipment, office, etc. requirements, as well as administrative responsibility related to the establishment of service areas, obtaining provincial approvals and reviewing developer's proposals. These tasks would require additional planning and engineering resources.

Another operational and maintenance option available to the RDN is to contract the operation and maintenance of the package treatment plants to an outside company through a contract or agreement. This alternative would alleviate the need to hire additional staff and would essentially put the responsibility of operating and maintaining various types of package treatment plants on the private owner(s) and/or developers through the contractor. Corix and EPCOR are two examples of companies that provide contract wastewater treatment operation in BC.

4.3 Recommended Package Treatment Plant Requirements

If the RDN were to take over the operation and maintenance of package treatment plants, it is in the best interest of the RDN to ensure that the package treatment systems are of an approved standard. Standardizing the package plants to one or two types of treatment processes would alleviate the time and effort required from operators in learning how the different types of systems work. Systems that are designed correctly, simple to operate, and affordable to maintain can be successful at providing the necessary level of effluent treatment.

Typically, package treatment plants can produce an effluent with a biochemical oxygen demand (BOD) of less than 45 mg/L and total suspended solids (TSS) of less than 45 mg/L. Some more sophisticated (and expensive) packaged treatment plants can produce effluent with biochemical oxygen demand of less than 10 mg/L and total suspended solids of less than 10 mg/L. The quality of effluent required is related to the disposal site characteristics or the intent to reuse the effluent in a beneficial manner. The “10/10” BOD/TSS quality of effluent is more likely to be acceptable for reuse whereas the “45/45” BOD/TSS quality is not suitable for direct reuse.

There is a wide variety of choice when it comes to treatment processes, with the various processes offering different advantages and disadvantages. The key in selecting a treatment system is recognizing system requirements and having a plan in place that will ensure long-term operation and maintenance of the system. For the system to be cost-effective and also provide acceptable wastewater treatment, the following factors must be addressed before selecting a package treatment system:

1. The receiving environment to which the effluent will be discharged (to ground, or into surface waters).
2. The type of collector sewer used.
3. The estimated volume of flow.
4. Site characteristics (including the land footprint and projected future use, soil type, topography).
5. System reliability and monitoring.
6. System maintenance and personnel requirements.
7. Adaptability to changes in system operation.
8. The potential for effluent to impact fish bearing streams.
9. Management of residuals e.g. sludges.

To discourage development in areas not suitable for conventional on-site wastewater treatment and disposal systems, package systems used for treating individual homes, i.e., rotating biological contactor (RBC) serving five person flows, would not be recommended for take over. The recommended minimum package sewage treatment system size to be accepted by the RDN, if it chose to take over private treatment systems, would be a system designed for 16 lots or more. This number is based on the breakpoint value of 22.7 m³/day between the Waste Management

Act's Municipal Sewage Regulation (MSR) and the Health Act's Sewerage System Regulation. The MSR applies to all flows greater than 22.7 m³/day or any effluent discharged to surface water. Flows of 22.7 m³/day are equivalent to approximately 16, three-bedroom homes. Private firms such as Corix and EPCOR have concluded that package treatment systems servicing less than about 60 dwelling units (homes) may not be economically viable. As such, we recommend a range of approximately 16 to 60 homes for package treatment systems to be accepted by the RDN. It should be noted that this range depends on site conditions and other parameters that would need to be assessed prior to making a final decision on how to proceed.

Once the abovementioned factors are identified, the type of package wastewater treatment process can be selected. There are several treatment processes that may be used for a package system. The suitability of the treatment process for a particular application depends on the factors mentioned above. Recommended treatment processes include:

- Activated sludge/extended aeration,
- Sequencing batch reactor,
- Rotating biological contactor,
- Moving bed biological reactors, and
- Membrane bioreactors.

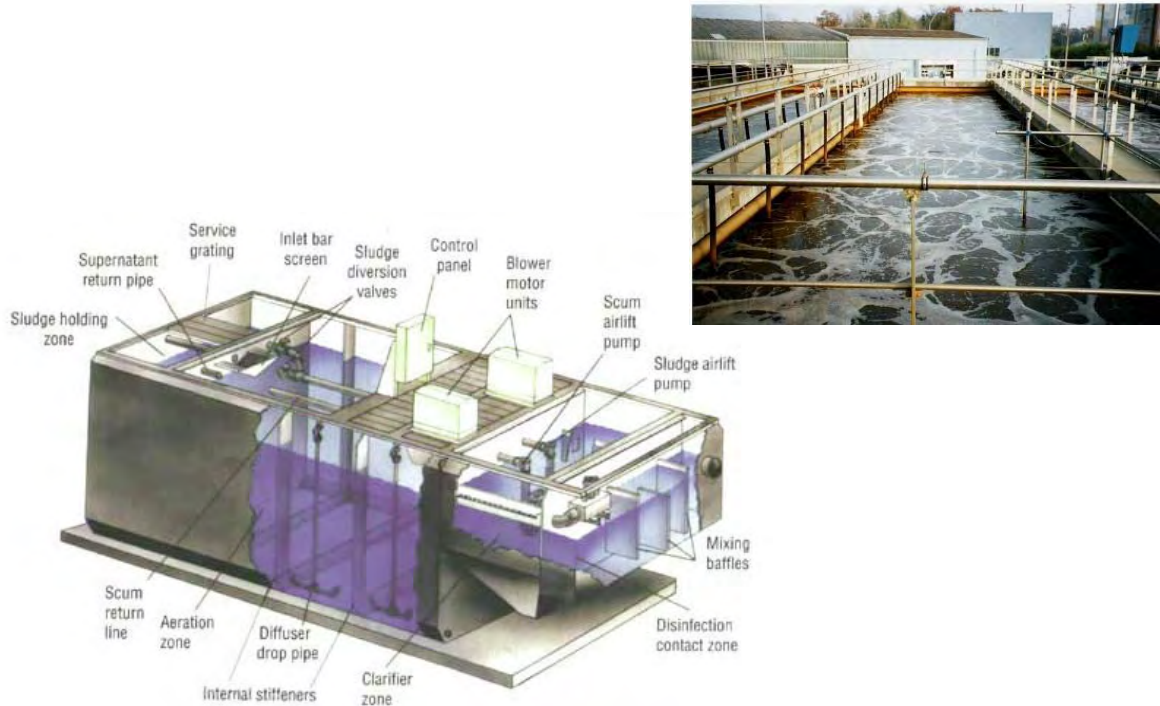
Descriptions of these treatment processes are provided below.

4.3.1 Activated Sludge/Extended Aeration

The activated sludge process, shown in Figure 1, is a biological treatment process. Raw screened wastewater is added to the activated sludge, and the mixture is aerated and agitated. After a certain amount of time, the activated sludge settles by sedimentation and is either disposed of (wasted) or reused (returned to the aeration tank).

A basic activated sludge process consists of several interrelated components: an aeration tank where the biological reactions occur; an aeration source, i.e. blowers and diffusers, that provides oxygen and mixing; a tank, known as the clarifier, where the solids settle and are separated from treated wastewater; and a means of collecting the solids either to return them to the aeration tank, (return activated sludge), or to remove them from the process (waste activated sludge).

Figure 1
Activated Sludge Process



Aerobic bacteria thrive as they travel through the aeration tank. They multiply rapidly with sufficient food and oxygen. By the time the waste reaches the end of the tank (between four to eight hours), the bacteria have used most of the organic matter to produce new cells. The organisms settle to the bottom of the clarifier tank, separating from the clearer water. This sludge is pumped back to the aeration tank as return activated sludge where it is mixed with the incoming wastewater. Excess biological growth is removed from the system as waste activated sludge. The relatively clear liquid above the sludge, the supernatant from the clarifier, is sent on for discharge or further treatment, e.g. filtration and/or ultraviolet disinfection, as required.

The extended aeration activated sludge process is a modified version of the activated sludge process described above. The extended aeration activated sludge process is designed to provide a much longer aeration period, e.g. 18 to 24 hours, for low organic loadings, thereby reducing the amount of sludge being wasted and requiring disposal. Air may be supplied by mechanical or diffused aeration. Mixing is by aeration or mechanical means.

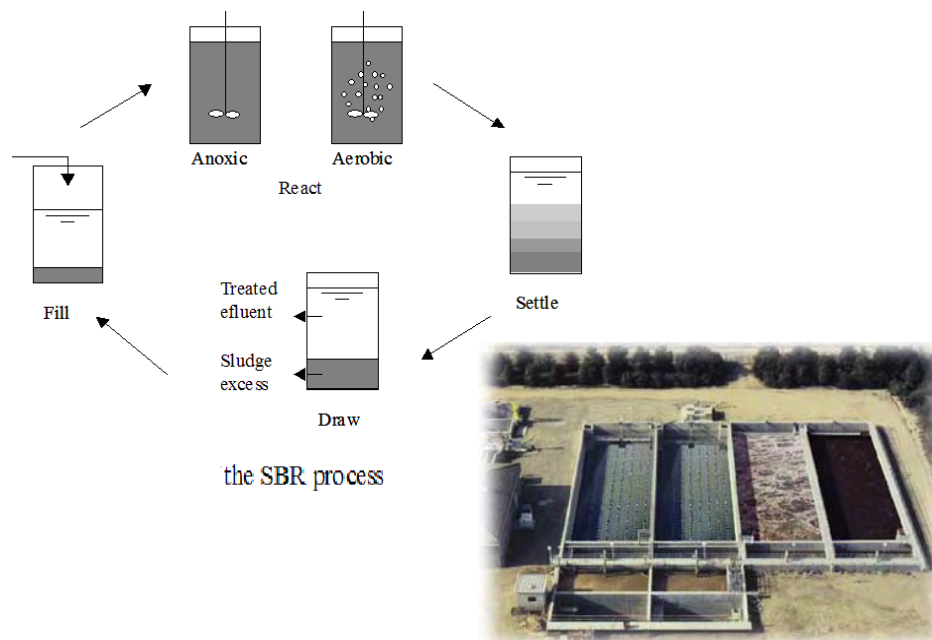
This process operates at a high solids retention time resulting in a condition where nitrification may occur. The micro-organisms compete for the remaining food and oxygen. This highly competitive situation results in a highly treated effluent with relatively low solids

production. The extended aeration process can accept periodic (intermittent) loadings without upsetting the system. The downsides include the potential for filamentous bacteria that make settling difficult, and therefore, can cause the process to fail to meet its discharge permit requirements.

4.3.2 Sequencing Batch Reactor

The process sequence for a sequencing batch reactor is a type of activated sludge process that involves a fill and draw activated sludge treatment system, where aeration and sedimentation/clarification are carried out sequentially in the same tank. The sequencing batch reactor process, shown in Figure 2, involves a series of five steps. The steps are as follows: (1) fill, (2) react (aeration), (3) settle (sedimentation), (4) draw (decant), and (5) idle.

Figure 2
Sequencing Batch Reactor Process



Sludge wasting in the sequencing batch reactor process typically occurs during the settle or idle steps. There is no need for a return activated sludge system because both aeration and settling occur in the same tank. Therefore, no sludge is lost in the reaction step, and no sludge has to be returned from the clarifier to maintain the sludge concentration in the aeration chamber. All wastewater that can be treated by conventional activated sludge process can be treated with the sequencing batch reactor. Filamentous bacteria, again, can be a problem, in some cases. The Duke Point Pollution Control Centre is a sequencing batch reactor treatment plant.

4.3.3 Rotating Biological Contactors

RBCs are made up of a series of closely spaced circular disks, such as those shown in Figure 3. The disks are partially submerged in wastewater and rotated slowly through it. The rotation of the disks and subsequent exposure to oxygen allows organisms to multiply and form a thin layer of biomass on the disks. As the disks rotate, they allow biomass to make contact with organic material in the wastewater and subsequently oxygen in the atmosphere. The rotating action also allows the biomass to maintain an aerobic condition. This large, active population of biomass causes the biological degradation of organic pollutants found in wastewater. Excess biomass shears off at a steady rate and is then carried through the rotating biological contactor system for removal in a clarifier (settling tank). The settled solids are wasted to a sludge treatment system, e.g. an aerobic digester.

The RBC process is quite reliable due to the large amount of biomass present (low food to micro-organisms ratio). The low food to micro-organisms ratio also allows the process to withstand hydraulic and organic surges. Energy costs are lower than for other aerobic treatment systems. Potential problems include mechanical failures of the disc support structures and drive failures.

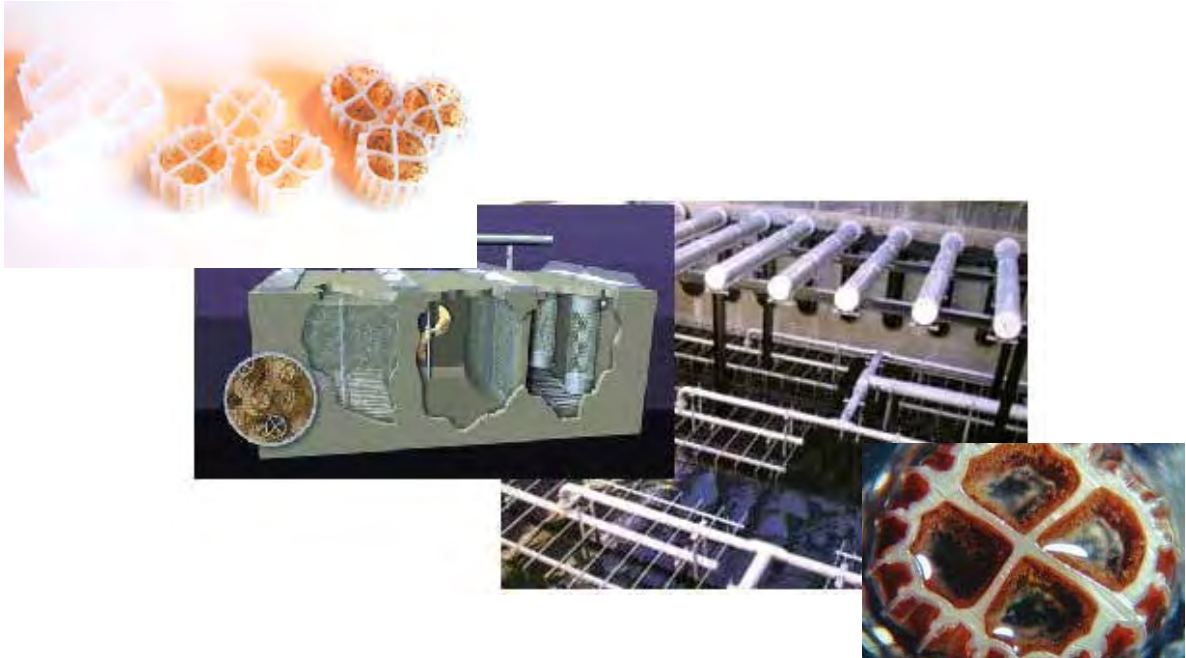
Figure 3
Rotating Biological Contactors



4.3.4 Moving Bed Bioreactors

The moving bed bioreactor process is an attached growth aeration process that uses a plastic ring media to optimize biomass growth within a fluidised bed. Figure 4 provides a schematic of the moving bed biological reactor. The biomass retained on a suspended plastic media provides effective treatment for the effluent. The media are kept in motion by coarse bubble aeration. The air introduced into the tank provides mixing and turnover of the media within the reactor. The media are physically separated from the flow going to the clarifier. Sludge treatment is similar to the rotating biological contactor process.

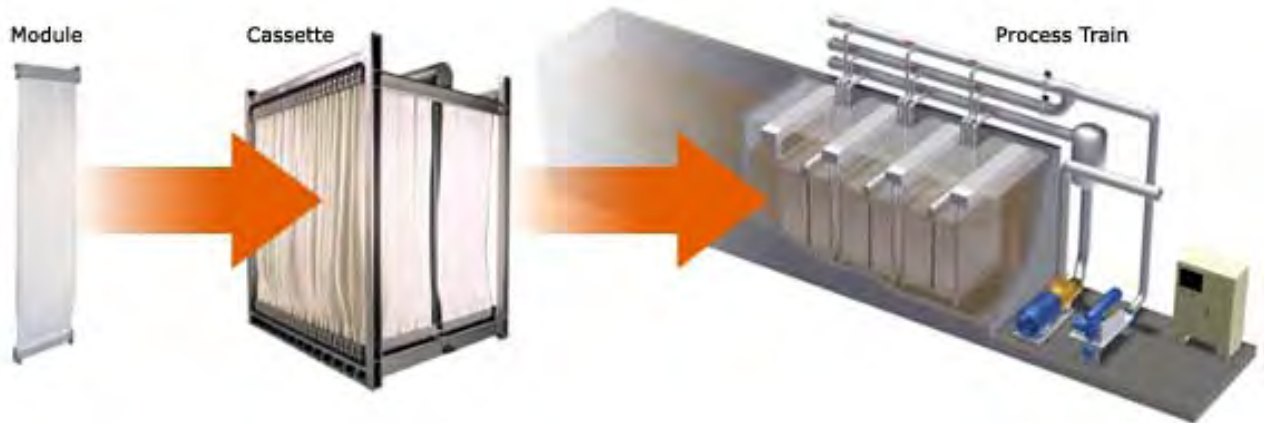
Figure 4
Moving Bed Biological Reactor



4.3.5 Membrane Bioreactors

A membrane bioreactor characterized by a suspended growth of biomass, similar to the activated sludge process but with a micro- or ultra-filtration membrane system that rejects particles and the biomass in the mixed liquor. Membrane bioreactors are composed of two primary parts, the biological unit responsible for the biodegradation of the waste compounds and the membrane filter (see Figure 5) for the physical separation of the treated water from mixed liquor.

Figure 5
Membrane Bioreactor



The membrane system replaces the traditional gravity sedimentation unit in the activated sludge process. The turbidity and suspended solids concentration of the effluent is far lower than in conventional treatment, e.g. less than 5 mg/L BOD and less than 5 mg/L TSS. Virtually all of the biomass is retained as activated sludge. Excess biological growth leaves the membrane bioreactor system as waste activated sludge. Due to the high quality of effluent produced and the higher cost of achieving that quality, membrane bioreactors are typically only used when there are water reuse applications either in place or planned.

Membrane bioreactors are also likely the best type of wastewater treatment for removal of endocrine disrupting chemicals and personal pharmaceutical care products because of the relatively long sludge ages in the membrane bioreactor process.

4.3.6 Treatment Technology Comparison

Table 1 provides a basic comparison of the different treatment technologies, based on capital cost, O&M costs, achievable effluent quality, and modular capabilities.

Table 1
Package Wastewater Treatment Technology Comparison

	Capital Cost	O&M Costs	Achievable Effluent Quality	Modular Capabilities
Activated Sludge/Extended Aeration	Low	Low-medium	<30 BOD/<30 TSS	Good – addition parallel units
Sequencing Batch Reactor	Low-medium	Low	<20 BOD/<20 TSS	Good - addition tankage in pairs
Rotating Biological Contactor	Lowest	Lowest	<45 BOD/<45 TSS	Good - addition parallel units
Moving Bed Biological Reactors	Medium-high	Medium	<20 BOD/<20 TSS	Good - addition additional tanks
Membrane Bioreactors	Highest	Highest	<10 BOD/<10 TSS	Good - addition more cassettes and/or more tanks

5 Summary

The RDN has policies in its LWMP to protect the integrity of the Region with regards to connection of new subdivisions and developer-installed package treatment plants. The RDN's LWMP supports the goals of the RDN's RGS by protecting rural areas from urban type development through the use of initiatives. This discussion paper has discussed RDN policies regarding new communities and developer-installed package treatment plants. It also discussed the implications of package treatment plants on the RDN's RGS and administrative issues the RDN should consider regarding ownership and operation of developer-installed package treatment plants.

Package treatment plants acquired and operated by the RDN could provide greater control and flexibility for servicing the Electoral Areas urban containment boundaries. However, this discussion paper identified several issues pertaining to the RDN taking ownership of privately-owned package sewage treatment systems inside the Urban Containment Boundary that would need to be addressed prior to considering and implementing policy changes.

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DISCUSSION PAPER NO. 4

Regional District of Nanaimo Liquid Waste Management Plan Review and Amendments

Current Flows and Loads, Effluent Quality, and Treatment Plant Capacities

Issued: October 23, 2008
Previous Issue: September 18, 2008

1 Background

The Regional District of Nanaimo (RDN) is undertaking a review of its Liquid Waste Management Plan to determine if amendments to the plan are required at this time. As part of this work, discussion papers are being developed and circulated to the RDN Liquid Waste Advisory Committee for their input and comments. Previous discussion papers have reviewed existing conditions, on-site treatment issues, and policies regarding new communities and developer-installed treatment plants.

The purpose of this discussion paper is to compare existing wastewater flows to established wastewater treatment plant (WWTP) capacity, compare actual effluent quality to required effluent quality in permits or operational certificates, review remaining treatment plant capacity for additional service connections, and assess the need to increase capacity sooner than previously established milestones.

As presented in Discussion Paper No. 1 “Review of Existing Conditions” (Associated Engineering, 2007), the RDN’s Liquid Waste Management Department provides sewer servicing for the Greater Nanaimo, French Creek, Nanoose, and Duke Point Service Areas that serve the urban containment areas within the District. Wastewater is treated for each of these service areas by the Greater Nanaimo Pollution Control Centre (GNPCC), French Creek Pollution Control Centre (FCPCC), Nanoose Pollution Control Centre (NPCC), and Duke Point Pollution Control Centre (DPPCC), respectively.

Effluent quality and flow requirements for each treatment plant are outlined in operational certificates or permits. Draft operational certificates for all four of the District’s WWTPs were submitted to the Ministry of Environment (MoE) on October 29, 2001. Each operational certificate outlines maximum and average daily-authorized rates of discharge and the effluent quality characteristics of the discharge from the treatment plant. To date, the MoE has only approved the operational certificate for the DPPCC. The GNPCC, FCPCC, and NPCC await approval of their draft operational certificates and continue to operate under discharge permits.

2 Approach

The approach of this discussion paper was to assess the state of the District's four WWTPs with respect to current and future service provisions. For this study, influent and effluent quality data were provided by the RDN for 2005 through July 2008 for the GNPCC, FCPC, and DPPCC. Influent and effluent quality data were provided by the RDN for 2005 through June 2008 for the NPCC.

This discussion paper is organized by treatment facility and begins with an overview of the service areas for each WWTP, followed by a quantitative assessment of WWTP capacity and effluent quality. WWTP capacity was examined by comparing wastewater flows and calculated influent biochemical oxygen demand (BOD) loading and total suspended solids (TSS) loading for each WWTP. These flow and loading values were compared to discharge permits and/or operating certificates and relevant design criteria obtained from existing studies for each facility. Effluent quality was evaluated to determine plant performance and the potential for expansion of service area connections via a comparison of effluent BOD and TSS concentrations to the discharge characteristics outlined in the discharge permits and/or operating certificates for each WWTP.

3 Greater Nanaimo Pollution Control Centre

3.1 Service Area

The GNPCC provides preliminary and primary treatment of incoming raw wastewater from the Greater Nanaimo Service Area, which includes the City of Nanaimo Urban Area as defined by the Regional Growth Management Plan and the Lantzville Sewer Local Service Area; and possibly future Village Centres and problem areas in some or all of Electoral Area 'C'. Future sewer service in the Greater Nanaimo area could include the currently expanding development in Lantzville, First Nations lands (IR 2, 3, and 4), and the Sandstone Development in southeast Nanaimo.

3.2 Capacity Assessment

Previously in Discussion Paper No. 1, it was stated that the GNPCC was designed and constructed to process up to a maximum of 110,000 m³/d of flows of typical residential strength wastewater based on typical overflow rates. Based on a review of the effluent data, such flows might be optimistic unless upgrades are implemented. Current wastewater flows and influent BOD and TSS loading for 2005 to July 2008 are presented graphically in Figure 1, Figure 2, and Figure 3. A statistical summary of GNPCC influent and effluent quality is presented in Table 1.

Table 1
GNPCC Influent and Effluent Statistical Summary 2005 to July 2008

Statistical Parameter	Flow (m ³ /d)	Influent BOD Loading (kg/d)	Influent TSS Loading (kg/d)	Effluent BOD Concentration (mg/L)	Effluent TSS Concentration (mg/L)
Average	32,840	6,102	8,141	92	72
Minimum	25,100	1,553	159	17	22
Maximum	120,800	20,476	27,425	148	237
90 th Percentile	41,500	8,038	10,600	95	69

Design criteria for the GNPCC were inferred from the “Greater Nanaimo Water Pollution Control Centre Pre-design Stage III Expansion Phase 1 Report Draft No. 4” (Dayton & Knight, 1997). GNPCC wastewater flows are generally in compliance with dry weather design flow criteria. Peak flows are also generally below discharge permit requirements of 80,870 m³/d, with occasional exceedances resulting from significant wet weather events, i.e. December 3, 2007 and January 18 to 19, 2005. Influent BOD and TSS loadings are approaching and frequently exceeding the Stage 2 design criteria. BOD and TSS influent loadings shown in Figures 2 and 3, respectively, suggest that without facility upgrades, additional connections to the service area in the future could significantly affect overall treatment performance.

3.3 Effluent Quality

The discharge permit for the GNPCC was issued June 2, 1994. The plant operates according to the permit, which specifies the maximum authorized rate of discharge as 80,870 m³/d. The characteristics of the discharge shall be equivalent to or better than: 5-day BOD - 130 mg/L and TSS - 130 mg/L. The Draft Operational Certificate, submitted to the MoE for approval in 2001, specifies the maximum authorized rate of discharge as 160,000 m³/d. The characteristics of the discharge shall be equivalent to or better than: 5-day BOD - 130 mg/L, TSS - 130 mg/L, and pH - 6-9 pH units. The preamble for the Draft Operational Certificate specifies that the GNPCC will be required to upgrade to full secondary treatment by 2015.

Comparisons of GNPCC effluent BOD and TSS concentrations to discharge permit and draft operational certificate values for 2005 through July 2008 are presented in Figure 4 and Figure 5.

Effluent BOD and TSS concentrations for the GNPCC are typically in compliance for the discharge permit and draft operational certificate. A distinct cyclical trend in BOD and TSS concentrations is clearly shown in Figures 4 and 5 for effluent BOD and TSS, respectively. This trend, which is more pronounced for GNPCC effluent TSS concentrations, is a result of seasonal variations in wet

weather flow characterized by the climate in the Pacific Northwest. In general, more concentrated wastewater is observed during the drier summer months whereas less concentrated wastewater is observed during the winter months when stormwater dilutes the wastewater. To improve the TSS effluent quality during the summer months at GNPCC, chemically enhanced primary treatment or CEPT is used to enhance removal of suspended material from the effluent via settling.

Although GNPCC effluent quality is generally in compliance with discharge permits, BOD and TSS concentrations are relatively high in the summer months compared to the winter months. Additional connections and population growth increases within the Greater Nanaimo Service Area suggest that enhancements in treatment capacity of the GNPCC will be required.

3.4 Summary

- GNPCC wastewater flows are generally in compliance with Stage 2 design criteria and discharge permits during dry weather flow. During wet weather events, discharge permit requirements are occasionally exceeded.
- GNPCC influent BOD and TSS loadings have approached the design criteria, with frequent exceedances of these criteria.
- GNPCC effluent BOD and TSS concentrations are generally in compliance with discharge permit requirements. Effluent BOD and TSS concentrations are approaching these limits, with the potential for more frequent exceedances, particularly during the summer months when wastewater is more concentrated.
- Wet weather wastewater flows are approaching permit requirements and influent BOD and TSS loadings are approaching (and in many instances are exceeding) plant design criteria demonstrating that the plant is approaching the limits of its current design. Interim treatment solutions have been implemented to maintain effluent BOD and TSS permit requirements; without upgrades to the facility, additional service connections will not be accommodated without increased potential to compromise the effluent quality. Continued use of CEPT is recommended until such upgrades are implemented.
- Upgrading to secondary treatment should occur no later than 2015.

4 French Creek Pollution Control Centre

4.1 Service Area

The FCPCCC provides preliminary, primary, and secondary treatment of incoming wastewater from the French Creek Service Area. The French Creek Service Area includes the Town of Qualicum Beach, the French Creek Sewer Local Service Area, Surfside, Barclay Crescent, Pacific Shores, and the City of Parksville, and possibly future Village Centres and problem areas in Electoral Areas 'F', 'G', and 'H'. Potential future sewer service in the French Creek area may include the Church Road Transfer Station and surrounding area, proposed expansion in the Surfside/Dashwood Area, and possibly Coombs Village Area, Madrona, and Wall Beach.

4.2 Capacity Assessment

The FCPCC was designed and constructed to process up to a maximum daily flow of 16,000 m³/d of typical residential strength wastewater. The FCPCC is currently at “Stage 3” of its development. “Stage 3” is an improvement on Stage 2 and is an interim step between Stage 2 and Stage 4. However, “Stage 3” is not as elaborate as had been originally envisioned by Dayton & Knight in 1993.

Wastewater flows and influent BOD and TSS loading for 2005 to July 2008 are presented graphically in Figure 6, Figure 7, and Figure 8, respectively. A statistical summary of FCPCC influent and effluent quality is presented in Table 2.

Table 2
FCPCC Influent and Effluent Statistical Summary 2005 to July 2008

Statistical Parameter	Flow (m ³ /d)	Influent BOD Loading (kg/d)	Influent TSS Loading (kg/d)	Effluent BOD Concentration (mg/L)	Effluent TSS Concentration (mg/L)
Average	9,090	1,569	2,860	9	22
Minimum	6,330	775	903	2	5
Maximum	18,872	4,374	9,963	37	96
90 th Percentile	10,727	2,087	3,849	14	36

Design criteria for the FCPCC were based on Stage 2 design flows and loads (Dayton & Knight, 1993). FCPCC wastewater flows currently exceed the Stage 2 average annual flow design criteria. These wastewater flows generally do not exceed the discharge permit, but occasional exceedances resulted from significant wet weather events, i.e. December 3, 2007 and January 19, 2005. Influent BOD loadings are generally above the Stage 2 design criteria, while influent TSS loadings are well-above the Stage 2 design criteria. Wastewater flows and TSS loading results suggest that additional connections made to the service area in the future could further affect overall treatment performance. Stage 3 upgrades to FCPCC are currently on-going, which consist of interim upgrading strategies to prolong the useful life of the existing Stage 2 capital infrastructure.

4.3 Effluent Quality

The discharge permit for the FCPCC was issued July 10, 1990. The plant operates according to the permit, which specifies the maximum authorized rate of discharge to Strait of Georgia as 16,000 m³/d. The maximum authorized rate of discharge to Morningstar Golf Course is 1,370 m³/d. The characteristics of the discharge to the Strait of Georgia shall be equivalent to or better than:

5-day BOD - 45 mg/L and TSS - 60 mg/L. The characteristics of the discharge to the Morningstar Golf Course shall be equivalent to or better than: 5-day BOD - 20 mg/L and TSS - 30 mg/L. The Draft Operational Certificate, submitted to the MoE in 2001 for approval, specifies the maximum authorized rate of discharge to Strait of Georgia as 25,300 m³/d and the maximum authorized rate of discharge to Morningstar Golf Course as 1,370 m³/d. The characteristics of the discharge to the Strait of Georgia shall be equivalent to or better than: 5-day BOD - 45 mg/L, TSS - 45 mg/L, and pH - 6-9 pH units. The characteristics of the discharge to the Morningstar Golf Course shall be equivalent to or better than: 5-day BOD - 20 mg/L, TSS - 30 mg/L, and pH - 6-9 pH units.

Comparisons of FCPCC effluent BOD and TSS concentrations to discharge permit and draft operational certificate values for 2005 through July 2008 are presented in Figure 9 and Figure 10, respectively.

Effluent BOD and TSS concentrations for the FCPCC are in general compliance for the discharge permit and draft operational certificate, with values typically below the Morningstar Golf Course effluent requirements. Effluent BOD concentrations were consistently below the permit requirements for the Strait of Georgia. Effluent TSS concentrations exceeded the allowable discharge permit for the Strait of Georgia for a short period in September and October 2007, during aeration upgrades to the solids contact tanks. Stage 3 interim facility upgrades are currently in progress, with Stages 4 and 5 consisting of major facility changes and upgrades recommended for completion by 2012 and 2025, respectively (Associated Engineering, 2006).

Additional connections and population growth increases within the French Creek Service Area could impact the treatment capacity of the FCPCC unless something significant is done to decrease wet weather flows, i.e., infiltration and inflow (I&I) reduction, and reduce influent TSS. In the interim, stress testing of the trickling filter/solids contact tanks could be used to estimate remaining potential capacity.

4.4 Summary

- FCPCC wastewater flows currently exceed the Stage 2 design criteria, but are within discharge permit requirements. Improvements to Stage 2 have been made to help accommodate this situation.
- FCPCC influent BOD and TSS loadings currently exceed the Stage 2 design criteria.
- FCPCC effluent BOD and TSS concentrations are generally in compliance with discharge permit requirements.
- Wastewater flows, influent BOD and TSS loadings demonstrate that additional connections from the French Creek Service Area are becoming less feasible. Recent facility upgrades have improved effluent quality but additional service connections could place additional hydraulic stress on the treatment system.
- Reduction of I&I and influent TSS is required.
- Stress testing of the trickling filter/solids contact tanks could be used to estimate remaining potential capacity.

- Planning for the 2012 Stage 4 upgrades should not be delayed.

5 Nanoose Pollution Control Centre

5.1 Service Area

The NPCC provides preliminary and primary treatment of incoming raw wastewater from the Nanoose Service Area. The Nanoose Service Area includes the Fairwinds Development, and the Delanice Way, Beachcomber, Dolphin Drive, Garry Oaks, and Red Gap areas. Other future areas, to be identified in the Official Community Plan (OCP) updating process, may be included in the future.

5.2 Capacity Assessment

The NPCC was designed and constructed to process up to 2,270 m³/d of wastewater as per discharge permit. Wastewater flows and influent BOD and TSS loading for 2005 to July 2008 are presented graphically in Figure 11, Figure 12, and Figure 13. A statistical summary of GNPCC influent and effluent quality is presented in Table 3.

Table 3
NPCC Influent and Effluent Statistical Summary 2005 to June 2008

Statistical Parameter	Flow (m ³ /d)	Influent BOD Loading (kg/d)	Influent TSS Loading (kg/d)	Effluent BOD Concentration (mg/L)	Effluent TSS Concentration (mg/L)
Average	247	62	70	89	70
Minimum	104	5	15	46	23
Maximum	554	352	308	162	114
90 th Percentile	297	108	109	129	97

Design criteria for the NPCC were based on the “Optimization of the Nanoose Bay Water Pollution Control Centre” (Associated Engineering, 2002). NPCC wastewater flows are well below the design criteria and permit requirements. Influent BOD and TSS loadings are generally below the design criteria, with more frequent exceedances observed during the end of 2007 and 2008 monitoring period. Given the relatively low flows to NPCC, the BOD and TSS loadings are more frequently exceeding the design criteria for the plant. The BOD and TSS influent loading results suggest that additional connections to the service area could significantly affect overall treatment performance unless some improvements are made.

5.3 Effluent Quality

The discharge permit for the NPCC was issued March 8, 1988. The plant operates according to the permit, which specifies the maximum authorized rate of discharge as 2,270 m³/d. The characteristics of the discharge shall be equivalent to or better than: 5-day BOD - 100 mg/L and TSS - 100 mg/L. The Draft Operational Certificate, submitted to the MoE in 2001 for approval, specifies the maximum authorized rate of discharge as 2,260 m³/d. The characteristics of the discharge shall be equivalent to or better than: 5-day BOD - 130 mg/L, TSS - 130 mg/L, and pH - 6-9 pH units.

Comparisons of NPCC effluent BOD and TSS concentrations to discharge permit and draft operational certificate values for 2005 through June 2008 are presented in Figure 14 and Figure 15, respectively.

Effluent BOD concentrations for the NPCC are generally in compliance with the discharge permit, with more frequent discharge permit exceedances observed in 2008. Effluent TSS concentrations for the NPCC are in compliance with the discharge permit. At this time, it is not clear whether or not issues related to an on-site sludge holding tank and its influence on effluent BOD quality have been resolved. It is noted that chemically enhanced treatment using alum and polymer has been implemented recently.

5.4 Summary

- NPCC wastewater flows are currently below design capacity and within the discharge permit requirements.
- Influent BOD and TSS loadings are generally below the design criteria, with more frequent exceedances observed during the end of 2007 and 2008 monitoring period.
- NPCC effluent BOD loadings are generally in compliance with the discharge permit, with more frequent permit exceedances observed in 2008. NPCC effluent TSS loadings are in compliance with the discharge permit.
- Wastewater flows and influent BOD and TSS loadings generally well below design capacity demonstrate that additional connections from the Nanoose Service Area could be accommodated. However, recent observed increases in influent BOD and TSS loadings, particularly loadings above the plant design criteria, must be taken into account if additional connections are to be considered for the NPCC.
- If the influence of the sludge tank cannot be mitigated, it will become increasingly necessary to continue to use enhanced primary treatment or secondary treatment sooner than originally planned.

6 Duke Point Pollution Control Centre

6.1 Duke Point Service Area

The DPPCC provides preliminary and secondary treatment of incoming wastewater from the Duke Point Service Area. The Duke Point Service Area includes the industrial development at Duke Point, and possibly future Village Centres and problem areas within Electoral Area 'A' that require community sewers. Future sewer service in the Duke Point area will include Cedar Village (sewer servicing currently under construction), and possibly future connection from Cable Bay Lands.

6.2 Capacity Assessment

The DPPCC plant is designed and constructed to process up to 910 m³/d of typical residential strength wastewater. Wastewater flows and influent BOD and TSS loading for 2005 to July 2008 are presented graphically in Figure 16, Figure 17, and Figure 18. A statistical summary of DPPCC influent and effluent quality is presented in Table 4.

Table 4
DPPCC Influent and Effluent Statistical Summary 2005 to July 2008

Statistical Parameter	Flow (m ³ /d)	Influent BOD Loading (kg/d)	Influent TSS Loading (kg/d)	Effluent BOD Concentration (mg/L)	Effluent TSS Concentration (mg/L)
Average	19	32	3	17	14
Minimum	6	0.1	0.1	1	1
Maximum	231	1,756	278	854	101
90 th Percentile	29	48	5	23	28

Design criteria for the DPPCC were based on the "Duke Point Water Pollution Control Centre Process Operation and Maintenance Manual" (Goronszy, 1998). DPPCC wastewater flows are well below the design and discharge values. Influent BOD and TSS loadings are also typically well below the design criteria, with only a few values that exceed the design values. DPPCC flow values and influent BOD and TSS loadings well below the design criteria demonstrate that there is capacity at the DPCC for additional connections for the service area.

6.3 Effluent Quality

The operational certificate (ME-05989) for the DPPCC was approved August 12, 2004. The maximum authorized rate of discharge is 1,800 m³/d. The characteristics of the discharge shall be

equivalent to or better than: 5-day BOD - 30 mg/L, TSS - 30mg/L, and pH - 6-9 pH units, and Fecal Coliform Bacteria - 1000 colonies/100 mL.

Comparisons of DPPCC effluent BOD and TSS concentrations to operational certificate values for 2005 through July 2008 are presented in Figure 19 and Figure 20, respectively.

Effluent BOD and TSS concentrations for the DPPCC are generally in compliance with the operational certificate. The operational certificate requirements for BOD and TSS were occasionally exceeded during the study period. These certificate exceedances were likely a consequence of unscheduled upstream industrial wastewater discharges to DPPCC that resulted in the disruption of biological activity, i.e., secondary effluent treatment, at the facility. Impacts to the biological activity would result in the observed increase in BOD and TSS concentrations observed in the DPPCC effluent. It is imperative that such activities do not occur in the future. This might require enforcement of a source control bylaw.

6.4 Summary

- DPPCC wastewater flows are in compliance with the design criteria.
- DPPCC influent BOD and TSS loadings are generally in compliance with the design criteria, with only a few loadings that exceeded these values.
- DPPCC effluent BOD and TSS concentrations are generally in compliance with operational certificate requirements. Occasional exceedances of certificate requirements are the result of a disruption in biological activity caused by upstream industrial discharges.
- Wastewater flows and influent BOD and TSS loadings well below design capacity and high quality effluent BOD and TSS concentrations demonstrate the feasibility for additional connections in the Duke Point Service Area.

7 Overall Summary

Greater Nanaimo Pollution Control Centre

- GNPCC wastewater flows are generally in compliance with Stage 2 design criteria and discharge permits during dry weather flow. During wet weather events, discharge permit requirements are occasionally exceeded.
- GNPCC influent BOD and TSS loadings have approached the design criteria, with frequent exceedances of these criteria.
- GNPCC effluent BOD and TSS concentrations are generally in compliance with discharge permit requirements. Effluent BOD and TSS concentrations are approaching these limits, with the potential for more frequent exceedances, particularly during the summer months when wastewater is more concentrated.
- Wet weather wastewater flows are approaching permit requirements and influent BOD and TSS loadings are approaching (and in many instances are exceeding) plant design criteria demonstrating that the plant is approaching the limits of its current design. Interim treatment solutions have been implemented to maintain effluent BOD and TSS permit

requirements; without upgrades to the facility, additional service connections will not be accommodated without increased potential to compromise the effluent quality. Continued use of CEPT is recommended until such upgrades are implemented.

- Upgrading to secondary treatment should occur no later than 2015.

French Creek Pollution Control Centre

- FCPCC wastewater flows currently exceed the Stage 2 design criteria, but are within discharge permit requirements. Improvements to Stage 2 have been made to help accommodate this situation.
- FCPCC influent BOD and TSS loadings currently exceed the Stage 2 design criteria.
- FCPCC effluent BOD and TSS concentrations are generally in compliance with discharge permit requirements.
- Wastewater flows, influent BOD and TSS loadings demonstrate that additional connections from the French Creek Service Area are becoming less feasible. Recent facility upgrades have improved effluent quality but additional service connections could place additional hydraulic stress on the treatment system.
- Reduction of I&I and influent TSS is required.
- Stress testing of the trickling filter/solids contact tanks could be used to estimate remaining potential capacity.
- Planning for the 2012 Stage 4 upgrades should not be delayed.

Nanoose Pollution Control Centre

- NPCC wastewater flows are currently below design capacity and within the discharge permit requirements.
- Influent BOD and TSS loadings are generally below the design criteria, with more frequent exceedances observed during the end of 2007 and 2008 monitoring period.
- NPCC effluent BOD loadings are generally in compliance with the discharge permit, with more frequent permit exceedances observed in 2008. NPCC effluent TSS loadings are in compliance with the discharge permit.
- Wastewater flows and influent BOD and TSS loadings generally well below design capacity demonstrate that additional connections from the Nanoose Service Area could be accommodated. However, recent observed increases in influent BOD and TSS loadings, particularly loadings above the plant design criteria, must be taken into account if additional connections are to be considered for the NPCC.
- If the influence of the sludge tank cannot be mitigated, it will become increasingly necessary to continue to use enhanced primary treatment or secondary treatment sooner than originally planned.

Duke Point Pollution Control Centre

- DPPCC wastewater flows are in compliance with the design criteria.
- DPPCC influent BOD and TSS loadings are generally in compliance with the design criteria, with only a few loadings that exceeded these values.

- DPPCC effluent BOD and TSS concentrations are generally in compliance with operational certificate requirements. Occasional exceedances of certificate requirements are the result of a disruption in biological activity caused by upstream industrial discharges.
- Wastewater flows and influent BOD and TSS loadings well below design capacity and high quality effluent BOD and TSS concentrations demonstrate the feasibility for additional connections in the Duke Point Service Area.

8 Final Summary

- GNPCC needs to continue to use CEPT as needed and move to secondary treatment on the existing 2015 schedule.
- FCPCC is approaching capacity, planning for Stage 4 upgrades and improvements for 2012 should proceed.
- NPCC should continue to implement CEPT or consider a move towards secondary treatment.
- DPPCC is likely fine for many years if industrial discharges are kept in compliance and there are not substantial increases to the DPPCC service area / population.

9 References

- 1 Associated Engineering. Discussion Paper No. 1: Review of Existing Conditions. February 2008.
- 2 Dayton & Knight. Report. Greater Nanaimo Water Pollution Control Centre Pre-Design Stage III Expansion Phase I Report. Draft No. 4. May 1997.
- 3 Dayton & Knight. Report. Stage 2 Pre-Design: French Creek Water Pollution Control Centre – Phase 2 Report. January 1993.
- 4 Associated Engineering. Report. French Creek Pollution Control Centre Performance Evaluation and Upgrading Plan Update. December 2006.
- 5 Associated Engineering. Report. Optimization of the Nanoose Bay Water Pollution Control Centre. January 2002.
- 6 Goronszy, M. C. Manual. Duke Point Water Pollution Control Centre Process Operation and Maintenance Manual. February 1998.



ENVIRONMENTAL SERVICES

LIQUID WASTE MANAGEMENT PLAN REVIEW AND AMENDMENT DISCUSSION PAPER #5

SOURCE CONTROL PROGRAM



August 2008

1.0 Background

The Regional District of Nanaimo (RDN) is reviewing the 1997 Liquid Waste Management Plan (LWMP) to determine if amendments to the plan are required. As part of the review, discussion papers have been prepared and submitted to the Liquid Waste Advisory Committee for comment and discussion.

The LWMP review offers a unique opportunity to re-evaluate the source control program at the RDN. Options include abandoning the program, maintaining status quo, or making a series of improvements to render the program more effective and/or rigorous. The objective of the paper is to provide material for discussion in order to answer the following question:

What changes, if any, should be made to the RDN's source control program?

This discussion paper provides an overview of the components of a source control program, the RDN's current program, a case study of the program at the Capital Regional District and concludes with recommendations for the RDN's future program.

In effect, the RDN's source control program should work to improve the quality of influent, effluent and biosolids while reducing the resources (energy, chemical and financial) required to treat wastewater. Furthermore, a source control program supports the Liquid Waste Department's environmental mandate and ISO 14001 Environmental Management System.

2.0 Source Control Programs

Source control programs are recognized as an economical and effective way to influence the quantity and quality of wastewater to be treated. At its core, a source control program is a pollution prevention strategy that works to reduce or eliminate contaminants that enter the wastewater stream. It can be a suite of practices, methods, and/or technologies targeted at industry, institutions, businesses and households who discharge wastewater into the sanitary sewer system. It is widely accepted that the general goals of a source control program are to¹:

1. Protect the environment.
2. Protect the health and safety of workers and the public.
3. Protect existing infrastructure and the wastewater treatment process.
4. Protect the quality of biosolids.

Generally, to achieve these goals, a source control program focuses on 2 elements:

¹ For example, see: Natural Resources Canada. March 2003. Wastewater Source Control: A Best Practice By The National Guide To Sustainable Municipal Infrastructure. National Guide to Sustainable Municipal Infrastructure. Issue No.10. Chapter 2: pp. 2-4.

Or, Capital Regional District. 2008. Source Control Program Goals. Available at:
<http://www.crd.bc.ca/wastewater/sourcecontrol/goals.htm>

1. A *sewer use bylaw* that regulates how the sewer system may be used.
2. An *education component* designed to generate awareness about the proper uses of the sanitary sewer system.

Regulations Governing Source Control Programs

Although source control is considered an aspect of the LWMP in the Ministry of Environment's guidelines for the development of LWMPs², there are no strict provincial requirements for the design, implementation or operation of a municipal source control program.

However, in S.20(3) of the *Municipal Sewage Regulation*³, the Ministry of Environment states that a municipality cannot accept discharge of non-domestic waste into the municipal sewage collection system unless the municipality has a source control bylaw, or the equivalent, in place. A source control bylaw must include provisions for pre-treatment of industrial, commercial and institutional discharges into the sewer system. It must also contain pre-treatment requirements to ensure that the final discharge of effluent meets pre-determined standards and that the quality of biosolids meet the requirements of any authorization given under the *Municipal Sewage Regulation*. Further, under reporting requirements (S.28(7a)) an update of the previous year's achievements relating to source control should be reported in the annual monitoring report.

Quantifying Success of a Source Control Program

The first step in developing a source control program is the identification of contaminants that adversely affect the quality of influent, effluent and biosolids. Commonly, measures of BOD₅⁴, TSS⁵, pH, metal content (eg. Mercury) and quantities of oils and grease, can determine the success of a source control program. Success is measured by a quantifiable decrease in the quantity and quality of contaminants entering and processed in the wastewater stream. Often the effects of a targeted education campaign, or outreach effort, are correlated with the perceptible decrease in a particular contaminant.

Further, a bylaw serves as a regulatory tool that sets parameters around sewer use, penalties for misuse, and instances where discharge into the municipal sewer system requires a permit or authorization. In some jurisdictions, an annual evaluation of permits/authorizations granted, rates of compliance, and number of fines issued is also used to gauge success.

² See: Government of British Columbia, Ministry of the Environment. 2008. Guidelines for Developing a Liquid Waste Management Plan. Available online at: <http://www.env.gov.bc.ca/epd/epdpa/mpp/gfdalwmp.html>

³ Government of British Columbia, Ministry of the Environment. 2006. Municipal Sewage Regulation. http://www.qp.gov.bc.ca/statreg/reg/E/EnvMgmt/129_99.htm

⁴ BOD₅: Biochemical Oxygen Demand is a measure of the quantity of oxygen consumed by microorganisms to break down organic matter in water. A high BOD means that there will be less oxygen and results in contamination of the receiving environment.

⁵ TSS: Total Suspended Solids are solid pollutants that would be captured on a fine filter paper. High concentrations can cause problems for aquatic life.

3.0 RDN's Programs and Commitments

The RDN covers an area of approximately 2,035 km² with a population of roughly 138,630 people. Between 2001 and 2006 the Region grew by 9.1%⁶. The sewer service population currently is 83,661 for Greater Nanaimo and 24,483 for French Creek. It is anticipated that the RDN's population will continue to increase, in all areas, by an average of 2% per year into the future.

Relative to other jurisdictions, the RDN has little in the way of heavy industry. Levels of metals, as well as the quality of influent, effluent and biosolids, are consistently within and below permit levels. As the 2007 monitoring report for the French Creek Pollution Control Centre illustrates, BOD₅ levels were well below the permit level of 45 mg/L for discharges to the Georgia Strait and below the limit of 20mg/L for the Morningstar Golf Course. In 2007 the average annual reduction from influent to effluent was 95% for BOD₅ and 92% for TSS. Low levels of Aluminum, Barium, Boron, Iron, Manganese, and Zinc were detected in effluent but these were attributed to naturally occurring levels in the municipal water supply. Finally, independent testing shows that influent levels of oil and grease were 17 mg/L but was <2 in effluent. Biosolids quality continued to meet the Ministry of Environment standards for class 'A' biosolids.⁷

Similarly, the 2007 monitoring report for the Greater Nanaimo Pollution Control Centre shows that average daily BOD₅ levels were 86 mg/L, below permit levels of 130 mg/L. Likewise TSS averaged 73 mg/L, below permit levels of 130 mg/L. The average annual reduction from influent to effluent was 54% for BOD₅ and 74% for TSS. Independent testing shows that influent levels of oil and grease was 34 mg/L. Biosolids generated by GNPCC contained concentrations of metals and fecal coliforms but still met the standards for Class "B" biosolids. However, volatile and semi-volatile compounds (4) were detected in effluent samples.⁸

Taken together, numbers from French Creek and Greater Nanaimo indicate relatively low levels of contaminants in influent, effluent and biosolids. Regardless, source control commitments were made in the 1997 LWMP. From this several source control strategies have been implemented.

Source Control Program Highlights 1997-2008

In the 1997 LWMP the following commitments were made:

1. Preparation and adoption of a district sewer use bylaw.
2. Development of an educational program to support the bylaw designed for rural and urban residents, both at home and in work places.

As a first step, the LWMP recommended that a cost benefit study be used to evaluate and prioritize objectives for the RDN's source control program. Results from this study suggested that the implementation of a source control program would yield the following benefits for the RDN:

⁶ Statistics Canada. 2008. Community Profiles. Available online at: statscan.ca

⁷ Regional District of Nanaimo, Liquid Waste Management. 2007. French Creek Pollution Control Centre Annual Monitoring Report.

⁸ Regional District of Nanaimo, Liquid Waste Management. 2007. Greater Nanaimo Pollution Control Centre Annual Monitoring Report.

- Reduced sewer maintenance costs and prevention of maintenance problems,
- Reduced treatment plant operation costs and prevention of plant upsets,
- Protection and improvement of effluent and biosolids quality,
- Protection and improvement of receiving environment quality,
- Prevention of public/worker health and safety concerns near sewers and in the treatment plants,
- Cost savings for individual operations due to lower water/energy/materials consumption, product recovery, etc.
- Tax savings as a result of 'user pay' approach (i.e. high strength waste surcharge fees), and
- Equitable treatment of businesses with respect to sewer discharge requirements.⁹

In 1998 the RDN contracted a firm to investigate an inventory model for non-domestic discharges to the sewer collection system in the French Creek area. Outcomes of this study identified contaminants discharged into the sewer system from 5 particular sectors: automotive, metal industries, printing and photoprocessing, food manufacturing, and drycleaners. This study recommended that an analysis of sewer discharge be undertaken in order to determine the most effective regulatory and education programs for wastewater contaminant reduction.

Bylaw No. 1225

On March 12th, 2002, the current sewer use Bylaw was introduced and subsequently adopted. The Bylaw places limits on the release of conventional contaminants (BOD₅, oil and grease, TSS), organic contaminants (such as polycyclic aromatic hydrocarbons (PAHs)), inorganic contaminants (metals), food waste, radioactive waste, pH waste, dyes, and other restricted wastes (such as Polychlorinated biphenyls (PCBs)) into the sewer system¹⁰. It also defines the powers of the manager to issue permits and authorizations, sets out requirements for the monitoring of discharges and maintenance of discharge records, and outlines possible consequences in instances of non-compliance. The Bylaw also includes an "Application for Waste Discharge Permit". Contravention of the Bylaw can result in a fine that does not exceed \$10,000, that may be imposed for each day on or during which an offence occurs or continues to occur. However, the strength of the Bylaw is undermined by the lack of enforcement capacity of the Liquid Waste Department to enforce instances of non-compliance using, for example ticketing or a Bylaw Enforcement Officer. Despite this, in 2008, two permits were issued under the Bylaw.

Education/Outreach

In 2001, an outreach and educational campaign directed at dentists resulted in a discernable decrease in the mercury levels in the wastewater stream. Between 2003 and 2007 there was a 71% reduction in mercury concentration in biosolids and a 95.5% reduction in mercury in effluent.

⁹ Cielanga, N. 2000. Memorandum to Dennis Trudeau. Correspondence within Regional District of Nanaimo.

¹⁰ Regional District of Nanaimo. 2002. Bylaw No. 1225: A Bylaw to Regulate the Discharge of Waste Into All Sewers Connected to Sewage Facilities Operated by the Regional District of Nanaimo. Available at: <http://www.rdn.bc.ca/cms/wpattachments/wpID1162atID1491.pdf>

Beginning in 2003, pamphlets were created to promote responsible residential sewer use. Materials developed included the pamphlets "Garburators – Why Not to Use", "Food Services Sewer Discharge Requirements" and "Business Sector's Guide to Responsible Wastewater Reduction". Each pamphlet describes aspects of wastewater processing, effects of improper sewer use and outlines alternatives. The 2007 Annual Monitoring Report for both French Creek and Greater Nanaimo facilities states that these pamphlets were mailed to all food services providers in the District.

These outreach campaigns have been complimented by open houses at the French Creek and Greater Nanaimo facilities. These have allowed the public to develop first hand knowledge of the wastewater processing systems and the effects of sewer use in the RDN. The next open house will be held in October or November of this year.

Education and outreach programs at the RDN are continually reviewed and updated. For example, the Liquid Waste Department's website has a link to a page that describes source control as a means to protect the environment and sewer infrastructure¹¹. This site links to the page "Be Sewer Smart At Home!" that outlines responsible sewer use for residential users, including tips as to what should not be put down the drain¹². Included on both sites is contact information for local hazardous waste disposal sites. Finally, in preparation is a water use awareness outreach program through the Utility Department's Water Smart program and a Septic Education Program, designed for rural communities, that is being developed by the Liquid Waste Department.

Taken together, the Bylaw and current source control initiatives form a firm foundation for a source control program at the RDN. Recognizing that there exists concerns about the marine environment at outfall sites and taking into consideration future demands on the system and the need to preserve current and future infrastructure, the RDN is in an excellent position to adapt and integrate elements from other jurisdictions/municipalities to enhance the effectiveness of their source control program.

4.0 Case Study: CRD

A regional scan suggests few other jurisdictions have adopted pro-active source control programs, with the exception being the Capital Regional District (CRD) and, in some respects, Metro Vancouver. Although the size of other regional districts precludes the need to develop rigorous source control programs, the RDN, as a mid-sized district, has the opportunity to evaluate and adopt aspects of the CRD's program that are most suited to the needs of the facilities and population in the RDN.

The CRD is considered to have one of the most progressive source control programs in the province. Though the CRD operates five wastewater treatment facilities, the two facilities that serve the core area (Clover Point and Macaulay Point) have only preliminary treatment that screen objects larger than 6 millimeters prior to discharge, through outfall, into the Strait of Juan De Fuca. Consequently, the CRD has developed a rigorous source control program. Although the CRD's program relies on two distinct components - regulation and education/outreach - emphasis is placed on a comprehensive system of regulation, enforcement and monitoring. The impetus for the development of this program was driven by the need to protect the effluent and biosolids quality at the Saanich Peninsula Wastewater Treatment Plant, a secondary treatment facility.

¹¹ See: Regional District of Nanaimo, Liquid Waste Department. 2008. Source Control. Available at: <http://www.rdn.bc.ca/cms.asp?wpID=1161>

¹² See: Regional District of Nanaimo, Liquid Waste Department. 2008. Be Sewer Smart At Home. Available through: www.rdn.bc.ca.

Regulatory Tools

The CRD's regulatory program evolved out of a sewer use bylaw adopted in 1994 and has developed into a system based on codes of practice, authorizations, and permits targeted at industrial, commercial, and business users.

Codes of practice (COPs) are regulatory documents with mandatory sanitary sewer discharge standards for specific industrial, institutional, or commercial sectors¹³. Included among the codes are requirements of the installation of works, such as grease traps in the food sector. Currently, three compliance officers inspect 20% of the approximately 2,200 permitted businesses per year, representing 11 sectors¹⁴. Drawbacks of the COP system include the limited physical and fiscal capacity for compliance officers to follow up on businesses that are not in compliance and/or in support of businesses in transition to compliance. However, in 2007 CRD compliance officers completed 630 primary business inspections and 729 repeat inspections¹⁵.

Within the CRD 88 authorizations were issued under the Sewer Use Bylaw, "in cases where overall contaminant loads to sanitary sewer are low or where discharges are predicted to have a minimal impact on collection and treatment systems and/or the receiving environment"¹⁶. Authorizations were issued to regulate unusual discharges or "small groups of similar operations, such as ship and boat waste facilities, laundromats and sani-dumps"¹⁷. These are tailored to the specific outputs of a particular business and do not necessarily require self-monitoring requirements. There is, at minimum, a periodic check on the quality of effluent discharged with reported restrictions on waste generation or on site handling. In 2007, 45 inspections were carried out with a near total level of compliance.

There have been 30-40 active temporary permits issued to businesses within the CRD. These are site-specific documents that outline requirements for wastewater treatment, effluent quality, monitoring and reporting. These are issued to operations that discharge significant non-domestic wastewater flows that are greater than 10 m³/day or wastewater with high loads of chemical contaminants or restricted wastes¹⁸. Permits require self-monitoring and reporting, preparation of compliance letters, meetings and regular phone contact with permittees, as well as site inspections.

Of potential interest for the RDN is the outreach effort made to include businesses in the planning and implementation of COPs, authorizations and permits. The CRD developed relationships with professional associations and groups within 11 sectors of their economy.

¹³ See: Capital Regional District. 2008. Codes of Practice. Available at: <http://www.crd.bc.ca/wastewater/sourcecontrol/codespractice.htm>

¹⁴ Capital Regional District. 2008. Regional Source Control Program Annual Report 2007. Available online at: <http://www.crd.bc.ca/wastewater/sourcecontrol/documents/sc2006annualreport.pdf>

¹⁵ Capital Regional District. 2007. CRD Regional Source Control Program Annual Report 2007. Available online at: <http://www.crd.bc.ca/wastewater/sourcecontrol/documents/sc2006annualreport.pdf>

¹⁶ Ibid. Pp. 6.

¹⁷ Ibid.

¹⁸ Ibid.

Compliance remains relatively high although there have been some instances (6) in which court action has resulted from non-compliance.

Education and Outreach

The CRD's source control program also has an outreach component targeted at either residential or commercial/industrial/business users. For the latter, guidebooks have been developed and are continuously updated to summarize regulations, COP guidelines and best practices. For residential users, education/outreach has targeted 3 activities: release of fats, oils, and greases, detergent use, as well as a pharmaceutical return program. To this end, education campaigns have distributed detergent scoops, organized pharmaceutical round-up programs and have featured community displays at appropriate venues.

The combined impact of the CRD's source control program has yielded tangible results, particularly with respect to installation of works and reduction of key contaminants. However, the program has some drawbacks particularly in terms of enforcement and monitoring. Not only has the issuance of tickets related to breaches of COPs lead to some dissension and court action, the monitoring schedule and follow up on non-compliance reports cannot be adequately maintained. Additionally, high turnover in business and the emergence of new businesses has further complicated efforts to enforce compliance.

Though the regulatory aspects of this program generate revenue of \$120,000 (2007) in permittee fees, source control at the CRD has a budget of over a million dollars and requires 7.5 full time staff.¹⁹ Although this is a resource intensive program, the focus on monitoring/enforcement is, in comparison, an aspect that is absent from the RDN's source control program relative to the sewer use bylaw.

Metro Vancouver and Public Outreach

Comparatively, few other jurisdictions, save Metro Vancouver, have such a rigorous source control program. This can be attributed to the time and budget intensive nature of regulation-based source control programs. However, it should be noted that Metro Vancouver, in their March 2006 LWMP Biennial Report reiterate a commitment to their focus on source control programs. Included among these were the development of peak discharge limits and fees for industry (targeted at BOD₅ and TSS), reduction in demand for treatment capacity (development of 10 Strategies to Improve Eco-Efficiency guidelines), and an increase in the number of workshops delivered for their education program. The latter education program is focused on developing educational tools for elementary and secondary teachers and students. This education program was also complimented by four outreach programs targeted at residential sewer use and proper disposal of household hazardous waste. These were developed in consultation with community stakeholders, including the BC Landscape and Nurseries Association and the Recycling Council of BC.²⁰ Further, as part of their LWMP and the 6 commitments laid out therein, Metro Vancouver has recently (as of February 27th, 2008) committed to "provide resilient infrastructure to address risks and long term needs" including collaboration with members of its municipalities.

5.0 Recommendations

¹⁹ Numbers obtained from personal communications with Chris Robins, Acting Supervisor of the Regional Source Control Program

²⁰ Metro Vancouver. 2006. Liquid Waste Management Plan Biennial Report. Available online at: <http://public.metrovancouver.org/about/publications/Publications/LWMPBiennialReport2006-Part2.pdf>

Given the size of the RDN, current and future demands on sewer infrastructure, existing outreach programs and programs in other jurisdictions, only minor improvements need to be made with respect to the RDN's source control program. At its core the RDN has an excellent foundation for a source control program. The objectives of the program continue to focus on the reduction of contaminants in influent, effluent and biosolids through education, outreach, and regulation through the Bylaw with measurable success. In addition to the recommendations below, efforts should continue to focus on education through the website.

The three recommendations made here seek to maximize existing relationships through the development of partnerships with other departments at the RDN, other regional governments, and others within the district. Indeed, the RDN can benefit from the knowledge, expertise, and experience of other programs in neighbouring jurisdictions.

Co-Partnerships with Other Departments Within the RDN

In 2007, for example, the Solid and Liquid Waste Departments worked together on an initiative designed to minimize the amount of organic waste entering the waste stream. Similar efforts that serve the goals of other departments in the RDN, particularly with the Solid Waste Department, should continue to be pursued. Not only is this economical in terms of resource sharing, it also serves to target key populations at one time, without engendering 'consumer fatigue' with regard to waste reduction messages.

Further, as several communities in the RDN are working to review or develop their Official Community Plans there are ample opportunities for the Liquid Waste Department to participate at community meetings. It is through these venues that community needs can be assessed and addressed vis-à-vis wastewater disposal. In addition, key source control messages can be imparted through presentations and one-on-one dialogue with community members. There also exists tremendous opportunity for communication about the bylaw and proper sewer use through the RDN's Regional Perspectives newsletter.

Finally, there exists opportunities to assess the possibility of using the RDN's bylaw enforcement resources, on an as needed basis.

Resources dedicated towards the creation of partnerships with other departments at the RDN would require minimal effort and could result in innovative resource sharing.

Partnerships With Other Municipalities/Jurisdictions

Throughout the year the Liquid Waste Department is in conversation with other technologists/coordinators/managers at other liquid waste departments across Canada and in the US, but in particular with those in our region. As such, there exists a network of individuals with whom information is exchanged and ideas are formed. It has been suggested that knowledge sharing regarding compliance, enforcement, and permitting could be invaluable in developing a streamlined and consistent approach to source control bylaws. Not only would this result in the identification of problems in the RDN, it could also make more collaborative use of municipal and regional sewer use bylaws.

Knowledge sharing with other municipalities and in other jurisdictions could enhance the effectiveness and outcomes of the RDNs source control program. This could also be useful for developing and coordinating educational campaigns with municipalities both inside and outside the RDN.

Communication and potential partnerships, on an informal and formal basis, would require minimal effort and budgeting, save for organization of and travel to meetings.

Partnerships With Others Within our District

In the interest of ensuring that the RDN's source control program meets the needs of the members of the community the RDN should, where possible, explore working with others in our district. Possibilities include professional associations, schools, non-profit and non-governmental organizations, or others with interest in contributing to inter/intra community outreach. Having linkages to the community helps to bolster the effectiveness of Bylaw compliance and sewer use through targeted messaging while also helping to determine suitable frequencies for education/outreach programs.

Taken in total it is estimated that the total expenditures related to the development and implementation of these three recommendations would require no more than 12-15% of 1 FTE (Liquid Waste Coordinator) and a budget of roughly \$15,000 for the revamping of source control outreach materials and for meetings with others within and outside of the RDN.

Conclusions

A source control program will improve the quality of our influent, effluent and biosolids, while reducing the resources (energy, chemical, and financial) required to treat wastewater. Furthermore, a Source Control Program supports the Liquid Waste Department's environmental mandate and ISO 14001 Environmental Management System at the RDN. However, the LWMP affords the opportunity to determine if and how the RDN's source control program should be either abandoned or improved.

This discussion paper provided an overview of the key components of a source control program. Through regulation (bylaw) and outreach (education) source control programs seek to decrease the levels of contaminants entering the wastewater stream. They also work to:

1. Protect the environment.
2. Protect the health and safety of workers and the public.
3. Protect existing infrastructure and the wastewater treatment process.
4. Protect the quality of biosolids.

As this discussion paper has shown, the RDN currently has an excellent foundation for a source control program, with both Bylaw and education/outreach components. However, the program can be rendered more effective through partnerships with other departments at the RDN, with other municipalities and jurisdictions, and with members of our community.

Regional District of Nanaimo Liquid Waste Management Plan Review and Amendments

Options for Secondary Treatment Processes

Issued: October 23, 2008

Previous Issue: None

1 Introduction

Currently, the Regional District of Nanaimo (RDN) has four pollution control centres (PCCs). Two of these PCCs are primary treatment plants that will have to be upgraded to secondary treatment in the future and two are secondary treatment plants that will have to be expanded at some point, perhaps using the same technologies or a different technology. The primary treatment plants include the Greater Nanaimo Pollution Control Centre (GNPCC) and the Nanoose Pollution Control Centre (NPCC). The secondary treatment plants include the French Creek Pollution Control Centre (FCPCC) and the Duke Point Pollution Control Centre (DPPCC).

The purpose of this document is to review the optional secondary treatment processes that might be used at these or other RDN plants in the future. Some of this information has been previously covered as a technical memorandum, “GNPCC Stage 3 Expansion, Technical Memorandum No. 5, Process Alternatives”, issued by Associated Engineering October 1, 2003. In addition, as part of the Liquid Waste Management Plan (LWMP) review process there was also a “Wastewater Treatment Primer” document that was created and issued to the LWMP review committee members as a reference. Some of this information was also presented in Discussion Paper 3 in the context of developer-installed packaged treatment plants. Information from these documents has been updated and/or expanded, as required, below.

Secondary treatment needs to be discussed in context. Preliminary treatment, which includes screening and grit removal, takes out large and easy to settle materials. Primary treatment, also called primary sedimentation or clarification, removes less easy to settle inorganics and some of the non-soluble organics, leaving a portion of the non-soluble organics and most of the soluble organics in the wastewater. Secondary treatment removes soluble and insoluble organic matter that is in primary treatment effluent. Without secondary treatment, there is some risk that the degradation of the organics in the receiving environment (rivers, lakes or the ocean) could cause the depletion of the dissolved oxygen in the receiving environment to the point that fish can no longer survive in that area. Secondary treatment also helps to remove contaminants of emerging concern such as some endocrine disrupting chemicals (EDCs) and pharmaceuticals and personal care products (PPCPs). It also helps to manage the creation of nitrous oxide from proteins and ammonia, which is about 330 times more potent as a greenhouse gas than carbon dioxide.

2 Regulatory Requirements

Based on the RDN being coastal, with all of the treatment plants discharging to the marine environment, the British Columbia Ministry of Environment, based on the Municipal Sewage Regulation, would establish the criteria for an Operational Certificate under the LWMP. This Operational Certificate would likely require the RDN to treat its wastewater to the levels defined and summarized in Table 1.

Table 1
Summary of Regulatory Treatment Requirements for Secondary Treatment
Where the Dilution in the Outfall is > 40:1

Parameter	Compliance Criteria ¹
Biochemical Oxygen Demand (BOD ₅)	45 mg/L Maximum
Total Suspended Solids (TSS)	45 mg/L Maximum
Fecal Coliforms	Not applicable
Turbidity	Not applicable (at this time)
Nitrogen	Not applicable (at this time) – based on ammonia toxicity at the edge of the initial dilution zone

¹ Note: Lower operational objectives would be required to consistently meet the compliance criteria, which in some cases are maximum or “never-to-exceed” values.

The values in Table 1 would require “secondary” treatment of the wastewater. The Municipal Sewage Regulation requirements in Table 1 are “never-to-exceed” values for single samples. In contrast, the up-coming compliance criteria for BOD₅ and TSS from the Canadian Council of Ministers of the Environment’s (CCME’s) Canada-Wide strategy process would likely be more stringent than the above numbers, but would be based on “average” values over a certain period of time, e.g. less than 30 mg/L BOD and less than 30 mg/L TSS on a 30-day running average. Regardless, the target values for treatment design and operation are normally set on a lower level than the above numbers, e.g. less than 20 mg/L BOD and 20 mg/L TSS.

The need for disinfection is based on water contact recreation needs and shellfish harvesting. At present, only the DPPCC has any disinfection. Disinfection for the other treatment plants is not required by the regulations at the moment. If any recreational activities or shellfish harvesting is to be considered in the future, treatment specifically targeting a reduction in pathogenic organisms would be required.

3 Secondary Treatment

Secondary treatment requires the removal of soluble and insoluble organics from the preliminary or primary treatment effluent. This discussion of secondary treatment includes biological treatment, settling, and separation and disinfection.

3.1 Biological Processes

Biological treatment works by providing an environment in which non-pathogenic bacteria can be cultivated in a safe and stable manner. These bacteria grow and multiply by consuming the soluble organics in the primary effluent and by hydrolyzing the non-soluble organics in the primary effluent and converting both sources of soluble organics to new cell mass. This new cell mass is then separated from the secondary effluent via sedimentation or some type of filter.

Within biological treatment there are three options: suspended growth processes, fixed growth processes and hybrid processes (a combination of suspended and fixed growth processes). The following sections discuss these options.

3.1.1 Suspended Growth Biological Processes

Suspended growth processes are biological treatment processes in which microorganisms (bacteria, fungi, rotifers, protozoa, and algae) responsible for wastewater treatment are maintained in suspension within the liquid. Suspended growth processes are a type of process often considered “secondary” wastewater treatment.

Suspended growth processes, which include activated sludge, sequencing batch reactors (SBRs), and membrane bioreactors, among others, are described below.

Activated Sludge

The activated sludge process involves the production of an activated mass of microorganisms capable of stabilizing wastewater in an aerobic (presence of oxygen) environment. Wastewater is introduced into a tank where the microorganisms are maintained in suspension through aeration and/or mixing. The contents in the reactor are referred to as “mixed liquor”. An aerobic environment is maintained by adding dissolved oxygen into the tank using diffused aeration or mechanical aeration to force air (21% oxygen) into the mixed liquor. As shown in Figure 1, the aeration also keeps the “mixed liquor” well mixed. After a set time period, the mixture is sent to a settling tank or a membrane filtration system where the bacterial cells are separated from the treated wastewater. The majority of the separated microbial solids are returned to the aeration tanks as return activated sludge in order to maintain a certain concentration of mixed liquor suspended solids (MLSS), e.g. 2500 mg/L. A smaller portion of the separated microbial solids is wasted from the system (e.g. to a digestion system) as waste activated sludge in

order to maintain the MLSS concentration and the mean cell residence time or solids retention time (SRT). The latter is typically kept at less than four days if nitrification (oxygen-consuming conversion of ammonia to nitrate) is to be avoided. If the SRT is too long, the MLSS concentration will be high and there will be a tendency to develop nitrification (and the resulting increase in energy demands from the aeration system) and/or filamentous bacteria (which do not settle well, causing potential effluent quality and operational issues).

Figure 1
An Activated Sludge Aeration Tank



In some cases, activated sludge can be augmented with anaerobic and anoxic tanks and various recirculation lines to produce biological nutrient removal (BNR) of both phosphorous and nitrogen. As an added bonus of the BNR process, BNR plants typically have high quality effluent, e.g. less than 10 mg/L BOD and less than 10 mg/L TSS. Such high levels of treatment are typically not needed in the RDN context because of the discharge to open marine waters. BNR is typically used where the discharge is to inland freshwater rivers or lakes, e.g. all the major treatment plants on Lake Okanagan are BNR plants. The only reason for BNR in a marine discharge situation is if there are concerns about the greenhouse gas implications (nitrous oxide) of discharging nitrogen to the ocean. At the present time, there is only speculation on this point and no firm conclusions.

Activated sludge systems can be based on aeration with air, i.e. air activated sludge in open tanks, or oxygen activated sludge in closed (covered) tanks.

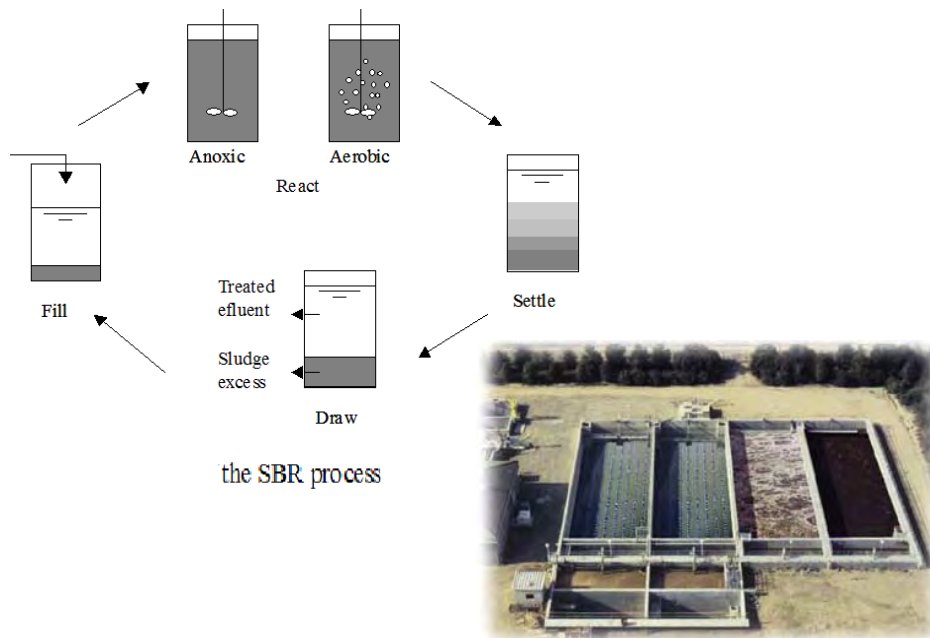
Activated sludge systems have some capacity to remove EDCs and PPCPs, particularly at longer sludge ages (SRTs).

Activated sludge is a well known process and despite some potential issues, is a reasonably robust treatment system. The downsides of the activated sludge process include the energy requirements for the aeration and the need for clarifiers or additional tankage for the separation of the solids.

Sequencing Batch Reactors

The SBR process is a type of suspended growth activated sludge treatment. SBRs can provide both high quality effluent and provide the possibility of biological nutrient removal. The main difference between an SBR and a conventional activated sludge treatment process is that after the preliminary treatment (screening and grit removal) processes, all of the wastewater treatment processes occur in one tank. These SBR tanks are each equipped with both an aeration system and a means to settle the solids and decant off treated liquid. A schematic of the SBR process is shown in Figure 2.

Figure 2
The Sequencing Batch Reactor Treatment Process
(Showing a Schematic Operating Cycle and a Four-Tank System)



There are several variations of the SBR process. One of the more common variants is the Intermittent Cycle Extended Aeration System. The Intermittent Cycle Extended Aeration System has a small pre-react chamber at the influent end of the SBR tank and a baffle wall

that forces the influent to the bottom of the tank. This feature and the addition of making the SBR tank somewhat longer allows for continuous loading of raw screened influent to all the SBR tanks (e.g. one or more tanks) in the process. This permits much simpler operation of the SBR. This is the type of SBR that is at the DPPCC.

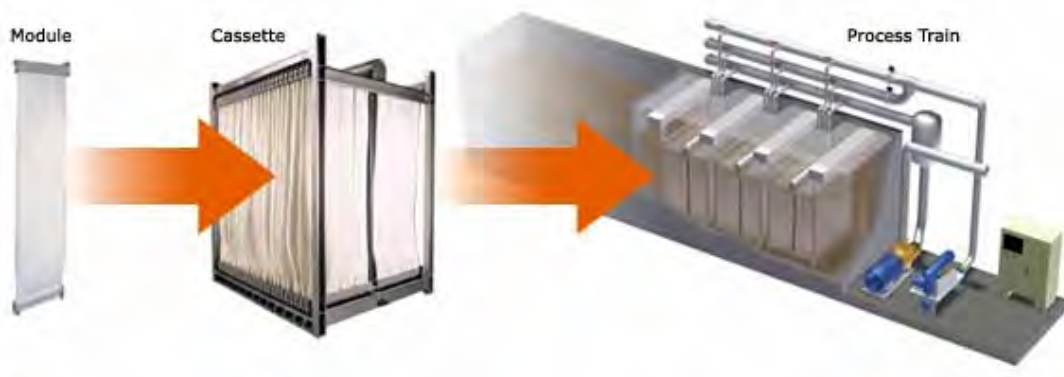
SBRs have some capacity to biologically remove nutrients as in the BNR process. However, if nutrient removal was a requirement, it would likely be better to design and operate a conventional activated sludge-based BNR process plant. SBRs, like activated sludge systems, have some capacity to remove EDCs and PPCPs, particularly at longer sludge ages (SRTs).

SBRs are most often used to treat smaller flows, e.g. under 5000 m³/day. However, there are larger SBR installations in the world, e.g. Dublin, Ireland. That said, at the larger flows, the SBR process may not be cost competitive with other processes, including conventional activated sludge systems.

Membrane Bioreactors

Membrane bioreactors (MBRs) also use a single tank system similar to the SBR process. However, rather than have a decanter and an intermittent cycle, the membrane bioreactor process eliminates the need for either a clarifier or a decanter to separate the biological solids from the purified effluent. Instead, a membrane system is used to provide a physical barrier between the biomass and the effluent. A pressure gradient provided by either gravity on the aeration side of the membrane or a vacuum on the effluent side of the membrane is used to provide the driving force across the membrane. Figure 3 presents a graphical representation of an MBR treatment plant.

Figure 3
The Membrane Bioreactor Process



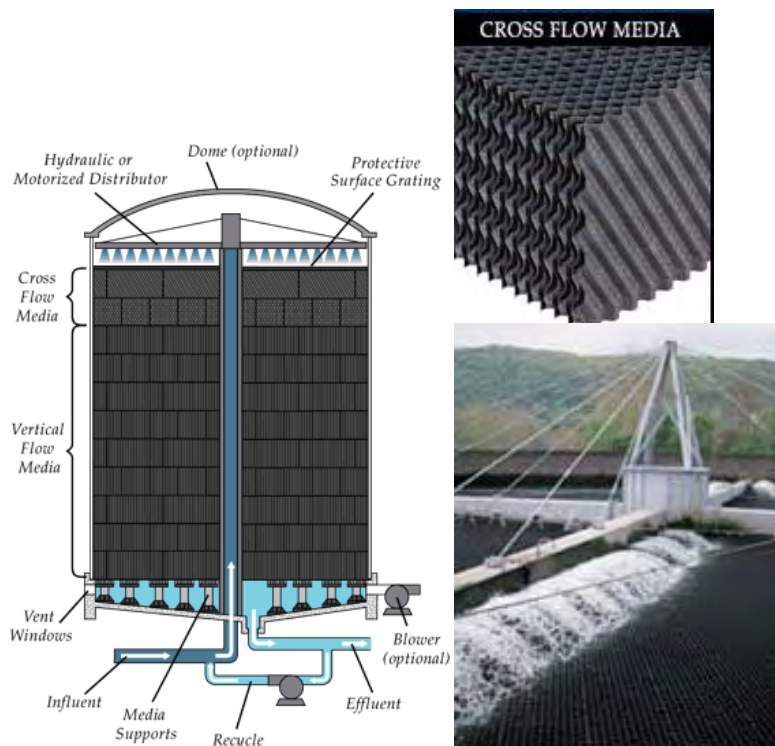
MBRs can produce the highest quality effluent currently possible with “conventional” treatment, i.e. less than 10 mg/L BOD and TSS is usually a given and in many cases, the effluent is less than 5 mg/L BOD and TSS. As an added bonus, the membrane pore sizes typically exclude both bacteria and viruses so the effluent quality is very good even prior to disinfection. MBRs are also likely to have long sludge ages (SRTs) and, as a result, are most likely to be capable of removing EDCs and PPCPs. The downside to MBRs is the additional equipment and energy required to make the process work. To some degree, this is mitigated by the elimination of the need for secondary sedimentation that conventional activated sludge requires.

MBRs have good capacity to biologically remove nutrients as in the activated sludge-based BNR process, provided the required anaerobic and anoxic tanks are added to the system.

3.1.2 Fixed Film Biological Processes

Fixed film processes are a type of “secondary” wastewater treatment. Fixed film processes, also referred to as attached growth process, are essentially biological treatment processes in which the microorganisms responsible for treating the wastewater are attached to some type of medium such as rocks, plastic materials, etc. Fixed film processes include trickling filters and rotating biological contactors (RBCs). These processes are described below.

Figure 4 - Trickling Filter Basics



Trickling Filters

Trickling filters consist of a media bed of highly permeable material such as rock or plastic on to which microorganisms are attached. As shown in Figure 4, wastewater is percolated or trickled down onto this media bed. Treatment occurs when the wastewater comes in contact with the rock or plastic media and microorganisms begin to degrade the organic material in the wastewater, converting the soluble and non-soluble organics to new cell mass that eventually sloughs off the media.

The depth of the media bed depends on the type of material used and the size and shape of the tank. While rock was an early popular media, it had a poor specific area, i.e. low m^2/m^3 rating. Today, it is very common for trickling

filters to be based around corrugated plastic sheets that have been thermally and/or chemically welded to form media blocks that are then stacked in the filter structure. An underdrain system is used to collect the treated wastewater effluent and any biological solids that have become detached from the media bed. This effluent is directed to secondary sedimentation basins or clarifiers.

In contrast to the activated sludge process, the solids from a trickling filters system secondary clarifiers are not recirculated back into the trickling filter like return activated sludge is returned to the activated sludge aeration basin. However, in some cases, the effluent from the trickling filter secondary clarifiers is recirculated back to the trickling filter, either for additional treatment or to improve the wetting rate, i.e. the flow over the media that is required to keep the media wet and to continuously shear off excess growth. The solids from the trickling filter clarifiers are wasted to a sludge handling system that typically includes some form of digestion to produce biosolids.

Trickling filters do provide a robust form of secondary treatment in that they are not as easy to upset as suspended growth systems can be. However, one problem that they do have is the sloughed solids do not settle as well as activated sludge mixed liquor does. This results in a poorer quality effluent (higher BOD and TSS) than activated sludge effluent. This can also mean that effluent disinfection becomes more difficult, either because of increased chemical dosages for chlorination or lamp fouling and/or light penetration for ultraviolet (UV) disinfection.

Trickling filters can be included in a BNR process train if biological nutrient removal was required. However, making them work in a BNR process is more difficult than a conventional activated sludge-based BNR process.

Trickling filters are not as good as the suspended growth systems for EDC and PPCP removal, likely because the effective sludge age is much shorter for a trickling filter than most activated sludge systems and much shorter than that for an MBR system.

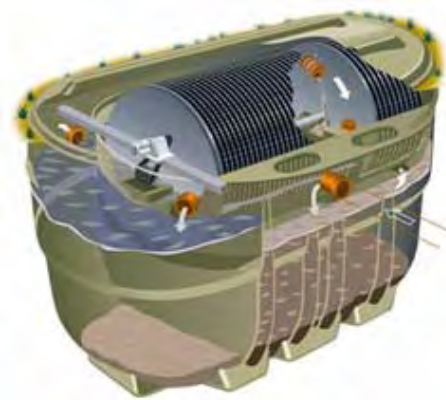
Trickling filters do not absolutely need forced airflow through the media but they will function better and more consistently if there is forced airflow. If forced airflow is used, it is best drawn downwards through the trickling filter rather than blown upwards through it. Upward flow tends to strip odour compounds from the primary treatment effluent leading to the need for odour control. Downward flow tends to result in the odour compounds being treated within the trickling filter by the biofilm.

Rotating Biological Contactors

RBCs are a fixed-film secondary treatment process in which the biology is virtually identical to that of the trickling filter. The only change instead of the media sitting passively and the primary effluent trickled over it as in the trickling filter process, with an RBC, the media

rotates through the wastewater. RBCs consist of a series of closely spaced circular disks, which are submerged in wastewater and rotated slowly through it. In the RBC process, microorganisms become attached to the disk surfaces and form a “slime” layer (much the same as a trickling filter). The rotation of the disks provides the microorganisms with food in the form of the organic material present in the wastewater and also oxygen present in the atmosphere. The rotation of the disks affects oxygen transfer and maintains the microorganisms in an aerobic condition. Figure 5 shows the general RBC process in a small scale (packaged plant) application.

Figure 5
Schematic View of a Small Scale RBC



Like trickling filters, RBCs provide a robust form of secondary treatment in that they are not as easy to upset as suspended growth systems can be. However, as with trickling filters, the sloughed solids from the RBC media do not settle as well as activated sludge mixed liquor does. This results in a poorer quality effluent (higher BOD and TSS) than activated sludge effluent. This can also mean that effluent disinfection becomes more difficult, either because of increased chemical dosages for chlorination or lamp fouling and/or light penetration for UV disinfection.

RBCs are potentially capable of being incorporated into some form of biological nutrient removal scheme, but rarely are because of their niche in smaller treatment plants. RBCs are similar to trickling filters for EDC and PPCP removal, i.e. not as good as activated sludge and MBR systems.

RBCs are relatively easy to maintain since they typically do not require additional aeration and the only electric motors are relatively low horsepower used to rotate the shafts through the wastewater. Based on economics, RBCs are typically more suited to smaller treatment plant installations. The original DPPCC was based on an RBC. NPCC is of a size and effluent quality requirement that would be suitable for an RBC installation.

3.1.3 Hybrid Biological Systems

Hybrid wastewater treatment systems consist of two or more treatment processes, e.g. trickling filters and a form of activated sludge, which are combined to achieve an overall level of treatment that is better than using a single treatment process alone. Hybrid system processes are a type of “secondary” wastewater treatment.

Examples of hybrid systems include trickling filter/solids contact, integrated fixed film activated sludge, and moving bed biofilm reactor. These processes are described below.

Trickling Filter/Solids Contact

Trickling filters typically shed or slough small amounts of biological solids from the biofilm on the plastic media on a constant basis. In some situations, these biological solids are very difficult to settle because they are small in size and light in mass. As a result, on their own, trickling filters do not have high quality effluent because of the higher TSS. To aid the settling of these solids, in the trickling filter/solids contact (TF/SC) process, the trickling filter process is followed by a short retention time (e.g. one hour) activated sludge aeration tank. This additional step improves the settleability of the solids and therefore, improves the clarity of the effluent.

The solids contact tank used in the TF/SC process is followed by a clarifier and, like the activated sludge system, a portion of the settled solids from the clarifier are recirculated back to the solids contact aeration tank. However, the sludge age (SRT) is kept very short, e.g. one day, and as a result, most of the solids are wasted to the sludge digestion system.

TF/SC systems can be incorporated into BNR nutrient removal but this is rare. It is typically easier to just have an activated sludge-based BNR process if you need biological nutrient removal. While the TF/SC process likely removes more EDCs and PPCPs than a straight trickling filter system, the improvement is very small and does not approach even that of a short (four-day) conventional activated sludge system.

The FCPCCC currently uses the TF/SC process and it has been shown to be reasonably robust for BOD and TSS removal. Issues with airflow direction (upwards) in the FCPCCC trickling have lead to odour control problems that still need to be fully resolved. There are plans developing to do this by reversing the airflow through the trickling filter.

Integrated Fixed-Film Activated Sludge

The integrated fixed-film activated sludge (IFAS) process is a variation of the conventional activated sludge process in which more biomass is added to the system in the form of biofilms grown on suspended plastic media. In this process, synthetic materials, i.e., polyethylene, foam, or polyvinyl chloride are used within the activated sludge tank to

provide additional surface area for the growth of microorganisms to treat the wastewater. These synthetic materials are often suspended within the activated sludge mixed liquor. In some cases, the additional fixed film media is fixed firmly in place within the aeration tank. In either case, this approach enhances the activated sludge process by increasing the concentration of microorganisms. As such, the IFAS media can be used to retrofit an existing activated sludge tank so it can be loaded higher than it could be previously. Alternatively, the IFAS media can be used to reduce the size of the activated sludge aeration tank that is required.

The IFAS process would have better EDC and PPCP removal capabilities than an activated sludge plant because of the greater biomass involved and also the longer overall sludge retention time (SRT).

Moving Bed Biofilm Reactor: The moving bed biofilm reactor (MBBR), such as that developed by Kaldnes®, is an example of an integrated fixed-film activated sludge (IFAS) process. In this process, small polyethylene cylinders, i.e., approximately 10 mm in diameter and 7 mm in height are suspended within an aerated or non-aerated activated sludge basin. Air or mixing is applied to the tank to keep the cylinders in circulation. The use of these cylinders increases the surface area for growth of biological organisms. A screening system is used to keep the plastic media and its attached biological growth in the activated sludge aeration tank. Typically for this process, a clarifier follows the aeration tank to settle out biological solids.

Figure 6 shows some of the characteristics of an MBBR process (including the media with biofilm, the aeration tank and the separation screens) (images courtesy of Veolia – Kaldnes)

Figure 6
Moving Bed Biofilm Reactor



The MBBR process would have better EDC and PPCP removal capabilities than an activated sludge plant because of the greater biomass involved and also the longer overall sludge retention time (SRT).

Biological Aerated Filters

Biological Aerated Filters (BAF) process combines BOD removal and physical solids separation in a single structure. In one BAF configuration of the process has primary effluent flowing downward through a bed of granular media while the bed is aerated. In another BAF configuration, the primary effluent flow is upwards as is the aeration. In either case, the granular media supports attached biofilm, which oxidizes soluble and particulate organic matter. The media also filters out the solids, leaving a clear effluent. The filter is regularly backwashed to remove excess solids; backwash solids are typically returned to the primary sedimentation tanks for thickening and removal. Figure 7 illustrates some of the aspects of the BAF process.

Figure 7
Schematic Representation of the BAF Process

(courtesy of Infilco Degremont)

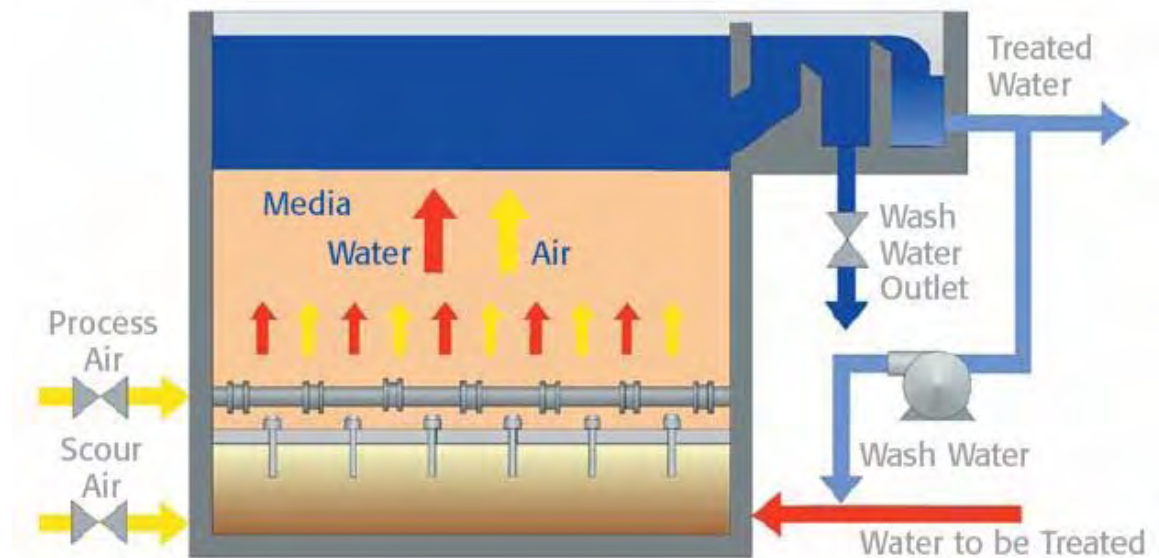
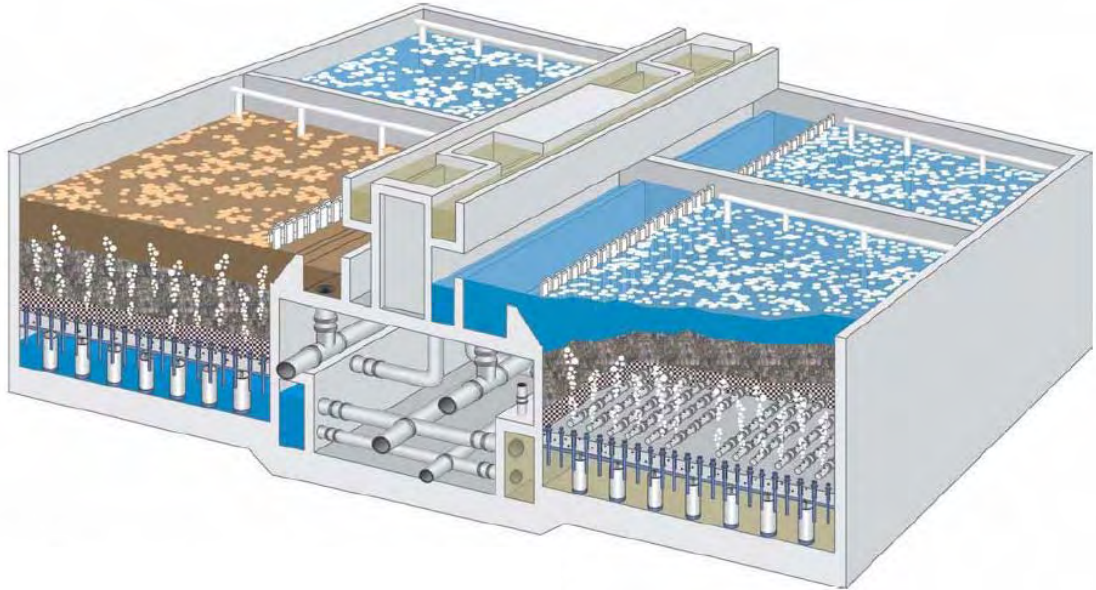


Figure 7 - Continued



BAFs typically have relatively short sludge ages (SRT) and as such, are similar to trickling filters in their relatively poor capabilities of removing EDCs and PPCPs.

3.1.4 Nitrification

Nitrification is the conversion of ammonia (NH_4^+) to nitrate (NO_3^-). If nitrification is not required to meet effluent criteria, i.e. an ammonia limit in the receiving body, it is often avoided because it consumes oxygen and alkalinity. The additional oxygen costs money through additional capital and operating costs associated with larger or more aeration blowers in a suspended growth system or additional trickling filter media for a fixed film system. Depletion of alkalinity can potentially significantly decrease the effluent pH to well below pH 6, whereas typical effluent criteria discharge pH's are not less than 6.5 (and not more than 8.5). One way to get back some of the oxygen and alkalinity is to biologically denitrify by recirculating aeration tank or trickling filter effluent back to a new tank, an "anoxic" tank, located before the aeration system (or trickling filter). In this situation, another group of bacteria convert the NO_3^- to N_2 gas and, in doing so, liberate some oxygen and bicarbonate (HCO_3^-) that help to replace at least some of the oxygen and alkalinity consumed in the original nitrification step.

As stated earlier, typically, for ocean discharges, the need for nitrification has been seen to be very low. However, with the growing interest in greenhouse gases this may change. The reason for this is one product of the conversion of ammonia to nitrate is nitrous oxide, which is about 330 times more potent on a mass basis than carbon dioxide. Since ammonia that is discharged to the environment could end up, at least partially, as nitrous

oxide in the natural environment, i.e. the ocean, it might be better to control the nitrous oxide generation by controlling the nitrification within the treatment plant. At present, there is no legislation that requires nitrification (and denitrification) for greenhouse gas control reasons.

3.1.5 Summary of Optional Secondary Treatment Processes

Table 1 summarizes the optional secondary treatment processes that could be available for expansion or upgrading of the RDN's treatment plants.

Table 1
Comparison of the Optional Secondary Treatment Processes

Process Option	Capital Cost	O&M Costs	Achievable Effluent Quality	Comments
Activated Sludge (AS)	Medium	Medium-high	<20 BOD/<20 TSS	Well known process; significant footprint requirements because of clarifiers
Sequencing Batch Reactor (SBR)	Low-medium	Low	<20 BOD/<20 TSS	Size limitations. Suitable for DPPCC and NPCC, but likely not for GNPCC or FCPCC
Membrane Bioreactors (MBR)	Highest	Highest	<10 BOD/<10 TSS	Best effluent quality but not necessarily needed for marine discharge. Good EDC and PPCP removal. Smaller footprint than conventional AS.
Trickling Filters (TF)	Medium	Medium-low	<45 BOD/<45 TSS	Effluent quality is not as good as AS or MBRs, poorer EDC and PPCP removal than AS and MBRs
Rotating Biological Contactors (RBCs)	Medium-high	Lowest	<45 BOD/<45 TSS	Suitable for NPCC, but not FCPCC or GNPCC. Not good for EDC and PPCP removal.

Process Option	Capital Cost	O&M Costs	Achievable Effluent Quality	Comments
Trickling Filter/Solids Contact (TF/SC)	Medium-high	Medium	<20 BOD/<20 TSS	Well known to RDN staff via FCPCC. Some issues with odour control. Not good for EDC and PPCP removal.
IFAS/ Moving Bed Biological Reactors (MBBR)	Medium-high	Medium	<20 BOD/<20 TSS	Good for upgrading or new plants to keep footprint down. Better EDC and PPCP removal than either AS or TF
Biological Aerated Filter (BAFs)	Medium-high	Medium-high	<30 BOD/<30 TSS	Small footprint. Not particularly good at EDC or PPCP removal.

Based on the above, the most likely processes for upgrading or expansion of the existing treatment plants would be as follows:

- FCPCC - TF/SC, Activated Sludge, IFAS/MBBR, BAF (if there are footprint issues), MBR if there is demand for reclaimed water
- GNPCC - TF/SC, Activated Sludge, IFAS/MBBR, BAF (if there are footprint issues), MBR if there is demand for reclaimed water
- NPCC - RBC following existing primary treatment plant, SBR (perhaps using existing tankage), MBR if there is a demand for reclaimed water for effluent use (toilet flushing, lawn and golf course watering, etc.)
- DPPCC – SBR, IFAS/MBBR to make further use of the existing tankage, MBR if there is demand for reclaimed water

Drivers for the final process selection will be the need for nitrification, the need for EDC and PPCP removal, cost and the need for reclaimed water.

3.2 Secondary Clarification

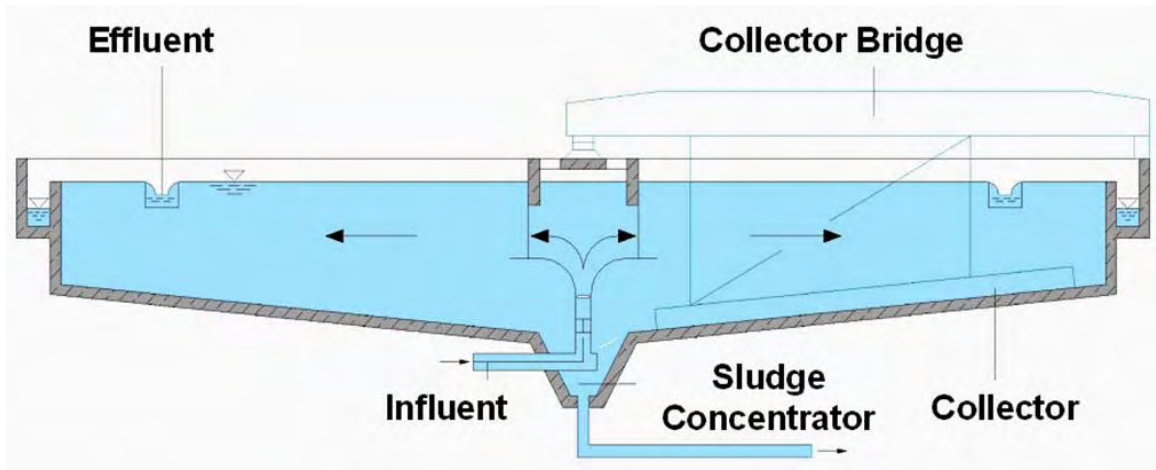
Following most suspended growth and fixed-film secondary treatment processes, it is usually necessary to have clarifiers to separate the biomass from the liquid effluent. Only the SBR, BAF and MBR processes do not require a separate secondary clarification step.

The following conventional and newer technology, e.g. AS, TF, TF/SC, MBBRs and RBCs, solids separation processes would have to be considered for future upgrades of the FCPCC, GNPCC

and, potentially, the NPCC. FCPCC has secondary sedimentation in the form of rectangular clarifiers that were converted from an older abandoned treatment process. The options include:

- *Circular Clarifiers* - Circular clarifiers have become the industry standard for biomass separation in larger treatment facilities. Clarifiers are often designed with purpose-built, centre well flocculation zones, which provide re-flocculation of sheared and dispersed biomass, thus enhancing clarifier suspended solids removal efficiency. Large clarifiers are often outfitted with inboard weirs and effluent launders, to avoid drawing water into the launders that originates near the outside walls, an area that often contains high solids concentrations. Finally, clarifier performance is largely influenced by the ability of the sludge withdrawal system to remove settled solids from the bottom of the clarifier. The most recent sludge scraper designs include a curved scraper blade, with the blade height decreasing as the blade extends from the centre of the clarifier to the outer wall. In addition, suction-based sludge withdrawal systems can increase allowable clarifier peak solids loading rates, while still providing acceptable solids separation efficiency.

Figure 8
A Schematic of a Circular Secondary Clarifier



- *Rectangular Secondary Clarifiers* - In North America, primary clarifiers are most often rectangular and secondary clarifiers are most often circular. One reason for this is the better flow distribution and flocculation that is possible with circular clarifiers. The other is the better likelihood of longer effluent weir lengths and lower approach velocities with circular clarifiers. However, this is not a firm rule as long as attention is paid to the flow distribution system, e.g. addition of inlet baffles in a rectangular secondary clarifier, and having sufficient length of effluent weirs to minimize upflow velocities and suspended solids carry-over. For example, the FCPCC has rectangular secondary clarifiers. A better example (because of the larger size) is the City of Edmonton's Gold Bar WWTP, which has rectangular

secondary clarifiers as a result of a need to keep the footprint as small as possible - this permits common walls that are not possible with circular clarifiers. A photo of the City of Edmonton secondary clarifiers is shown in Figure 9.

Figure 9
City of Edmonton Rectangular Secondary Clarifiers



- *Membrane Filtration* - In a biological treatment system, membrane filtration units can provide biomass separation, replacing traditional secondary clarifiers. Membrane filtration units can be incorporated directly into suspended-growth bioreactors, creating what are termed MBRs. Alternately, the filtration units can be situated in a separate tank located adjacent to the bioreactor. In this configuration, membrane filtration can theoretically be used to provide solids separation for any sort of suspended-growth, fixed-growth, or hybrid secondary treatment system.

As a matter of interest, the City of Edmonton supplies reclaimed water to the petrochemical industry in nearby Strathcona County by treating their secondary treatment effluent with membrane filtration to further improve the effluent quality (eliminating more suspended solids).

3.3 Effluent Disinfection

Generally, there are two conventional approaches for effluent disinfection at wastewater treatment facilities:

- UV irradiation
- Chlorination / Dechlorination

At present, only the DPPCC has to disinfect its effluent and, when it does so, it uses UV light. In general, the trend has been away from chlorination/dechlorination because of issues with handling chemicals and on-going improvements in UV lamp efficiency. It is anticipated that if disinfection was required at the other three RDN wastewater treatment facilities in the future, UV would be the method of choice. That said, UV does not work well with primary effluent and therefore would only be used at GNPCC or NPCC once those plants were upgraded to secondary treatment.

3.4 Additional Considerations

In secondary treatment process evaluations, the RDN will take a number of factors into consideration. Evaluations will consider energy consumption, capital costs, and overall operation and maintenance costs associated with the treatment technology. Further, the effectiveness of the treatment technology to reduce and / or remove levels of EDCs and PPCPs will be considered. Treatment technology evaluations will also identify opportunities for integrated resource management, such as wastewater heat recovery and water reuse (to be discussed further in Discussion Paper No. 8).

4 Summary

This discussion paper has identified that when primary treatment is no longer acceptable at GNPCC and NPCC, the required level of treatment will be secondary treatment. However, if there is demand for reclaimed water or there are concerns about EDCs and PPCPs in the effluent, additional measures, including membrane bioreactors might be needed. Another potential concern is the need for nitrification, not so much for ammonia removal, but more for control over the processes that convert ammonia to nitrate and other products, including nitrous oxide, which in itself is a potent greenhouse gas.

Based on the discussion of the optional secondary treatment processes, the most likely processes for upgrading or expansion of the existing treatment plants would be as follows:

- FCPCC - TF/SC, Activated Sludge, IFAS/MBBR, BAF (if there are footprint issues), MBR if there is demand for reclaimed water
- GNPCC - TF/SC, Activated Sludge, IFAS/MBBR, BAF (if there are footprint issues), MBR if there is demand for reclaimed water

- NPCC - RBC following existing primary treatment plant, SBR (perhaps using existing tankage), MBR if there is a demand for reclaimed water for effluent use (toilet flushing, lawn and golf course watering, etc.)
- DPPCC – SBR, IFAS/MBBR to make further use of the existing tankage, MBR if there is demand for reclaimed water

When the secondary processes are added or expanded, if secondary clarifiers are needed, they could either be circular or rectangular, depending on space availability. Effluent disinfection, if deemed necessary in the future, would most likely be UV irradiation. Additional factors such as energy consumption, capital costs, operation and maintenance costs, EDCs and PPCP reduction and/or removal and opportunities for integrated resource management, will also be considered by the RDN in the secondary treatment process evaluations.

Regional District of Nanaimo Liquid Waste Management Plan Review and Amendments

Cost Estimates for Upgrading/Expanding Treatment Capacity

Issued: November 26, 2008

Previous Issue: None

1 Introduction

The Regional District of Nanaimo (RDN) is undertaking a review of its Liquid Waste Management Plan to determine if amendments to the plan are required at this time. As part of this work, discussion papers are being developed and circulated to the RDN Liquid Waste Advisory Committee for their input and comments. Previous discussion papers have reviewed existing conditions; on-site treatment issues; policies regarding new communities and developer-installed treatment plants; and current flows and loads, effluent quality, and treatment plant capacities.

The purpose of this discussion paper is to update capital and operation and maintenance (O&M) costs for upgrades / expansions of treatment capacity for RDN's existing wastewater treatment facilities, based on previously completed studies. This discussion paper will also provide a revised timeline and cash flow, where applicable, for treatment facility upgrades and expansions.

As presented in Discussion Paper 6 "Options for Secondary Treatment Processes", the RDN has four pollution control centres (PCCs). Two of these PCCs are primary treatment plants that will have to be upgraded to secondary treatment in the future and two are secondary treatment plants that will have to be expanded at some point, perhaps using the same technologies or a different technology. The primary treatment plants include the Greater Nanaimo Pollution Control Centre (GNPCC) and the Nanoose Pollution Control Centre (NPCC). The secondary treatment plants include the French Creek Pollution Control Centre (FCPCC) and the Duke Point Pollution Control Centre (DPPCC).

The updated cost estimates for secondary treatment upgrades to RDN PCCs presented in this discussion paper do not account for potential opportunities for integrated resource management that may be included as part of the upgrades. Information related to integrated resource management strategies will be presented in a subsequent discussion paper, Discussion Paper No. 8.

2 Approach

The capital cost estimates for PCC upgrades were based on previous studies. Capital costs were updated based on consideration of various price/cost indices and was uniformly applied to all relevant costs. Operations and maintenance costs are based on a fixed percentage of the capital

cost, 4% of capital, intended to cover equipment maintenance and repair costs, chemical costs, electrical costs and additional staffing costs.

3 Greater Nanaimo Pollution Control Centre

A detailed capital cost assessment and upgrading plan for GNPCC was outlined in the report titled “Greater Nanaimo Pollution Control Centre Stage 3 Expansion – Process Alternatives and Layouts” (Associated Engineering, 2003) (the report) and, in particular, Appendix J - Technical Memorandum No. 9 – Development Plan and Cost Estimates (Issued October 1, 2003). The purpose of this section of this discussion paper is to update this previous cost estimate based on a number of factors.

3.1 Staged Upgrading Items

Upgrading of the existing GNPCC has been and will be done in stages. The initial upgrade stage is Stage 3. Stage 4 would be the secondary treatment upgrade and Stage 5 would be future expansion of the secondary treatment plant. Some aspects of Stage 3 have already be implemented, others have are partially completed or still need to be completed. Some upgrades could occur in either Stage 3 or Stage 4. Others could occur in Stage 4 or Stage 5. This list of items for the various stages of upgrade include the following:

Stage 3 – Primary Upgrading and Expansion

- Twin outfall land section
- Chemically-enhanced primary treatment – summer operation (on-going)
- Third digester
- Odour control upgrades (partially completed)

Stage 3 or Stage 4 – Upgrading and Expansion

- New headworks (Screens, grit tanks, etc)
- New Operations building (being completed)
- New biosolids dewatering facility (if needed)
- Cogeneration – Stage 1
- Construct 4th primary clarifier
- Construct new electrical power distribution building

Stage 4 – Secondary Upgrading

- Construct secondary treatment trains including secondary clarifiers
- Construct UV disinfection system (if required)
- Construct 4th digester to accommodate increase solids loadings
- Expand gravity thickening facility for primary sludge

- Construct dissolved air flotation (DAF) system for secondary sludge
- Expand existing sludge heating capacity
- Construct new flow monitoring facility
- Modify outfall diffuser
- Expand odour control facilities

Stage 4 or 5 – Upgrading and Expansion

- Expand headworks – add third screen
- Cogeneration – Stage 2 – to deal with increased gas production and energy demands

Stage 5 – Secondary Expansion

- Expand secondary treatment process
- Expand primary and secondary sludge thickening capacity
- Expand biosolids dewatering capacity

3.2 Previous Cost Estimates

The previous cost estimate developed in the report (Associated Engineering 2003) was expressed in 2002 dollars, the ENR Construction Cost Index (CCI); at the time of the cost estimates was 6500. A summary of the estimates from the 2003 GNPCCC report is as follows:

Stage	Amount (2002 \$)
Stage 3 – Primary Treatment, Upgrading and Expansion	\$7,500,000
Stage 3 or 4	\$10,600,000
Stage 4 – Secondary Treatment Upgrading	\$26,400,000
Stage 4 or 5	\$4,100,000
Stage 5 – Secondary Treatment Expansion	\$9,100,000
Total Development Plan	\$57,700,000

3.3 Revised Cost Estimate

3.3.1 Approach

The approach taken in updating the 2003 estimate can be summarized as follows:

- .1 The cost estimates were updated to August 2008.

- .2 Construction Value was updated using STATSCAN Table 327-0039 - Price indexes of non-residential building construction, industrial structures for Vancouver, B.C. (1)
- .3 For work that has been completed, these have been removed from the updated cost estimates.
- .4 Cost estimates reflect revisions to previous cost estimates due to subsequent design activities. In particular co-generation, digestion and primary sludge thickening costs.
- .5 The allowance for Engineering, Contingencies and other factors increased by 10% to reflect additional soft costs such as geotechnical, environmental, regulatory, administration and permitting costs. The total allowance included for these items is 40%.

Note that the STATSCAN values were taken in lieu of the more common Engineering News Record Construction Cost Index (ENR CCI) since the STATSCAN index best reflected the market conditions experienced in BC since 2003. A comparison of the two indices is provided on the following table (for information purposes ENR CCI Values have also been presented for the cities of Toronto and Seattle.)

Index	STATSCAN Table 327-0039	ENR- CCI (North America)	ENR – CCI (Seattle)	ENR – CCI (Toronto)
Index Value 2002	108.3	6500	7560	8100
Index Value August 2008	189.5	8362	8762	9555
Total Increase (%)	75 %	29 %	16 %	18 %
Average Year to Year Annual Increase (%)	9.8 %	4.3 %	2.5 %	2.8 %

Based on the above, the previous construction cost estimates were increased by 75% (by multiplying them by 1.75) and then the resulting product was multiplied by 1.4 to take into account contingencies and engineering. Additional amounts, not included here, would have to be added to account for RDN project financing costs. O&M costs are estimated, at this level of accuracy, to be approximately 4% of capital, which is intended to cover future equipment repairs, chemical use, electrical use, and staffing.

3.3.2 The Revised Estimate

Based on the above approach, a summary of the updated costs estimates to August 2008 follows:

Stage	Original Amount (2002 \$)	Updated Amount (2008 \$)	Estimated O&M Cost (2008 \$)
Stage 3 – Primary Treatment, Upgrading and Expansion	\$7,500,000	\$11,450,000	\$460,000
Stage 3 or 4	\$10,600,000	\$17,750,000	\$710,000
Stage 4 – Secondary Treatment Upgrading	\$26,400,000	\$55,700,000	\$2,230,000
Stage 4 or 5	\$4,100,000	\$1,150,000	\$46,000
Stage 5 – Secondary Treatment Expansion	\$9,100,000	\$17,300,000	\$692,000
Total Development Plan	\$57,700,000	\$103,350,000	\$4,138,000

3.3.3 Summary of GNPCC Cost Updates

Based on the previously prepared cost estimates, we have updated the estimated costs for upgrading the GNPCC to reflect escalated costs to August 2008. The revised estimate considers projects already completed as well as revised values due to subsequent capital projects and engineering studies carried out since the preparation of the original estimate. In addition, the allowance for engineering, contingencies and other factors has been increased from 30% for most items to 40%. It should be noted that costs from 2008 will escalate from now until the time of construction. As a result, as time progresses, future cost estimates and forecasts will be required.

3.4 Cash Flow Requirement for GNPCC Upgrades

Based on the above, the cash flow requirements for the GNPCC facility upgrades would likely be as follows:

Stage	Updated Amount	Year(s) for Implementation
Stage 3 – Primary Treatment, Upgrading and Expansion	\$11,450,000	2009 to 2012
Stage 3 or 4	\$17,750,000	2009 to 2017
Stage 4 – Secondary Treatment Upgrading	\$55,700,000	2013 to 2017 with secondary trains in by 2015
Stage 4 or 5	\$1,150,000	2020 to 2028
Stage 5 – Secondary Treatment Expansion	\$17,300,000	2029 to 2032
Total Development Plan	\$103,350,000	

4 French Creek Pollution Control Centre

The FCPCC currently operates with primary treatment followed by trickling-filter solids contact (TF/SC) secondary treatment, including secondary clarification. While treatment processes other than TF/SC might be selected for the next expansion of the treatment plant, the estimated costs for expansion of the secondary process are currently based on the TF/SC process. These costs were most recently updated in 2006.

The Stage 4 expansion, scheduled to occur in 2011, would include the following:

- Two new trickling filter bays located immediately beside and to the north of the current trickling filter, additional solids contact system improvements
- Two new secondary clarifiers located to the north of Morningstar Creek.
- A new cycled biological sludge (RBS) pump station to return solids from the new secondary clarifiers to the solids contact tanks.
- Retrofitting of some of the existing secondary clarifiers into primary clarifiers, e.g. No. 1 secondary would be converted to No. 4 primary.
- Expansion of the ATAD sludge digestion system (tanks already in place).
- Improvements to the effluent pumping system.

4.1 Previous Cost Estimates

Previous cost estimates for future upgrades at the FCPCC were most recently presented in a December 2006 upgrades report entitled “Performance Evaluation and Upgrading Plan Update”. Some of the cost items included in that report have since been implemented or are in the process of being implemented. Of those that remain, the major ones that remain include those in the table below:

FCPCC Upgrade Item	Amount (2006)
Implement Short-term chemically-enhanced primary treatment	\$590,000
Commission Fifth ATAD digester	\$250,000
Install second dewatering centrifuge	\$550,000
Add RBS pumping capacity	\$130,000
Stage 3 – Phase 2 – secondary treatment optimization and new secondary clarifier	\$2,090,000
Stage 4 – TF/SC Plant Expansion No.1 (including outfall)	\$28,000,000
Total Development Plan	\$ 31,610,000

4.2 Revised Cost Estimates

Based on the work to update the GNPCC cost estimates, we have again used the STATSCAN index as the basis for the cost increases. In this case, the indices of concern are the 2006 value 151.9 and the latest 2008 value, 189.5, an increase factor of about 24.75%. Since the 2006 FCPCC cost estimates already included approximately 40% for engineering and contingencies, no further cost increase factors will be used to update the 2006 estimates to 2008 dollars. The results of the 24.75% cost increase factor and the 4% O&M cost estimate are shown in the following table:

FCPCC Upgrade Item	Estimated Cost (2006 \$)	Estimated Cost (2008 \$)	Estimated O&M Cost (2008 \$)
Implement short-term chemically-enhanced primary treatment (CEPT)	\$590,000	\$740,000	\$30,000
Commission fifth ATAD digester	\$250,000	\$315,000	\$13,000
Install second dewatering centrifuge	\$550,000	\$690,000	\$28,000
Add RBS pumping capacity	\$130,000	\$165,000	\$7,000
Stage 3 – Phase 2 – secondary treatment optimization and new secondary clarifier	\$2,090,000	\$2,610,000	\$105,000
Stage 4 – TF/SC Plant Expansion No.1 (c/w outfall)	\$28,000,000	\$34,910,000	\$1,400,000
Total Development Plan	\$31,610,000	\$39,430,000	\$1,583,000

4.3 Cash Flow for Major Upgrades

FCPCC Upgrade Item	Estimated Cost (2008 \$)	Year(s) for implementation
Implement short-term chemically-enhanced primary treatment (CEPT)	\$740,000	2009 or as needed
Commission fifth ATAD digester	\$315,000	2010 or as needed
Install second dewatering centrifuge	\$690,000	2009
Add RBS pumping capacity	\$165,000	Only if needed
Stage 3 – Phase 2 – secondary treatment optimization and new secondary clarifier	\$2,610,000	May not be needed if CEPT is successful
Stage 4 – Secondary Treatment Plant Expansion No.1 (c/w outfall)	\$34,910,000	2010-2012
Total Development Plan	\$39,430,000	

5 Nanoose Pollution Control Centre

The NPCC is a small primary treatment facility designed to accommodate a service population of 1,500 persons, with a current service population of approximately 800 residents. The RDN committed, through the 1997 Liquid Waste Management Plan, to upgrade the NPCC liquid-stream treatment process to include secondary treatment when the service population for NPCC reaches 6,000 persons. In 1997, it was likely assumed that this population would be reached before 2010 through growth and potential trunk sewer expansions to Madrona, Wall Beach, Delanice Way, Beachcomber, Red Gap and Garry Oak (Reference: pg. 16 and Table 4.1 of the LWMP). As a result, in the 1997 LWMP, this population-triggered upgrade was scheduled for the 2005-2010 period. In reality, the extensions of the trunk sewer system were not made and the growth in the service populations from 500 in 1997 to 800 recently, has been much slower than had been anticipated. On this basis, there is merit in extending the 2010 date for the upgrading of Nanoose to secondary treatment to something more realistic. This is especially true in light of the relatively low service population and the cost of upgrading to secondary treatment that would have to be borne by this population.

Class D capital cost estimates for secondary treatment upgrades for the NPCC were developed (Associated Engineering, 2006). At that time, it was arbitrarily assumed that the RDN would have

secondary treatment operational at NPCC by 2012, independent of service populations. The capital cost estimate and operations and maintenance costs for secondary treatment upgrades were developed using the following assumptions:

- All new works would be related to secondary treatment and/or the significantly increased treatment capacity.
- Primary treatment would be decommissioned, rather than maintained and expanded.
- Ultraviolet-based effluent disinfection system.
- Treatment system would not include ammonia removal at this time.
- Solids-stream handling systems that would include aerobic solids digestion and mechanical dewatering.
- Effluent outfall was excluded from the cost analysis.

Cost estimates included engineering and construction costs and contingency allowances. Cost estimates were developed based on similarly sized facilities located in southwestern British Columbia. The developed capital cost estimate for the secondary treatment facility was \$10,400,000 in 2006 dollars. Similar to the capital cost estimate, the operations and maintenance cost was developed using data from similar and recently constructed treatment facilities. The anticipated O&M cost, assuming a 6,000 person service population is in place would be about \$400,000 per year in 2006 dollars. Based on the FCPC discussions in Section 4, the factor to increase these previous 2006 cost estimates to 2008 is approximately 24.75%, which would bring the new cost estimates for NPCC upgrades to approximately \$12,975,000 for capital cost and \$ 500,000 for O&M costs.

Based on the current service population (approximately 800 persons), with an average of a three-person household, the capital cost of this upgrade would be approximately \$48,600 per household, well above a reasonable level of affordability. Based on this cost, unless additional service population is added very quickly, upgrading the NPCC by 2010 would be unacceptably financially onerous on the specified service area population. While the 6000 person trigger population might be too far in the future, it would appear that for the NPCC, some date between a 2010 implementation date and the 6000 person population would be more appropriate than 2010.

6 Duke Point Pollution Control Centre

DPPCC is a secondary treatment facility consisting of two sequencing batch reactors. The DPPCC is currently the only RDN's facility with a Ministry of Environment approved operational certificate.

As presented in Discussion Paper No. 5 (Associated Engineering, 2008), the DPPCC is generally well below its current design capacity.

The current estimated cost to twin the DPPCC is approximately \$ 4.7 million.

The timing of such an upgrade depends entirely on the increase to the connected sewered population. At this point, it is not clear when such an increase in capacity would be needed.

7 Future Staffing Requirements

Moving to secondary treatment at the GNPCC and expanding the FCPCC will likely require an increase in staff. At present there is one Operations Supervisor for all plants plus 11 staff at GNPCC (1 Chief Operator, 4 Operator Level 3s, 4 Operator Level 2s, and 2 Operators-in-Training) and 9 staff at FCPCC (1 Chief Operator, 2 Operator Level 3s, 4 Operator Level 2s and 2 Operators-In-Training). In a September 8, 2008 memorandum to the RDN on future staffing levels, Associated Engineering, estimated future staffing levels for GNPCC and FCPCC based on data from a Water Environment Federation survey of 110 wastewater treatment plants regarding their staffing levels (WEF, 1998). The data were examined in two different ways: straight numbers and numbers broken down to staff per 1000 m³/day. The results were the upgrade to secondary treatment at GNPCC could require up to a total of 29 operational staff depending on the process selected, the level of weekend staffing and the degree to which the future plant will be automated. For the FCPCC, the initial 2012-13 expansion would require a total of 10 staff (an increase of one) with the future 2025 expansion requiring an additional 3 staff, for a total of 13.

The above estimates are based on a 7 day per week operation and include additional duties, such as maintenance of the RDN pump stations and attending the DPPCC and NPCC. If the plant is left unstaffed over the weekend or if the staff did not do pump stations, staffing levels could be lower. For example, the Comox Valley Pollution Control Centre (CVPCC) serving Courtenay and Comox and area is a secondary treatment plant that is only staffed Monday to Friday. The CVPCC has average flows in the range of 15,000 m³/day (about the same as the future FCPCC expansion flows). They currently have one Chief operator, 6 Level 3 operators, and one Level 2 operator at the treatment plant, plus two more staff at their biosolids composting operation, for a total of 10 staff. They are planning on adding one additional staff in the near future.

Another comparable example for future staffing requirements is the City of Abbotsford's JAMES PCC. The JAMES plant is a TF/SC plant like FCPCC but the flow are significantly higher, e.g. average flows of 65,000 m³/day, which is the upper range of the future upgraded GNPCC. The JAMES plant is currently staffed by 1 plant manager, 8 operators, 2 millwrights, 1 electrician and 1 lab staff, for a total of 13. The plant manager indicated that this level is reflective of the fact that they do not staff the plant on the weekend, they do not do any pump station maintenance and, perhaps most importantly, the TF/SC process is not as staff intensive as some other wastewater treatment processes like activated sludge.

Based on the above the future level of staffing needs to be a consideration of part of the GNPCC secondary process selection. In addition, policies on weekend staffing and levels of automation will have to be considered during the preliminary design of the future treatment plant.

8 Summary

Previous cost estimates for GNPCC, FCPCC, NPCC and DPPCC have been updated using STATSCAN construction related indices and, in some cases, increases to the engineering and contingency allowances from 30% to 40%. These updated costs have then been summarized and dates associated with their likely implementation have been assigned. For the GNPCC, the amounts are significant, especially when secondary treatment is implemented starting in 2013. The costs for the FCPCC are also significant and are primarily related to the expansion of the secondary treatment process. The cost to upgrade the NPCC to secondary are shown to be too high to be affordable for the current small connected population. On this basis, it is suggested that the original NPCC secondary treatment implementation date of 2010 was based on an assumed need to service 6000 people, not the current 800 connected people and, as a result, the implementation date should be extended beyond 2010. DPPCC currently has so much excess capacity that the timing of secondary expansion is completely unknown and dependent on decisions to expand the sewer service area.

Future staffing level requirements were reviewed. FCPCC will likely need to increase its staff from 9 persons to approximately 13 with future expansions. GNPCC will likely also have to increase its staff levels from the current 11 to upwards of 29. This latter level is significant and could be reduced by selecting less personnel-intensive treatment processes as well as limiting staffing to five days per week and increasing the level of plant automation.

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Discussion Paper

Date: April 20, 2009
To: Sean De Pol, RDN – Manager, Wastewater Services
From: David Lycon, AECOM – Senior Wastewater Engineer
Project Number: 111660 (03)
Subject: Integrated Resource Management Opportunities for the Regional District of Nanaimo

Distribution: RDN – Lindsay Dalton
AECOM – Will Wawrychuk, Catherine Dallaire, File

draft for discussion

1. Introduction

As the Regional District of Nanaimo (RDN) Liquid Waste Advisory Committee reviews the Liquid Waste Management Plan (LWMP), the wastewater industry is undergoing a paradigm shift. Increasingly municipalities are considering options that will allow them to reduce the energy they consume and optimize the resources they can recover from the treatment of their wastewater. In B.C., the provincial government is encouraging municipalities and regional districts such as the RDN to take into consideration such options.

This discussion paper includes a review of the Province's view on Integrated Resource Management (IRM), or Integrated Resource Recovery (IRR) as it is sometimes referred to. They are interested in ways by which valuable resources can be recovered both from the solid and liquid components of wastewater. This paper will further summarize the relevance of each opportunity to the RDN's main wastewater treatment plants (Greater Nanaimo Pollution Control Centre and French Creek Pollution Control Centre). Each relevant opportunity will be further scrutinized as the process selection exercise for each plant is developed.

1.1 Wastewater Solids

Solids in wastewater treatment processes represent a significant potential source of resource recovery (Table 1). The solids are referred to as either *sludge* or *biosolids*. The term *sludge* refers to the solids prior to treatment for beneficial use, where *biosolids* refers to solids after treatment.

Table 1. Resources Recoverable from Wastewater Treatment Solids¹

Type of Recovered Product	Use of Product
Methane	Electricity, Heat, Fuel
Gases	Electricity, Heat
Oil, fat, greases	Bio-Diesel, methane
Phosphorus	Fertilizer
Nitrogen	Fertilizer
Metals	Coagulants
Inorganic material	Building material
Organic compounds	Organic acid production
Inoculum	Bio-Hydrogen gas production
Crystal proteins, spores	Bio-pesticides production

This list of examples serves to show the direction the wastewater industry is taking. Some of the technologies listed in the table are still not proven to be viable in the North American context. This discussion paper will focus on the resource recovery options that represent the most promising opportunities for the RDN.

1.2 Liquid Component of Wastewater

The liquid component of wastewater, specifically treated wastewater called effluent, holds water that can be reused for irrigation and heat. The heat stored in a wastewater treatment plant's effluent comes in part from the residential and commercial hot water heaters used across the Regional District, and from within the plant's treatment processes themselves. The hot water used for domestic and commercial purposes is sent down the drain at a relatively high temperature which means with thermal energy/heat that can be recovered and reused. The recovered waste heat from the effluent can be reused for space and domestic water heating.

Depending on the level of treatment and intended use, the effluent can also be used as source of raw water, replacing the requirement for potable water from the Regional District's network. While a desirable practice, it is not always viewed as a priority given the Province's climate and availability of raw water sources.

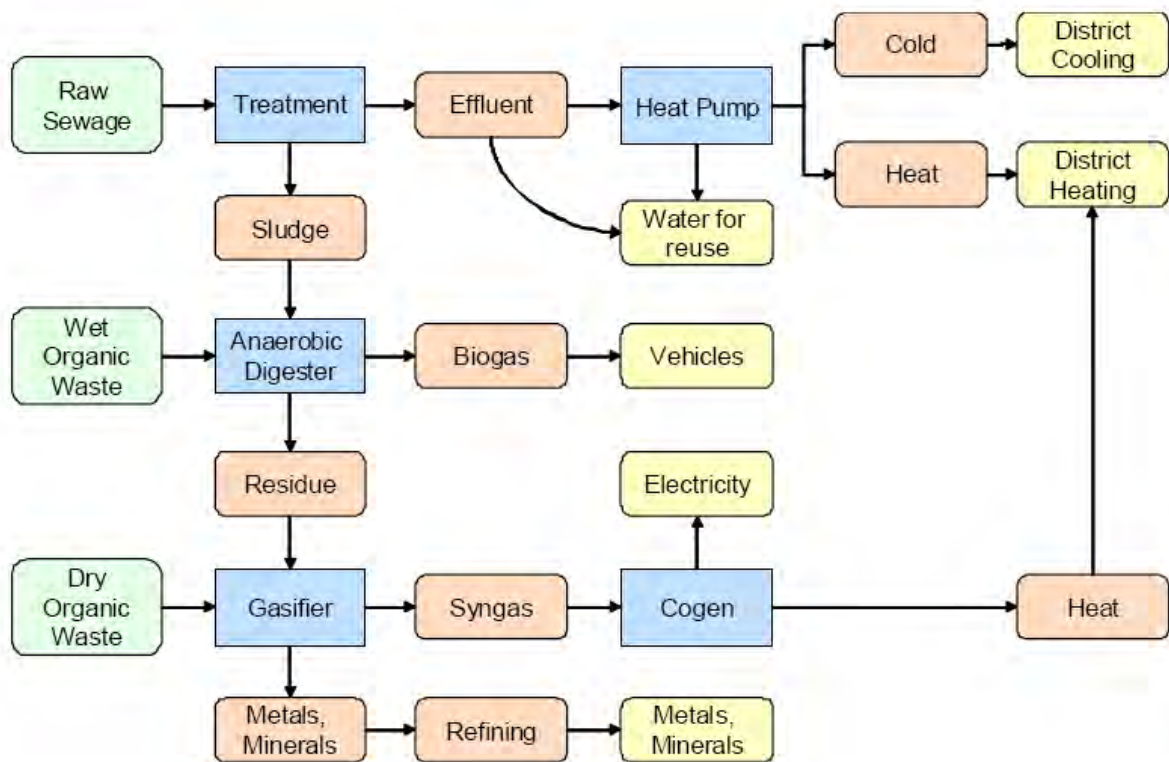
2. Supporting Provincial Policy

In February 2008 the Ministry of Community Services published the Phase I Study Report on IRM "Resources from Waste". The IRM approach sees the amalgamation of the three urban waste management streams for wastewater, stormwater and solid waste. It aims to create a more sustainable and integrated approach to wastewater management and resource recovery, and has the following main characteristics:

¹ Table1 was developed by the Water Environment Research Foundation (WERF) in a state of science report on recoverable resources from sludge.

- It promotes smaller localized facilities for the treatment of wastewater to reduce pumping needs and the ensuing greenhouse gas emissions from energy use;
- The capture of energy (Figure 1) by the combination of municipal organic solid waste and sludge to increase biogas production;
- The re-use of treated wastewater at a tertiary level for irrigation, commercial and industrial consumption, or for groundwater recharge; and
- It is driven by the highest and best use, and value business case.

Figure 1. Resource Recovery Pathway



Beyond being environmentally focused, a principle that was adopted when the IRM was developed is that in future infrastructure planning net revenues generated from recovered resources should be placed as a priority before engineering options, design and costs. This presents a new business case approach, similar to the private sector's, for assessing the most viable method for waste management.

The IRM approach itself coincides with many existing provincial policies including:

- The Climate Action Plan to reduce GHG emissions in the province by 33% below 2007 levels by 2020;

- The Climate Action Charter of which the RDN is a signatory;
- The Energy Plan which aims to reduce GHG emission from energy production; and
- The Bio-Energy Strategy which aims that by 2020 bio-fuel be equal to 50% of renewable fuels produced in the province.

As the Regional District considers sustainable approaches in the review of its LWMP, it aligns itself with the goals of the Province. This is an alignment that has benefited other communities as they have received infrastructure grants to implement said goals.

3. Recoverable Resources

3.1 Methane (Biogas)

In wastewater treatment plants methane gas is produced and collected within anaerobic digesters. The gas is produced by bacteria as they decompose the volatile organic material present in the sludge. The gas in turn can be used to generate electricity, heat and/or fuel. The practice of anaerobic digestion has been common in wastewater treatment plants for a number of years, but it is only over the past 10 to 15 years that recovery of the methane has become more of an area of interest.

3.1.1 Anaerobic Digestion

Anaerobic digestion involves the decomposition of the volatile organic matter and sulfate in sludge by bacteria in the absence of oxygen. In stabilizing concentrated sludge, anaerobic digestion produces gas that contains approximately 65-70% of methane (CH₄) by volume, 25-30% carbon dioxide (CO₂), and small amounts of nitrogen (N₂), hydrogen (H₂), hydrogen sulfide (H₂S), water vapor, and other trace gases. The extent of methane production and sludge stabilization depends on temperature and providing sufficient residence time to allow significant destruction of the organics to occur by the bacteria.

Temperature is important in determining the rate of digestion, as biochemical reaction rates increase with temperature. Most anaerobic digestion systems, including Greater Nanaimo's, are designed to operate with bacteria in the mesophilic range, between 30 and 38°C. Other systems are designed for operation with bacteria in the thermophilic temperature range of 50 to 57°C.

Thermophilic digestion is much faster than mesophilic digestion because of the higher temperature, and subsequent higher reaction rate. Advantages cited for thermophilic digestion include increased solids destruction capability, improved dewatering, and increased bacterial destruction. Disadvantages are higher energy requirements for heating, poorer-quality supernatant containing larger quantities of dissolved solids, odours, and less process stability.

The IRM favours anaerobic digestion in the thermophilic range since it produces higher methane yields, but there are other opportunities for enhancing the performance of anaerobic digesters. This is primarily accomplished by increasing the residence time of sludge in the digester. Residence time of sludge is defined by:

- Solids retention time, the average time the solids are held in the digestion process; and
- The hydraulic retention time, the average time the liquid is held in the digestion process.

Concentrating the feed sludge going into the digester or thickening a portion of the digesting sludge can increase the solids retention time and reduce the hydraulic retention time. In short, thickened sludge contains more organic food for the bacteria to convert into biogas and less water that takes up valuable digester space. The Regional District is already familiar with this practice as they have recently implemented gravity thickeners for the primary sludge feed into the digesters at the Greater Nanaimo Pollution Control Centre (GNPCC).

3.1.2 Co-Generation of Electricity & Heat

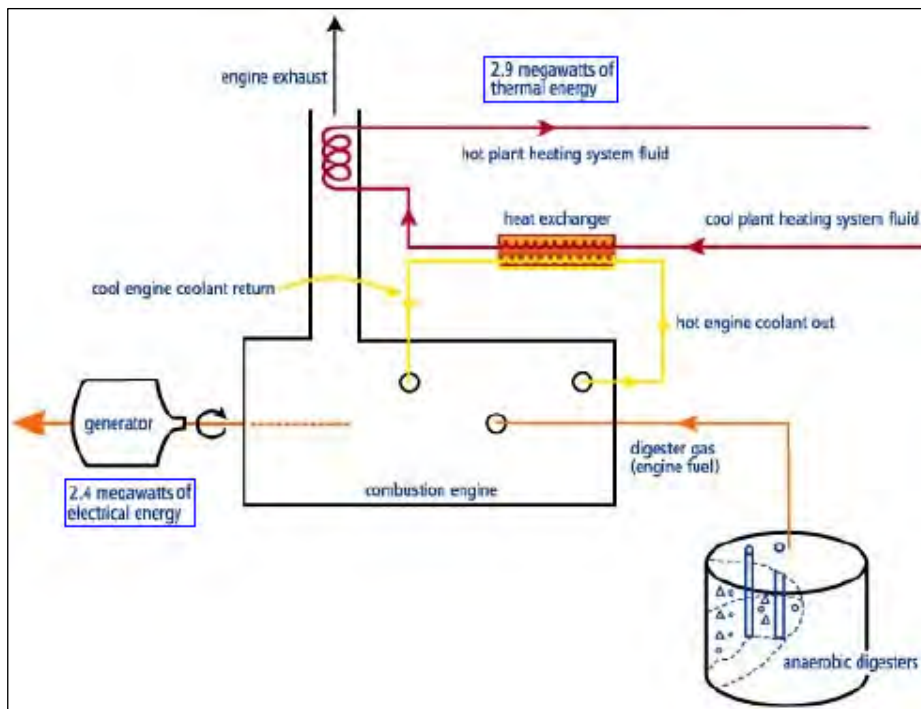
Methane gas at standard temperature and pressure (20°C and 1 atm) has a lower end heating value of 36 MJ/m³. Because digester gas is only 65% methane the lower end heating value of digester gas is approximately 23 MJ/m³. By comparison natural gas which is a mixture of methane, propane and butane has a lower end heating value of 38 MJ/m³. Nonetheless, digester gas is highly flammable and can be used as fuel for cogeneration of heat and electricity.

Cogeneration has a long history in Canada with the first plants being built for radar sites in the Arctic in the 1960s. There are several industrial and municipal installations where surplus power, over and above that required for plant purposes, is sold to local electric utilities. According to Environment Canada, cogeneration could supply more than 20% of the country's current electricity needs.

Before cogeneration processes are installed, wastewater treatment plants typically use the digester gas for building and process heating purposes. In the warm summer months this heat demand decreases and the excess digester gas is flared. Cogeneration processes can put to good use the excess biogas by producing electricity with internal combustion engines that drive generators and recover the heat produced in gas combustion. The overall energy recovery efficiency is reported to be 75-85%.

As an example, the City of Ottawa does this at its Robert O. Pickard Environmental Centre. The cogeneration facility at the Pickard Centre converts 32% of the available energy in the digester gas to electricity and 48% to heat. This electrical power (2.4 megawatts) and thermal energy (2.9 megawatts) reflects enough electric power to supply 2,000 homes and enough heat for 400 homes. The cogeneration plant was built at a cost of \$4.5 million, which in turn saves Ottawa taxpayers \$650,000 annually on the purchase of electricity. At the Pickard Centre, digester gas from the anaerobic digesters is piped and burned by three continually running combustion engines located in the cogeneration facility. The digester gas serves as fuel for the engines that drive the generators, producing the electricity. A schematic of the overall process is illustrated below in Figure 2.

Figure 2. Typical Wastewater Treatment Plant Co-Generation Facility



As illustrated above in Figure 2, heat generated from the gas combustion is captured and utilized in two ways:

- Circulating coolant runs through cavities in each engine body and is warmed to approximately 120°C. The hot coolant is then channelled to a heat exchanger where the heat is transferred to the plant heating system; and
- Exhaust gas runs through a heat exchanger. The heat recovered in this process is also transferred to the plant heating system.

3.1.3 Co-Digestion of Biosolids & Municipal Solid Waste

The IRM model promotes the practice of mixing organic kitchen waste with wastewater treatment plant sludge for increased biogas production by digesters. The combined anaerobic digestion of sludge and municipal organic solid waste is a proven technology. This practice has been put into full scale operation in Sweden. However, according to a study performed by Gartner Lee (now AECOM) for the RDN, the anaerobic digestion of organic solid waste although technically viable is not economically viable in the North American context.

Recently it was recommended by AECOM in a draft Technical Memorandum (February 16, 2009) that the opportunity for co-digestion of organic solid waste and wastewater treatment plant sludge not be considered further by the RDN. The reasons being that:

- Based upon their Solid Waste Management Plan, the RDN is moving towards a cost-effective, timely, and sustainable diversion of organic waste from its solid waste stream;
- Adding the element of co-digestion would require a significant investment for larger digester(s) which may not be able to be sited at the GNPCC; and
- Creating an end use for the surplus biogas would increase the required infrastructure investment.

3.1.4 End Uses for Biogas

Biogas from anaerobic digestion can potentially be sold back to natural gas utilities and reformed to hydrogen or into liquid fuels such as ethanol. According to the IRM, the best use for biogas would be to displace gasoline or diesel for transportation. However these options for biogas do not represent the most promising opportunities for the RDN at present given the size and location of its wastewater treatment plants.

3.2 Compost

Composting is a viable method for sludge stabilization and resource recovery after it has been dewatered. Most composting operations are aerobic and consist of the following steps:

- Preprocessing - the mixing of dewatered sludge with an amendment material and/or a bulking agent;
- High-rate decomposition by micro-organisms (bacteria, actinomycetes and fungi) and aeration of the mixed biosolids/amendment pile either by the addition of air, by mechanical turning or both;
- Recovery of the amendment and or bulking agent (if applicable);
- Further curing and storage, which allows for additional stabilization and cooling of the compost;
- Postprocessing, screening for the removal of non-biodegradable material (if applicable); and
- Final disposition.

This practice is becoming increasingly common in response to an anticipated shortage of landfill space in many communities. In addition to leaving space at the landfill composting sludge creates a fertilizer superior to commercial chemical fertilizers, or can be used as cover for landfill completion. It contains plant nutrients such as phosphorus and nitrogen which are released over a long period of time and the humus quality of the compost helps to retain water and nutrients.

The RDN is already familiar with biosolids diversion from their Regional landfill. Biosolids from the two pollution control centers were diverted from the landfill and are being successfully used for land reclamation. Biosolids from both the GNPCC and FCPCC are managed by Vancouver Island University and are used as part of a Forest Fertilization Project on their woodlot. The university has forest sites which lack soil nutrients that have strongly benefited from the application of biosolids. According to the University's website (<http://www.viu.ca/forestry/biosolids/index.asp>), the project which began in 1992 has seen increases in tree growth from 50% to 400%. Trees treated with

biosolids also appear healthier; needles and buds are longer, greener and more numerous. It serves as an example that the health of forests can be improved in an ecologically sensible way.

3.3 Phosphorus

Wastewater contains an important component of fertilizer, phosphorus. If discharged to the environment in excess it can cause the depletion of water resources by eutrophication. Eutrophication is the enrichment of water bodies with nutrients such as phosphorus and nitrogen which causes growth of algae beyond the carrying capacity of the ecosystem. This leads to the decline of animal and other plant populations because of decreased light in the water column and increased CO₂ concentrations.

Luckily, phosphorus can be recovered from sludge and increasingly there is reason to do so as the reserves held in the Earth's crust are limited and depleting because of increasing global demand. In an article published in 2004, Helmut Kroiss of the Vienna University of Technology wrote: *"The conclusion is that phosphorus is the most valuable compound in sewage sludge from the sustainability point of view but also in regard to the economic value. The recovery of phosphorus can become a vital resource for food production of the global population in the foreseeable future."*

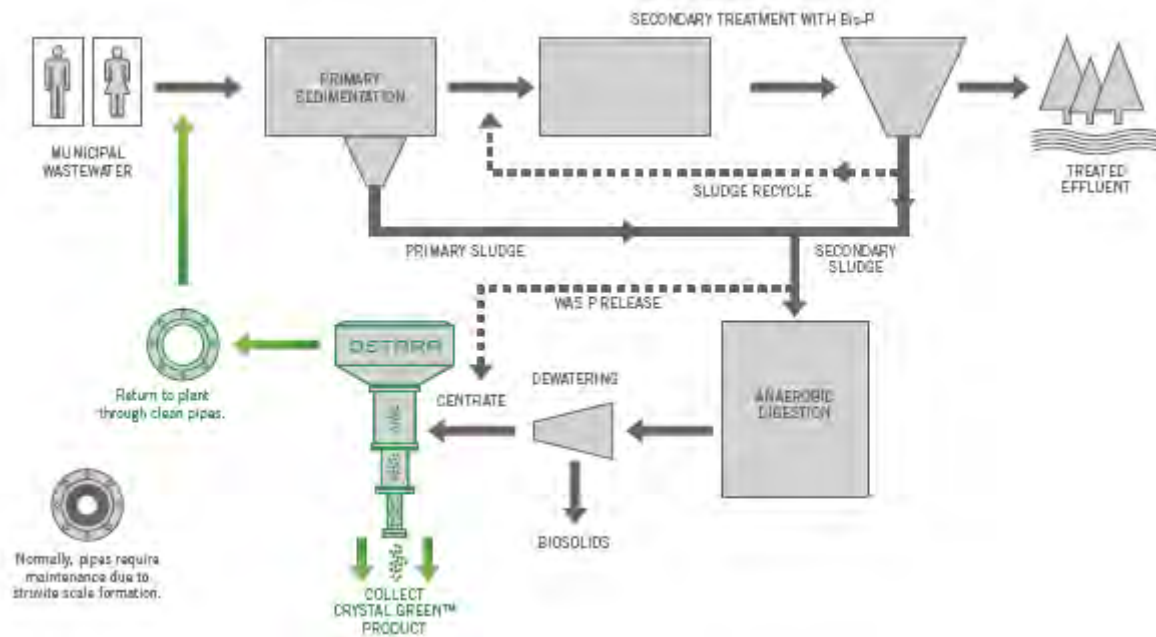
3.3.1 Struvite

Phosphorus can be recovered chemically and biologically. An innovative process was developed to recover phosphorus from sludge (75 to 80%) at the University of British Columbia and commercialized by Ostara Nutrient Recovery Technologies Inc. of Vancouver. The process recovers phosphorus in the form of struvite (crystalline magnesium ammonium phosphate). In its commercial form the Ostara process by-product is referred to as Crystal Green™. Unlike most fertilizers, Crystal Green™ dissolves slowly over a nine-month period and therefore is environmentally safe because it does not leach into the water table, or run off the surface of the ground. It is currently used in agriculture, horticulture and silviculture.



The Ostara process requires the centrate from dewatered anaerobically digested sludge. The centrate is usually returned to the beginning of the treatment process for further treatment. By undergoing the Ostara treatment process, the centrate returns to the head of the plant with less nutrients which increases plant capacity and reduces the scaling of pipes due struvite accumulation. Figure 3 provides a basic level overview of how this process fits into the overall wastewater treatment plant process.

Figure 3. Nutrient Recovery and Struvite Mitigation



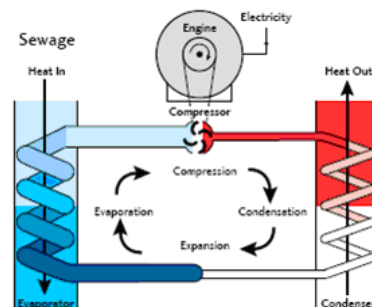
There are Canadian wastewater treatment plants that have implemented the technology. The City of Penticton and Metro Vancouver did so at a pilot scale and the Goldbar plant in Edmonton became the first commercial-scale producer of this product following a successful pilot study. It produces approximately 500 kg/d of Crystal Green™ by treating the effluent of a city of 700,000 people.

3.4 Effluent Heat

Much of the energy that is used to heat potable water by its users for domestic and commercial use is wasted to the sewer and then to the environment via the treatment plant's effluent. Municipal wastewater heat is an advantageous source of community energy for water and space heating. It is stable and available in substantial quantities. The heat contained in 10°C to 20°C effluent can be safely captured and increased to a useable temperature as high as 65°C with the use of heat pump technology.

3.4.1 Heat Pump

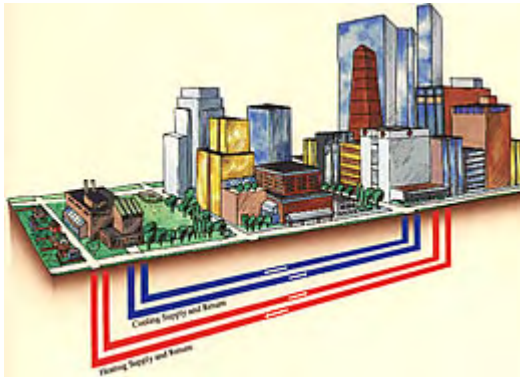
The heat pump is a proven technology that operates in a fashion similar to a refrigerator by transferring thermal energy from a low temperature source and making it available at a higher temperature. It is highly efficient; for the same electricity input into the compressor motor, heat pumps provide three times the heat of a conventional electric heating system.



3.4.2 District Heating Systems

The upgraded effluent heat can be used within the wastewater treatment plant or distributed to residential, institutional and commercial users by means of a district heating system (DHS), also known as district energy system. Although wastewater heat is the main source of energy, back up boilers are always included for peak demand during the coldest days of the year. There are two types of DHS, low temperature and high temperature network systems.

3.4.2.1 Low temperature networks



Low temperature networks are best for cases in which the pipeline must extend more than one kilometre from the utility to the customers. The temperature of the water that circulates from the utility to the user ranges usually from 10 to 20°C. According to SuisseEnergie, less expensive non-insulated pipes can be used since heat losses to the ground are small because of the small temperature difference between the ground and the water in the pipe.

With a low temperature network, each building connected to the DHS must consequently have its own heat pump system to increase the low-grade heat to usable temperatures. This allows each building to have a heat pump system that provides usable temperatures specific to their heating system temperature requirements.

3.4.2.2 High temperature networks

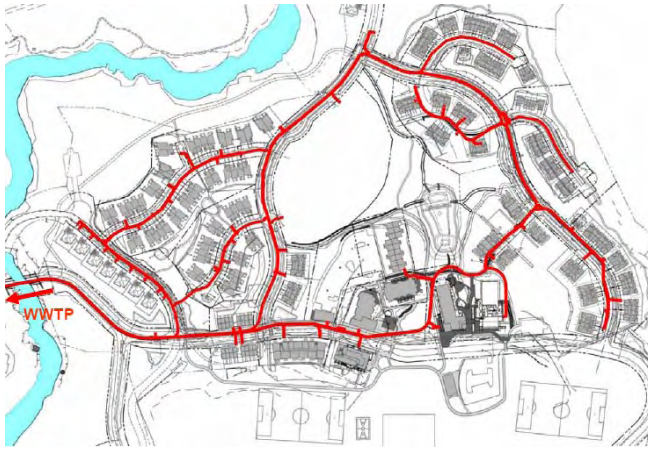
High temperature networks are best when customers are close to the utility. An advantage of centralized heat generation at the utility is that heat transfer units are easier to maintain and rates are easier to set. The advantage to the customer is that they can use the space normally required for heating systems in their buildings for other purposes, if a back-up heating system is not required.

3.4.3 Examples in Canada

The countries with the most knowledge, technology and experience with wastewater heat recovery are Switzerland and Japan. Although the majority of wastewater heat recovery projects are found in Switzerland, Sweden, Japan and the United States, a few can be found in BC, as described below.

3.4.3.1 Athlete Village, Whistler

The wastewater heat recovery project in the Resort Municipality of Whistler (RMOW) is a part of the preparations for the 2010 Olympics. A low temperature DHS will serve to heat the Athlete Village/Cheakamus Legacy Neighbourhood; it will provide over 90 percent of the heating and up to 75 percent of the domestic hot water heating requirements for the village. The Whistler 2020 Development Corporation, a subsidiary of the municipality, is in charge of the planning, construction and operation of the village.



Heat exchangers at the WWTP will transfer the heat contained in the effluent to water contained in the DHS closed loop piping network. The addition of the heat exchangers to the WWTP comes at the convenient time when the plant is undergoing a major capacity upgrade. The pipe network will extend more than a kilometre from the plant to and across the village.

The housing units vary from townhouses to four story apartment buildings. Each building in the village will have a heat pump system to transfer the energy from the DHS pipe network to the building's space and water heating system. This DHS will have a low temperature heat network. The heat pumps will be sold with the housing units and owned by the building owner. Peak energy demands will be covered by electric heating.

The Municipality will remain the owner and operator of the DHS. When the project is completed, a Municipal department will then run the DHS from the WWTP. The DHS in Whistler will not be regulated by the British Columbia Utilities Commission. The rates will be based on operating, maintenance and replacement costs.

3.4.3.2 *Okanagan College, Kelowna*

The first Canadian DHS wastewater heat recovery project was completed during the upgrade of the Okanagan College heating system in 2003. The upgrade was mostly focused on the College's heat generation system which at the time consisted of two boilers with over a decade of operating time. A feasibility study recommended recovered effluent heat and high efficiency boilers to cover peak loads as a heat sources.

The effluent temperature at the WWTP varies between 12°C and 22°C. The effluent is pumped from a WWTP discharge chamber through a 500m long 200mm diameter PVC pipe to the central plant on campus. The effluent is circulated through a heat pump and is then returned to the WWTP discharge chamber at a lower temperature. The City of Kelowna agreed to the use of the effluent as long as no heat is rejected in the discharge by the campus. Maximum allowable discharge temperatures into Okanagan Lake are imposed on the City by Fisheries Canada.

The heat pump increases the temperature of the warm water that flows in the campus heat distribution network by 50°C to 55°C as it circulates through the heat pump. Two new high efficiency boilers were installed to supplement the heating requirement and two of the previous boilers were kept as additional back-up sources.

For a portion of the year, the heat provided by the heat pump is enough to cover the campus' needs. Peter Csandl, Manager of Operations and Energy Services, confirmed that when the heat demand increases during the cold season, the reclaimed heat is directed solely to the trades and health

buildings, approximately 100,000 square feet. At this time the boilers provide heat for the remaining buildings on campus.

Construction took a year to complete and the heating system was operational in 2004. The existing closed loop heat distribution network on campus made the heat source upgrade to wastewater more feasible. The Community Energy Association (CEA) reported that the upgrade cost approximately \$1.5 million to complete with annual savings of \$100,000. Although 15 years is a long cost recovery period for stakeholders envisaging a similar project, the cost benefit over the entire life cycle of the project is substantial. The college received funding from Natural Resources Canada's Energy Innovators Initiative and Aquila Networks Canada.

3.4.4 Benefits of District Heating

The magnitude of a DHS permits the cost effective installation of highly efficient heating technologies since incorporating low emission technologies or renewable energies is not often economically feasible for individual facilities. As a centralized thermal source, DHS also reduces the number of greenhouse gas emitters in a community. Other benefits associated with DHS community energy projects include:

- They offer the possibility of diversifying energy sources and securing the energy supply for an area; and
- They are an opportunity for job creation in the energy sector and keep energy dollars in the local economy (Community Energy Association 2007).

3.5 Water

The major pathways of water reuse include irrigation, industrial use, surface water replenishment and groundwater recharge for which case studies abound. The best case scenario for the RDN depends on the potential users in close proximity to the plants. Despite advances in treatment technology and growing water re-use, environmental and health concerns remain.

3.5.1 Re-use methods

The re-use of wastewater for agricultural purposes is the largest current use of reclaimed water. In North America, California is the largest user with an average daily consumption of 1,100,000 m³ for agricultural purposes alone (nearly 50% of total re-use). The second most important use of water is for landscape irrigation of parks, playgrounds and golf courses.

Groundwater recharge can be performed by direct injection of water into the aquifer. This however requires the injected water to be highly treated so it does not contaminate the groundwater. It is the method of groundwater recharge that has proven effective in creating freshwater barriers in coastal aquifers against the intrusion of saltwater from the sea.

Groundwater recharge can also be done by surface spreading. It is the simplest, oldest and most widely used method of groundwater recharge. It is the most favoured method of recharge because it allows efficient use of space and requires relatively low maintenance.

3.5.2 Environmental & Health Concerns

Despite the existence of technically proven advanced wastewater treatment processes, long term safety of reclaimed water and the impact on the environment are still difficult to quantify for the wastewater industry. There are a variety of constituents of concern from an environmental and health perspective that are found in wastewater. These are listed in the following table.

Table 2. Constituent of Concern for Effluent Re-use

Classification	Constituent
Conventional Those constituents measured in mg/L that have served as the basis for the design of most conventional wastewater treatment plants. These are also the constituents that fall under the guidelines associated with the <i>B.C. Municipal Sewage Regulation (MSR)</i> .	Total suspended solids
	Colloidal solids
	Biochemical oxygen demand (BOD)
	Chemical oxygen demand (COD)
	Total organic carbon (TOC)
	Ammonia
	Nitrate
	Phosphorus
	Bacteria
	Protozoan cysts and oocysts
Non-Conventional Those constituents that may have to be removed or reduced using advanced wastewater treatment processes.	Refractory organics
	Volatile organic compounds
	Surfactants
	Metals
	Total dissolved solids
Emerging Those classes of compounds measured in the micro- or nanograms/L range that may pose long-term health concerns and environmental problems.	Prescription and non-prescription drugs
	Home care products
	Veterinary and human antibiotics
	Industrial and household products
	Sex and steroidal hormones
	Other endocrine disrupters

For most of the emerging compounds listed in the table, there is little or no information concerning health or environmental effects. Some however are known to have acute or chronic health effects depending on their concentrations.

4. IRM Opportunities Relative to the RDN's WWTPs

Not all of the IRM opportunities discussed above necessarily have merit in the RDN's context. The following sections represent a list and discussion of the opportunities that could prove feasible at either the GNPCC and/or the FCPCC. These opportunities will need to be further refined once the process selection for each of the treatment plants is further defined. The intent is to develop an

appropriate secondary treatment process for both the GNPCC secondary treatment upgrade and the FCPCC secondary treatment expansion projects. This overall process selection project will be initiated in the coming month. As such, the identification of IRM opportunities for the RDN will likewise be finalized in October 2009 to allow for inclusion with grant documentation to the Ministry of Community Services.

4.1 GNPCC

Based on an initial assessment of the opportunities noted above, four appear to have potential for the GNPCC. These include:

- Struvite recovery;
- Effluent water re-use;
- Heat recovery from effluent; and
- Enhanced biogas recovery and utilization.

4.1.1 Struvite Recovery

With the implementation of secondary treatment at the GNPCC, there will likely be a blended sludge stream feeding the anaerobic digesters, consisting of both primary and secondary sludge. It is this combined sludge stream in treatment plants that leads to the formation of struvite from the centrate generated from the dewatering of the digested sludge. As noted above, there is a benefit to the recovery of this stream both in the production of a high grade fertilizer byproduct and in the elimination from the process piping of a stream that will eventually create a nuisance build up. A determination will have to be made early on in the design process as to whether this is an economical opportunity based on the size of the treatment plant and its corresponding production of centrate from the digested sludge.

4.1.2 Effluent Water Re-use

It may be challenging to develop a business/technical case for water re-use in conjunction with the upgrade to the GNPCC. Aside from internal re-use, external re-use may not have an end-user within a reasonable distance of the treatment plant. Typically effluent re-use in the Province is geared towards irrigation of golf courses and municipal parks. As they are unlimited public use facilities, these applications also require a high level of treatment/disinfection. It will have to be further determined if such an end-user exists in relative close proximity to the GNPCC.

4.1.3 Heat Recovery from Effluent

This represents perhaps the most viable of the four identified IRM opportunities. The potential for heat from effluent use both internally and externally should be examined in more detail prior to the submission of any grant application for IRM-related funds. The heat pump technology could also be applied to older existing buildings at the GNPCC where current unit heaters may be nearing the end of their lifecycle.

4.1.4 Enhanced Biogas Recovery and Utilization

With the addition of secondary sludge into the anaerobic digestion process, there is a potential for greater production of biogas due to an increase in the volatile component of the feedstock. The

GNPCC already utilizes its digester gas in boilers for digester related process heating, and is currently in the early implementation stages for a co-generation facility. The development of the design for Digester 3 will help in the process of establishing biogas quantity projections. This in turn will allow for the development of a firm utilization strategy prior to the submission of any grant application for IRM-related funds for co-generation.

4.2 FCPCC

Based on an initial assessment of the opportunities noted above, three appear to have potential for the FCPCC. These include:

- Effluent water re-use;
- Heat recovery from effluent;
- Biosolids composting; and
- Enhanced biogas recovery and utilization.

4.2.1 Effluent Water Re-use

The FCPCC already has a current effluent re-use strategy with its provision of seasonal irrigation water to the adjacent Morningstar Golf Course. As noted above for the GNPCC, effluent re-use is dependant upon having end users in nearby proximity to the treatment plant. Aside from the golf course, other end-users would have to be identified to determine if expansion of this system within the IRM context would be feasible.

4.2.2 Heat Recovery from Effluent

This opportunity may be developed with the planned secondary expansion, as this expansion will entail new or expanding buildings to accommodate additional processes and potentially, additional staff. If the opportunity exists to heat these buildings with heat pump energy derived from plant final effluent, it should be determined early in the design process. In addition, district heating opportunities will also be explored prior to submission of any IRM-related funding application.

4.2.3 Biosolids Composting

Composting represents a potential opportunity at the FCPCC if the RDN might consider moving away from ATAD sludge stabilization technology. This has been done at treatment plants in both Whistler and Banff, where the ATAD process was abandoned in favour of either onsite or offsite indoor aerated static pile composting. This process allows for the production of a nutrient rich growing media that can be marketed in bulk for partial cost recovery. However, the RDN may not choose to proceed with this option given the substantial capital that has already been directed towards the odour issues related to the FCPCC ATADs, along with having an already well developed disposal plan (as briefly outlined above in Section 3.2).

4.2.4 Enhanced Biogas Recovery and Utilization

As with the option of composting presented above, biogas recovery and utilization at the FCPCC would require the departure from ATAD technology and the replacement with anaerobic digestion (either mesophilic or thermophilic). Like the GNPCC, the derived digester gas could be used in boilers for digester related process heating, and for co-generation of heat and/or electricity. However,

from a purely economical point of view, anaerobic digestion is not typically seen as feasible for smaller plants such as French Creek. It is often only examined for plants that exceed average annual flows of 25 ML/d; where the FCPCC is currently averaging under 10 ML/d.



WATER & WASTEWATER SERVICES

LIQUID WASTE MANAGEMENT PLAN REVIEW AND AMENDMENT DISCUSSION PAPER

SERVICING RURAL AREAS



JUNE 2009

1.0 BACKGROUND

The Regional District of Nanaimo (RDN) is reviewing the 1997 Liquid Waste Management Plan (LWMP) to identify items that require updating or amendment. As part of the review, discussion papers have been prepared and submitted to the Liquid Waste Advisory Committee (LWAC) for comment and discussion. Through the process it has been demonstrated that wastewater infrastructure in the RDN is the product of time, geography, planning, regulation, and the needs of the RDN's residents. As such, the review process offers a unique opportunity to re-evaluate *Section 3.5 Rural Areas* of the LWMP.

Although various land use plans, population settlement patterns, and environmental conditions have given shape to the existing network of septic systems, collection systems, and treatment plants, the location of wastewater treatment options has also been influenced by property owners. These wastewater treatment options include septic systems, community sewer, and package treatment plants. For the purposes of this paper, community sewer refers to any sewer collection system and treatment plant that is owned and operated by the RDN.

With that in mind, this discussion paper provides an overview of wastewater treatment options for rural areas, as supported by RDN policy. It should be noted that community sewer can facilitate new development in Village Centres and potentially alleviate threats to the environment and human health in areas of existing development with failing on-site systems.

The objective of this paper is to provide points of discussion on 3 wastewater treatment options for rural areas, places that are located inside and outside of the RDN's urban containment boundary. The goal of any strategy discussed in this document is to support the long term health and sustainability of the Region's residents, environment, and economy. The outcome of this discussion will inform the *Section 3.5 Rural Areas* of the LWMP.

This paper begins with an examination of the planning tools used by the RDN to regulate growth and development in the Region. This is followed by discussion of wastewater treatment options that are available to residents in the rural parts of the Electoral Areas and in designated Village Centres. The paper concludes with a proposed future implementation plan for discussion by the LWAC.

2.0 DEFINING "RURAL AREAS"

Although not explicitly defined in the LWMP, section 3.5 implies that rural areas are the RDN's Electoral Areas, places that exist beyond the municipal boundaries of the City of Nanaimo, the District of Lantzville, the City of Parksville, and the Town of Qualicum Beach.

It is anticipated the RDN's population will grow at an average rate of 2% per year, from 144,317 people in 2006 to 231,184 in 2036¹. The majority of this growth will be in existing municipalities, but will also



occur in the Region's Electoral Areas.

Recognizing that growth will occur, the RDN uses the concept of Urban Containment Boundary in the Regional Growth Strategy (RGS) as tool to identify where growth should take place and where it should be discouraged in Electoral Areas². The RGS is a Board-approved strategic plan and policy framework made up of 8 distinct goals that work to enhance the liveability of the Region.

¹ See: Urban Futures. Population and Housing Change in the Nanaimo Region, 2006-2036. Pp. 14. Available at: <http://www.shapingourfuture.ca/resources.asp>

² See: Regional District of Nanaimo Regional Growth Strategy Bylaw No. 1309. Pp. 1. Available at: <http://www.rdn.bc.ca/cms/wpattachments/wpID436atID413.pdf>

Goal 7, 'Efficient Services' states that services - community sewer, for example - will be cost-effective and intentionally located where development is intended, within Village Centres³. Village Centres are determined through the Official Community Plan (OCP) planning process and are to serve as local service centres in the rural areas by supporting a mix of uses and higher densities. Village Centres are also areas that can be considered for community servicing.

Section 3.5 Rural Areas of the LWMP supports the RGS goal of protecting rural areas and intentionally siting services, such as community sewer, in Village Centres. Working within the parameters of the RGS, neither the RDN nor the LWMP support sewer servicing outside the Urban Containment Boundary, except where there are verifiable threats to the environment and/or human health⁴.

Although Village Centres are an integral part of the RDN's 'rural' landscape, the majority of the population in Electoral Areas live outside of these areas. For the foreseeable future, residents outside Village Centres will continue to depend on septic systems.

3.0 SERVICING OPTIONS

As mentioned on page 1, there are 3 types of wastewater treatment options in the RDN: 1) septic systems, including holding tanks; 2) community sewer; and 3) package treatment plants. It should be noted, that the costs associated with the installation, expansion, repair, and maintenance of any wastewater treatment system are borne by property owners that do, or can, benefit from the service.

3.1 SEPTIC SYSTEMS

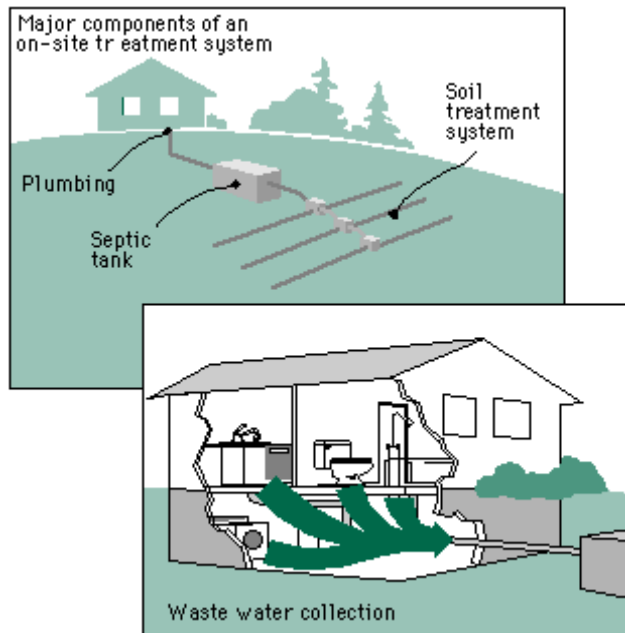
Although there are some portions of Electoral Areas A, C, E, and G that are connected to the larger RDN sewer service, most properties rely on septic systems to service an individual residence/business, or several residences/businesses collectively. It is estimated that there are approximately 12,000 septic systems in the RDN, making septic systems the most prevalent form of sewage treatment in the Electoral Areas. As discussed in the *On-site Treatment Issues Discussion Paper*⁵, these systems are generally privately owned by property owners. Subsequently, residents use a disposal service to

³ See: Regional District of Nanaimo. 2003. Regional Growth Strategy Bylaw No. 1309. Pp. 15. Available at: <http://www.rdn.bc.ca/cms/wpattachments/wpID436atID413.pdf>

⁴ OCP will be explained on pp. 2 but refers to an Official Community Plan.

⁵ See: Associated Engineering, March 2008, "Discussion Paper No. 2: On-site Treatment Issues". Available at: <http://www.rdn.bc.ca/cms/wpattachments/wpID1632atID2235.pdf>

transfer septage to the Chase River Pump Station or the French Creek Pollution Control Centre. Residents also hire an authorized person to perform required maintenance on their septic system. An



'authorized person' is an accredited professional who is authorized through the *Sewerage System Regulation Act* to repair, upgrade, and perform maintenance on an septic system.

It is under this same Regulation, that the Vancouver Island Health Authority (VIHA) has the authority to inspect and take corrective action to alleviate health hazards presented by failed, or failing, septic systems. The LWMP suggests that the RDN will work proactively with VIHA to "monitor and assess sewage system requirements

and develop solutions for failed on-site systems"⁶. To that end, the RDN has an educational program to support new and existing septic systems in the Electoral Areas.

The SepticSmart program is designed to connect septic system owners with basic information about septic system maintenance. Given residents' overwhelmingly positive feedback, the RDN has also recently secured funding to evaluate the feasibility of implementing a mandatory maintenance program designed to ensure that property owners are servicing their septic systems.

3.1.1 *The SepticSmart Program*

The SepticSmart Program provides basic information to property owners about the proper use, maintenance, and servicing of their septic system. It provides tools to enable homeowners to detect and prevent failing systems by underscoring the value of regular maintenance and proper use of the system. The program also makes the link between a failing system and its potential impact on human health and the environment. It follows that the expected outcome of the SepticSmart program is a reduction in the number of failing systems in the RDN.

⁶ See pp. 3-6 of the Regional District of Nanaimo, Liquid Waste Management Plan (Stage 3 Report), November 1997. Available at: <http://www.rdn.bc.ca/cms/wpattachments/wplD1131atID1130.pdf>

The RDN SepticSmart program has been modeled after the Capital Regional District's (CRD) Septic Savvy education program. The CRD has found that workshops and outreach events have proven successful as they allow for direct communication with the owners of septic systems.

The RDN's SepticSmart Program has been created with this in mind and currently includes:

1. A brochure;
2. A SepticSmart Residential Household Information Kit;
3. A public workshop presentation; and
4. A web-based component.



At each of the workshop sessions, a VIHA representative is available to answer property owner questions. More recently, an expert has been contracted to give a portion of the presentation, as well as to answer more detailed questions. As of June 2009, 350 people have attended 4 workshops, 650 information kits have been distributed, and feedback has been overwhelmingly positive.

3.1.2 Mandatory Septic Maintenance Program (Proposed)

VIHA is responsible for issuing permits for on-site wastewater systems and enforcing the *Sewerage System Regulation Act*, as mentioned on page 5. They recommend that septic tanks be pumped out every 5 years and that Type 2 and 3 systems (package treatment plants) receive annual service by an authorized person.

Failing systems are known to cause many problems, ranging from malodour to the contamination of surface and ground water. Repairs are often costly, but can be avoided through proper maintenance. However, many systems are not adequately maintained and VIHA has no real means to ensure that each system is functioning properly.

In April 2008, the Capital Regional District (CRD) adopted Bylaw 3479 which enables the CRD to enforce mandatory maintenance for onsite septic systems to mitigate system failures. The CRD Bylaw has only been applied within the municipalities in the *Core Area Liquid Waste Management Plan*: Langford, Colwood, Saanich, and View Royal. If the program proves successful, it may be extended to 3 Electoral Areas: Juan de Fuca, Salt Spring, and the Southern Gulf Islands Electoral Areas.

Although it will be phased in gradually, the CRD Bylaw requires the owners of Type 1 septic systems (basic septic tank and disposal fields) to pump out their tanks by the end of 2010 and every five years thereafter. Homeowners must keep their receipts as proof of compliance.

To administer the program, the CRD created an annual parcel tax of \$25. This fee covers the cost of a database to track compliance, map individual septic systems, create records of new installations, and monitor decommissioning of septic systems when homes eventually connect to the sewer. When maintenance is due, the program also provides notification to property owners and the potential cost for non-compliance.

The RDN is considering implementing a similar mandatory maintenance program. To that end, the RDN has been granted \$10,000 from the Ministry of Community Development to evaluate the feasibility of developing and implementing a mandatory maintenance program. A study of this kind would examine the general causes of failed systems, cost assessments related to the drafting of a bylaw, the development of a framework of requirements, and administrative and staffing needs for the implementation and execution of a monitoring program. This study will work to support the RDN's SepticSmart education program.

3.2 COMMUNITY SEWER

As discussed on page 3, community sewer can direct growth and support increased population densities in Village Centres. With community sewer, Village Centres can potentially support the population densities required to make them socially and economically diverse. For example, the Area E OCP states that "under the current zoning, the provision of community sewer and water services may enable a higher level of development in some areas of Nanoose Bay"⁷. On page 1, community sewer was defined as any sewer collection system and treatment plant that is owned and operated by the RDN.⁸

In the RDN, the extension of existing sewer infrastructure or the location of community sewer is generally determined by an OCP and by property owners. For example, the Area E OCP states that new sewer connections: "...[require] a policy framework and proposed consultation and decision making

⁷ Available At: <http://www.rdn.bc.ca/cms/wpattachments/wpID1125atID1041.pdf>

⁸ Electoral Area 'G' Official Community Plan Bylaw 1540. 2008. Plan. pp. 118. Available at: <http://www.rdn.bc.ca/cms.asp?wpID=1722>

process to allow the community and RDN Board decide how future community sewer...⁹. Additionally, RDN plans determine the extent of sewer service areas. Servicing is only possible where an area has first been designated for community sewer, or for health and environmental reasons.



Under the current LWMP all sewer systems are based on a user pay principle, through the establishment of a sewer service area¹⁰. A sewer service area is a geographically bounded area, recognized by bylaw, within which properties may be connected to a particular treatment plant via a particular collection system network.

All RDN sewer service areas come into being through public assent, by means of a referendum, petition, or counter-petition process.

3.2.1 Sewer Servicing Study

A sewer servicing study identifies and evaluates opportunities and options for servicing a particular area. This type of study assesses environmental conditions, defines treatment options, and identifies suitable types of infrastructure and potential locations for that infrastructure. A study also provides cost estimates for various options. The intent of these studies is to provide property owners and RDN staff with enough information to make an informed decision about whether or not to proceed with community sewer in a given area. Information from a sewer servicing study can also be used in the public assent process and is, generally, presented by the RDN to property owners at an open house

3.2.2 Sewer Service Area & Fees

There are geographic considerations that also factor into sewer connections. In some places, such as Cedar Village, it may be more financially feasible to pay for an upgrade to the Duke Point Pollution

⁹ <http://www.rdn.bc.ca/cms/wpattachments/wplD1125atID1041.pdf>.. Section V, pp. 7.

¹⁰ See pp. 3.7 in Regional District of Nanaimo Liquid Waste Management Plan (Stage 3 Report), November 1997. Available at: <http://www.rdn.bc.ca/cms/wpattachments/wplD1131atID1130.pdf>

Control Centre and install a collection system, than build a new treatment plant. However, in Area H it could be more practical to build a small a treatment plant, as well as a new collection system.

The cost of providing community sewer is based on a user pay principle. This means that those who benefit from sewer service pay for it. All connections share equally in the cost of constructing, maintaining, and upgrading a wastewater collection system and treatment plant. There is little opportunity for grants unless a region wide bylaw is passed limiting all lots outside of Village Centres to a 1 hectare minimum, or through a region-wide soils suitability analysis¹¹. Regardless, the costs of providing sewer servicing are captured through the designation of a local sewer service area.

The fees paid by property owners who are connected to the sewer system include capital charges, parcel taxes, and user fees. A capital charge is assessed for properties within a service and allows a property owner to 'buy into' the capacity of an existing service. Within a sewer service area all properties pay a parcel tax to cover the capital cost of the system, as these properties are, or could be, connected to the sewer service. User fees are also charged once a property is connected.

The cost to provide sewer servicing will be borne equally among those who benefit from the service. However, it is anticipated that a portion of the cost of expanding a sewer service area will be paid by developers through development cost charges (DCCs). Capital charges will apply to existing development and property owners that are newly brought into a service area.

3.3 PROPOSED FUTURE IMPLEMENTATION PROCESS FOR VILLAGE CENTRES

If sewer servicing in Village Centres is supported by the LWMP, the RDN will develop an implementation plan that consists of meetings with different types of property owners in Village Centres and Electoral Areas.

For the purposes of this paper, there are two types of local property owners who can initiate or influence sewer servicing in a Village Centre. The first are existing property owners who own one or more parcels of land within the Village Centre and reflect the current sewer servicing needs of the existing

¹¹ See for example: Canada-British Columbia Building Canada Fund – Communities Component. February 2009. Category Specific Supplement Wastewater. Available at: <http://www.th.gov.bc.ca/BCFCC/documents/wastewater.pdf> . Pp. 16.

population. The second are property owners who own large parcels or multiple lots that can be subdivided and who represent future residents and sewer servicing needs for a growing Village Centre and Electoral Area.

Though distinct, both types of property owners can request the creation of a sewer service area via the public assent process.

3.3.1 Proposed Implementation Plan : Meetings With Current Property Owners

It is proposed that the RDN will host meetings with residents of an Electoral Area, in Village Centres (as they are identified in OCPs). The intent of these meetings is to assess the community's interest in community sewer and their willingness to pay for a sewer servicing study to assess the options and costs for establishing a sewer service area, or for the extension of existing infrastructure.

Meetings of this kind will serve 2 purposes: 1) They will be used to gauge the community's interests in pursuing sewer servicing in the Village Centres or Electoral Area generally; and 2) They will provide baseline information for future sewer servicing studies should property owners reject sewer servicing, or should a new Village Centre, with potential for sewer servicing, be created in an Electoral Area.

Once a servicing study has been supported by the community and developed by a consultant, the RDN will present the study findings to property owners for their consideration. Property owners will have a specified length of time to evaluate the study and express their interest in pursuing a public assent process.

3.3.2 Proposed Implementation Plan: Meetings With Developers

Owners of large, subdividable parcels, or multiple properties in the same area, are considered developers and represent future property owners, residents, and possibly community sewer in Village Centres and Electoral Areas. Developers can facilitate the design and construction of sewer infrastructure within a UCB, mitigating some of the costs for existing property owners.

The RDN will evaluate existing land ownership against the development potential of a Village Centre as it is expressed in the relevant OCP. In instances where there exists potential for development, or an expression of interest in development through subdivision application, the RDN will meet with the property owner(s) to discuss mutually beneficial sewer servicing opportunities. Should the property

owner(s) be interested in pursuing sewer servicing, the RDN and property owner(s) will jointly contract a sewer servicing feasibility study. If the property owner(s) wishes to continue with the design and construction of sewer related infrastructure, the public assent process will be initiated.

The intent of meetings with property owner(s) with large parcels, or multiple properties with potential to be subdivided, is to encourage density in the Village Centre, as described in an Electoral Area's OCP. It is expected these owners will be willing to pay a portion of the cost for sewer servicing to a Village Centre.

3.4 PACKAGE TREATMENT PLANTS

Achieving RGS goals of nodal development within the established Village Centres may be achieved through a variety of approaches. Like other types of wastewater servicing, package treatment plants (PTP) located in Village Centres could encourage development in these areas and support strong urban containment, a nodal structure, rural integrity, and efficient services.



Following current policy, any PTP system will be designed, constructed, and maintained at the expense of the users. There are many types of innovative systems available to property owners. However, all package treatment plants must be suited to the environmental conditions of a site and will require regular maintenance and upgrades. The basic criteria for selecting a package treatment plant should also consider the following:

1. the discharge environment;
2. type of collection system;
3. flow volume;
4. site and footprint;
5. reliability of the system and its monitoring requirements;
6. operational and maintenance requirements, costs, and personnel;
7. the capacity of the system to adapt to technological change.

For a greater discussion on PTPs in the RDN please see *Discussion Paper No. 3: Policies Regarding New Communities and Developer Installed Treatment Plants*¹². The RDN, as part of the LWMP Review, will determine whether to approve and manage PTPs in the future. Currently, Ministry of Environment (MOE) and Vancouver Island Health Authority (VIHA) approve systems, dependent on their size.

4.0 CONCLUSIONS

Various land use plans, population settlement patterns, environmental conditions, and changing technologies have given shape to the existing network of septic systems, collection systems, and treatment plants. With that in mind, this discussion paper provides an overview of wastewater treatment options for rural areas, as they are supported by RDN policy. For the purposes of this paper, wastewater treatment options include septic systems, community sewer, and package treatment plants.

The objective of this paper was to provide points of discussion on 3 wastewater treatment options for areas located inside and outside Village Centres. The outcome of this discussion will inform *Section 3.5 Rural Areas* of the LWMP.

This paper began with an overview of the planning tools deployed by the RDN to regulate growth and development in the Region. It was concluded that LWMP supports the goals of urban containment in the RGS.

This was followed by a discussion of wastewater treatment options available to both rural and urbanizing areas (Village Centres) in the Electoral Areas. It was demonstrated that:

- 1) Septic systems are currently the most prevalent form of wastewater treatment in Electoral Areas in the RDN. As such, the RDN has developed the SepticSmart program and will undertake a study to consider the feasibility of implementing a mandatory septic maintenance program.

¹² Available at <http://www.rdn.bc.ca/cms/wpattachments/wpID1632atID2374.pdf>

- 2) Community sewer is generally determined by property owners through a public assent process. Property owners will pay for sewer servicing on a user pay basis. However, sewer servicing will be limited to Village Centres, or in cases where there are verifiable threats to human health and/or the environment.

- 3) Package treatment plants are a third wastewater treatment option available to property owners in the RDN. Although there are many innovative options, all systems will be based on a user pay principle and require that property owners consider installation, maintenance, and upgrade costs, as well as the environment in which their system will be located.

The paper concluded with a proposed future implementation plan for discussion by the Liquid Waste Advisory Committee.

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Date: August 26, 2009
To: Sean De Pol, RDN – Manager, Wastewater Services
From: Andy Bell, AECOM – Infrastructure Engineer
Project Number: 113488 (03)
Subject: Volume Reduction in Sanitary Sewers

Distribution: RDN – Lindsay Dalton, Sean De Pol
AECOM – Will Wawrychuk, Scott Neuman, File

1. Introduction

The Regional District of Nanaimo (RDN) is in the process of updating sections 3.2 and 3.3 of its 1997 Liquid Waste Management Plan (LWMP) that refer to the reduction of flow into sanitary sewers and stormwater management initiatives. The goal of the plan's update is to create a LWMP that sets out appropriate wastewater management strategies and their implementation, for now and the future.

AECOM has prepared this discussion paper to assist the RDN's Liquid Waste Advisory Committee (LWAC) with the LWMP update.

2. Volume Reduction in Sanitary Sewers

2.1 Introduction

In complying with the Ministry of Environment's long-term goal of achieving zero pollution, the RDN recognizes the various benefits of reducing sewage flow, inflow and infiltration (I&I) in their sanitary sewer network. Such benefits include the increased operational stability of pollution control centres, the reduction of sanitary sewage overflows and the potential for both capital and operational economic savings (deferment of new infrastructure and reduced power, chemical and potentially labour costs).

BC's Municipal Sewage Regulation specifically recognizes the impact of I&I on a sewer system, stating in Part 17, Schedule 1 (see appendix 1) that inflow and infiltration be controlled as follows:

"The discharger must ensure that no person allows I&I so that the maximum average daily flow exceeds 2.0 times ADWF¹ to occur during storm or snowmelt events with less than a 5-year return period".

Although allowances to this rule are permissible (by implementation of reduction strategies or cost benefit analysis as set out by the discharger's Liquid Waste Management Plan), it is a realistic target for the RDN and local municipalities to aim at.

2.2 RDN Infrastructure

The Ministry of Environment's Guidelines for Developing a Liquid Waste Management Plan requires that municipalities (incorporated cities, towns, villages and regional, municipal and improvement districts) reduce the impact of their liquid waste on the environment by complying with operational certificates issued under the LWMP. It also requires a commitment to control and minimize sanitary overflows from sewers and pumping stations and investigate I&I control options to reduce hydraulic loads on treatment plants.

The RDN owns and operates four Pollution Control Centres (PCCs) and associated trunk sewers, 19 pump stations and a number of small sanitary collection systems. It does not own any stormwater sewers, or related infrastructure. Stormwater infrastructure is owned by the MoT (Ministry of Transport & Infrastructure) or local governments.

The most significant local and communities discharging to the four pollution control centres are listed in the table below.

¹ ADWF (Average Dry Weather Flow) is a measure of sewer flow during periods of no rainfall. Refer to appendix for additional details.

Table 1. RDN Pollution Control Centres Inflows

Pollution Control Centre	Community Served
Greater Nanaimo (GNPCC)	The Greater Nanaimo Service Area* The District of Lantzville**
French Creek (FCPCC)	The Town of Qualicum Beach The City of Parksville The Surfside Sanitary Sewer Service Area*** French Creek Sewer Service Area*** The Barclay Crescent Sewer Service Area*** The Pacific Shores Sanitary Sewer Service Area***
Nanoose (NPCC)	The Fairwinds Sanitary Sewer Service Area***
Duke Point (DPPCC)	Duke Point Service area*

*Collection system operated by the City of Nanaimo

**Only a small area of Lantzville has recently received sewer services

*** Collection system operated by the RDN

As a trunk system operator, the RDN is heavily dependant on its service area municipalities to meet its own operational commitments, as the majority of I&I sources are located within collection, not trunk, systems. Thus, any reduction strategy should be strongly aligned with the objectives of collection system operators.

Flow meters are used to record flows from the Town of Qualicum Beach and the City of Parksville prior to them reaching the FCPCC, while Greater Nanaimo flows are measured at the GNPCC. Flow measurement is considered accurate to + or – 5% and is used for billing each municipality, except for the District of Lantzville that is currently billed by the number of connections in their system.

2.3 Understanding Inflow and Infiltration

2.3.1 Defining Sanitary Sewer Flows

Sanitary sewer flow is derived from sewage that enters the system via buildings and other permitted service connections and I&I of ground, surface and extraneous water sources. For the purpose of discussion, these terms are defined as follows:

Wastewater

Water contaminated with organics and inorganics based on human activities, as discharged to a sewer system for conveyance to a facility for treatment and disposal/reuse².

Note: Wastewater originates from a building's toilets, sinks, floor drains and similar sources, as well as any other permitted source (for example, from an industrial process). It excludes rainwater,

² Taken from the District's LWMP glossary

groundwater and water from extraneous sources. Wastewater sewage may also be defined as baseflow that, depending on the local community, is typically constant in volume. Reducing baseflow reduces the cost of pumping and treating sewage.

Inflow

Water discharged to a sanitary sewer system, including service connections, from such sources as roof leaders; cellar, yard or area drains; foundation drains; drainage from springs and swampy areas; manhole covers; interconnections from stormwater sewers; surface runoff and street wash waters or drainage³.

Note: Inflow is rainfall dependant. During a storm, inflow is often the cause of peak flows that overwhelm pump and treatment facilities and cause sanitary overflows. Reducing peak flows can prevent overflows, promote stable operation of treatment facilities, avoid short term capital investment and reduce operational and maintenance costs.

Infiltration

Water entering a sewer system, including building sewers, from the ground through such means as defective pipes, pipe joints, connections or manhole walls⁴.

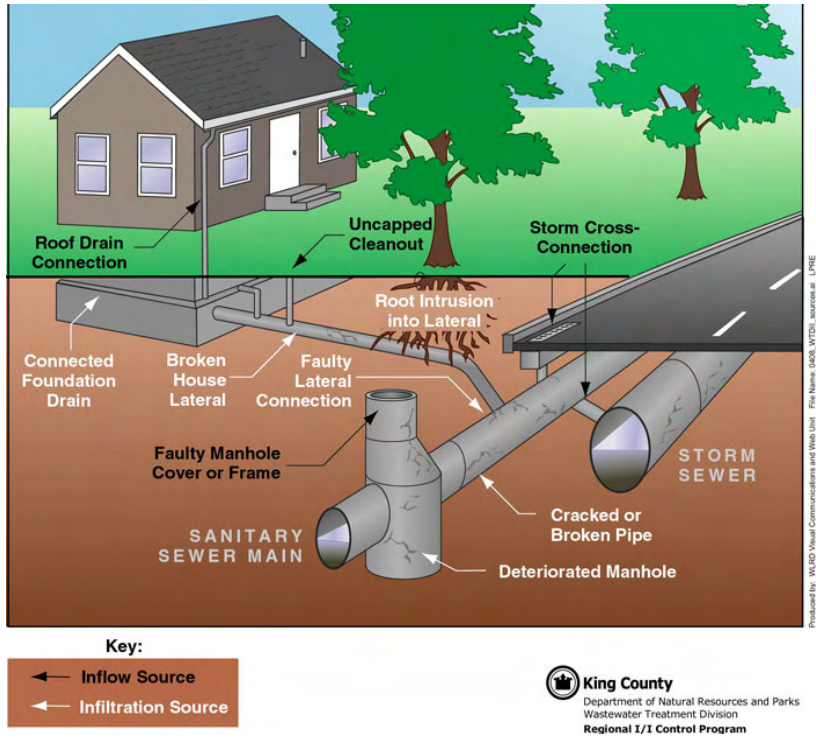
Note: Infiltration is both rainfall and groundwater dependant, as rainfall can elevate groundwater levels to submerge susceptible sewers. Infiltration can therefore increase base and peak flow in a sewer.

The figure below identifies many sources related to inflow and infiltration (I&I).

³ *The National Guide to Sustainable Municipal Infrastructure's 2003 guide: Infiltration/Inflow Control/Reduction for Wastewater Collection Systems*

⁴ *The National Guide to Sustainable Municipal Infrastructure's 2003 guide: Infiltration/Inflow Control/Reduction for Wastewater Collection Systems*

Figure 1 Common Sources of I&I



I&I has proved a difficult issue for many local governments to deal with. For example, a significant source of I&I arises from private properties – either from poor plumbing or from legal and non-legal connections from stormwater collection systems into sanitary mains. Toronto based studies have in fact indicated that over 50% of I&I can come from private properties. Prominent areas of I&I often include those where older houses exist (pre 1970's) that may have been permitted to connect drainage from their property into sanitary sewer systems.

Each flow type previously described can be managed to reduce the total flow of water in a sewer. Management of these flows is often best addressed using a cost benefit approach to ensure that money spent brings best value to the community.

2.3.2 Problems and Costs Associated with Inflow and Infiltration

Excessive I&I is a problem because it reduces sewer and sewage treatment facility capacities, can cause pollution events at overflow chambers, manholes (for example, a surcharged manhole spill into a street and subsequently into storm sewers that lead to watercourses), basements etc, and in extreme cases can result in sinkholes. I&I is costly to communities in a number of ways:

1. The cost of sewage treatment is often based on flows/volumes, meaning that once extraneous water gets mixed in with sanitary flows communities pay unnecessary charges this service – thus reducing I&I volume to achieve an annual 5% in flows could save a community 5% of its total wastewater service charge.

2. It reduces sewer and treatment facility conveyance and processing capacities and can lead to unnecessary or premature capital construction projects to provide greater capacity, which also have associated operational and maintenance (O&M) costs.
3. Pollution events cost money to clean up and can have far reaching social and environmental consequences, which also have a financial element.
4. In certain soil conditions, infiltration can lead to the loss of solid particles and the formation of voids or sinkholes – with sometimes disastrous consequences.

An extreme example of a sinkhole is shown below, which was caused by a watermain burst that scoured soil into a damaged sewer, forming a void under the road.

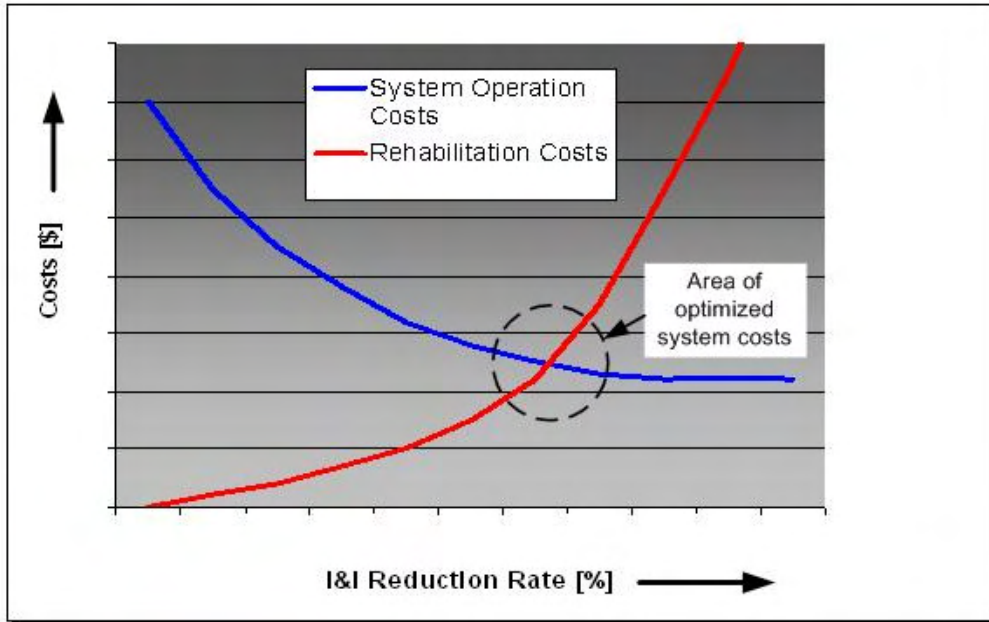
Figure 2. A sink hole caused by a watermain break adjacent to a poorly maintained sewer



It is not economically feasible, nor is it necessary, to eliminate all I&I into a sewer system. Thus, a cost benefit analysis between the cost of implementing I&I mitigation measures and the benefits of doing so should always be considered. Such benefits may include the delay of capital expansion projects at pollution control centers (and the O&M costs they incur), the reduction of treatment charges to a community and the reduction of sewer overflow events (which could eliminate or delay the need for new capital infrastructure that would otherwise be needed to prevent such events).

The figure below depicts a simplified view of I&I reduction economics. It shows that the cost required to reduce I&I increases disproportionately as higher reduction rates are obtained.

Figure 3. Inflow and Infiltration Economics



2.3.3 I&I Identification

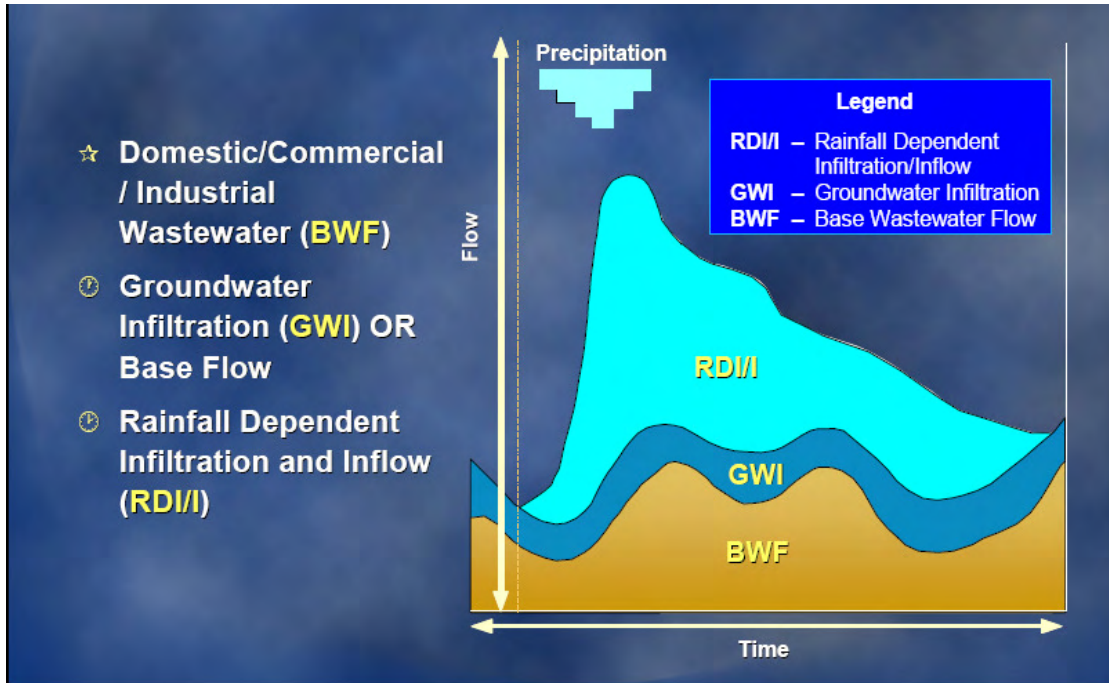
Inflow to a sewer system is easily identified through correlating elevated sewage system flows with periods of wet weather (either in collection sewers or treatment facilities). This may include the observation of overflow events throughout the sewer collection system.

Conversely, infiltration is more difficult to identify as it is related to groundwater flowing into the system, typically through defects – and can occur during both wet and dry weather periods. Its occurrence typically depends on the height of the groundwater table, seasonal variations, and soil permeability.

Identifying the source of I&I problems can be costly in itself and requires a strategic approach to determine the biggest “bang for your buck”. The approach initially involves a modeling and flow monitoring program that starts at the system level and drills down to greater detail as areas and sub areas with I&I are identified. This approach will assist in distinguishing between inflow from rainfall or infiltration from ground and extraneous water sources. Figure 4 presents a visual interpretation of flow within a sewer during and after a rainfall event. Here, large rainfall flow (RDI/I) is seen to enter sewers very quickly while groundwater (GWI) is more consistent over time, and wastewater flow (BWF) varies diurnally.

This type of study has already been completed for the Greater Nanaimo trunk sewer system, which will be discussed in subsequent sections of this paper.

Figure 4. Sewer flow Components



With the approximate location and type of I&I identified, specific sources of I&I can be systematically investigated.

2.3.4 Inflow Investigation

Inflow from the downspouts of buildings, road drains, lawn drains, leaking manhole covers are most simply and cost effectively identified using vapour tests (also called smoke tests). This process involves isolating a section of sewer and blowing a non-toxic, visible vapour into it and observing locations vapour is escaping, as shown in figure 5.

Figure 5. Vapour escaping from a road drain



Figure 6. Vapour escaping from abandoned services



Another simple way of identifying inflow is by dye tests. This involves the application of dyed water at each potential inflow source with the observation at strategic manhole points to see if the source is connected to the sewer. Dye tests are sometimes used to confirm the results of vapour tests prior to the commencement of disconnection work.

Figure 7. Dye is observed in a manhole downstream of an inflow source



2.3.5 Infiltration Investigation

Closed Circuit Television (CCTV) inspection involves the use of robotic closed circuit cameras mounted on portable platforms that move down a sewer to visually inspect sewers and identify defects where infiltration can occur. Common sewer pipe defects include cracks, leaking joints, holes and even collapsed sections, which can be exacerbated by the ingress of tree roots. It also enables identification of unknown connections that could be a source of water inflow. However, due to the relatively high cost of CCTV inspection, it is usually used to identify infiltration rather than inflow sources.

The following two figures show the application of CCTV equipment for investigation of main line sewers plus lateral connections.

Figure 8. CCTV equipment deployed into a sewer

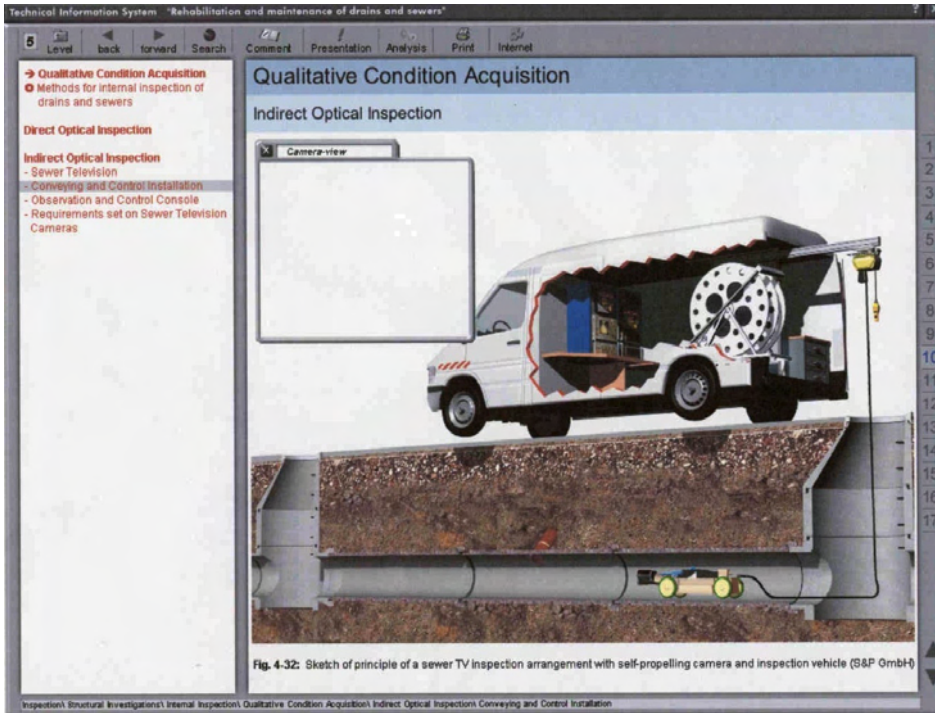
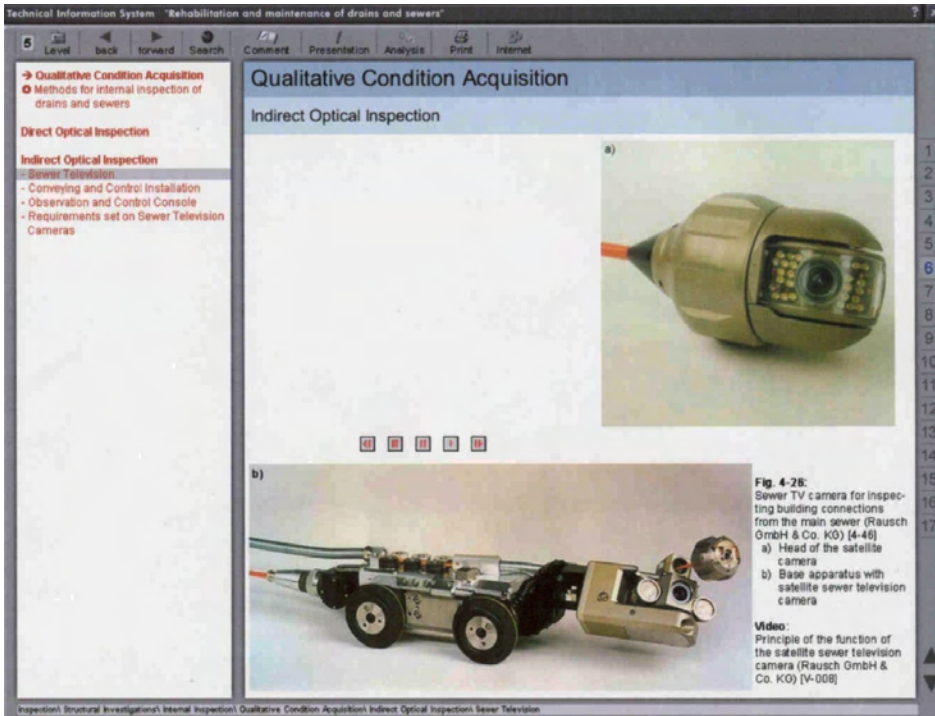


Figure 9. CCTV equipment used for service lateral inspections

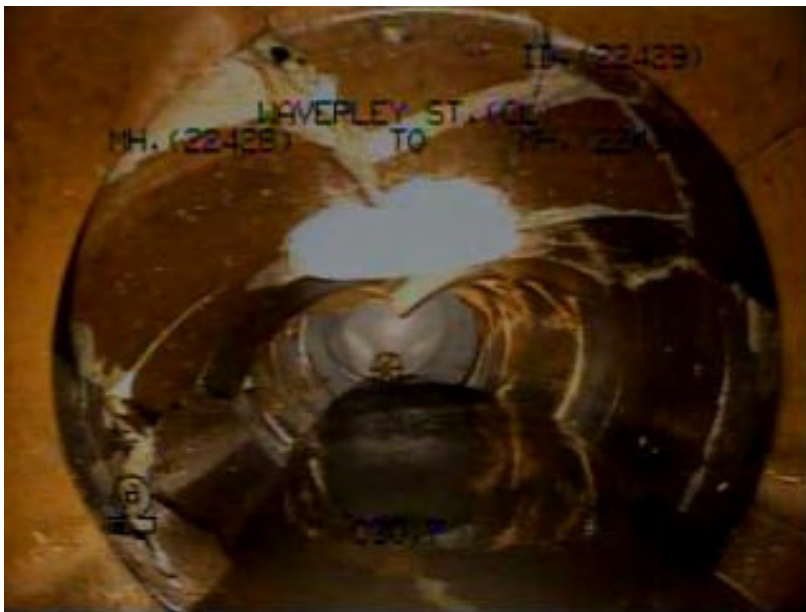


The following two figures show example results from a CCTV survey, the first shows a sewer in almost perfect condition where infiltration is unlikely to occur and the second shows a sewer collapsing where infiltration is highly likely.

Figure 10. A sewer in almost perfect condition where infiltration is unlikely to occur



Figure 11. A sewer is collapsing and is highly likely have infiltration issues



Manhole inspection is another important part of identifying infiltration. Based on similar condition assessment principles to pipes, manhole should be visually inspected to identify cracks and holes that allow infiltration of groundwater, an example of which is shown below.

Figure 12. Significant infiltration of water into a damaged manhole.



2.3.6 Mitigation of Inflow and Infiltration

I&I mitigation techniques vary with their source. The following two tables summarise a number of typical I&I sources, corresponding mitigation techniques responsible parties. It should be noted that many sources of infiltration occur on private, typically older, property. Local governments across North America are reducing I&I from private property in a variety of ways that includes education campaigns, incentives and tariffs. Some governments have gone as far establishing stormwater utilities that, alongside the management of surface rainwater, aim to control sanitary sewer inflows.

Table 2. Inflow Sources into Sanitary Sewers and their Mitigation Techniques

Inflow Source (responsibly)	Mitigation technique
Roof leaders/downspouts (property owners)	<p>Disconnect from sanitary sewer and re-route to a:</p> <ul style="list-style-type: none"> - Buried/surface soak-away (to be located away from sanitary sewers), - rain-barrel, - splash pad to a vegetated area ,or a - storm sewer* <p>Where feasible a green roof may be appropriate to help mitigate this source (incorporates soil beds and plants to store and utilize rainfall)</p>
Yard/area drains (property owners)	<p>Disconnect from sanitary sewer and re-route to a:</p> <ul style="list-style-type: none"> - buried/surface soak-away, - storm sewer*
Cellar drains/sumps that are also connected to foundation drains (property owners)	<p>Disconnect from sanitary sewer and re-route to a:</p> <ul style="list-style-type: none"> - buried/surface soak-away (see note above), - rain-barrel, - vegetated area ,or a <p>Note that cellar drains can contain pollutants and should not discharge directly to a storm sewer</p>
Foundation drains (property owners)	<p>Disconnect foundation drains and weeping tiles from sanitary sewer and using a sump pump re-route to a:</p> <ul style="list-style-type: none"> - buried/surface soak-away, - rain-barrel, - vegetated area ,or - storm sewer* <p>Note that overflows from soak-aways to storm drains may be required</p>
Manhole covers (property owners – if on private property - & local gov't)	<p>Stop the inflow of water through manhole covers by:</p> <ul style="list-style-type: none"> - Replacing existing covers with sealed covers - Using manhole pans (plastic or steel pans that fit beneath an existing cover to form a seal) - Resetting manhole frames (lift the manhole frame and cover to road or soil grade to prevent ponding on the covers surface).
Cross connections (property owners & local gov't)	Remove cross connections between sanitary and storm sewers
Catch basins (local gov't)	<p>Where feasible:</p> <ul style="list-style-type: none"> - Discharge catchbasins to exfiltration structure - Remove catchbasins, curbs and gutters and create roadside ditches
Drainage of swampy areas (property owners & local gov't)	Reconsider the reasons for draining such areas and strategies for removing water
Uncapped sewer cleanouts (property owners & local gov't)	Sanitary service lateral cleanouts (located on all sanitary services) should always be capped.

*Many communities now recognize that containing stormwater locally is an effective strategy for inflow management. Reducing or better managing flows running off of impervious areas - driveways, parking areas, walkways, patios etc. – can help to reduce inflow. However, rainwater redirected below ground must be kept away from sewer pipes with infiltration problems, otherwise inflow may be transferred from one point to another.

Table 3. Infiltration Sources into Sanitary Sewers and their Mitigation Techniques

Infiltration Source	Mitigation technique
Unstable Mains (local gov't)	Replace structurally unstable or collapsed mains with new mains using: <ul style="list-style-type: none"> - open trench construction (traditional mainline sewer or lateral installation), - pipe bursting, (pipe is burst into fragments and a new pipe is pulled into its place), and - pipe reaming (pipes are reamed into fragments that are removed as a new pipe is pulled in to replace the old). Both pipe bursting and reaming require dig down operations to restore services.
Defective Mains (local gov't)	Rehabilitate defective pipes using: <ul style="list-style-type: none"> - Cured-in-Place pipe (fabric liner with a liquid resin inflated in the pipe and cured in place. Spot repairs and laterals can be sealed in this way) - Chemical grouting (pressure inject grout into crack and surrounding soil to form a seal). - Sliplining (new pipe inserted into old one and grouted into place, numerous variations of this technique exist) - Mechanical Joint seals (rubber seals placed by hand in larger diameter sewers, held in place by stainless steel bands)
Defective/Unstable Lateral (property owners & local gov't)	Replace or reline using cured-in-place techniques
Abandoned Lateral (property owners & local gov't)	Cut and permanently cap as close to the sewermain as possible.
Unstable Manhole (property owners – if on private property - & local gov't)	Replace structurally unstable, leaking manholes
Defective Manhole (property owners – if on private property - & local gov't)	Rehabilitate defective but structurally sound manholes by: <ul style="list-style-type: none"> - Repointing (repoint brickwork, solution only good where low pressure flows exist) - Grout injection (resin or chemical grout injected through the manhole wall to form a seal on its outer side) - Spray systems (spray the entire manhole interior with cement or polymer grout) - Lining (insert a preformed, cast or poured-in-place liner)

In combination with implementing I&I mitigation techniques, it is prudent to educate property owners against planting trees and shrubs over sewer laterals, as roots from larger plants can structurally damage a sewer lateral, causing infiltration potential.

2.3.7 Public Education/Outreach

Through its Team Watersmart initiative, the RDN already strives to educate its community on a range of water conservation issues that include the use of rain barrels on roof leaders to reduce reliance on potable water. The same initiative could therefore be used to educate on I&I issues relevant to property owners.

2.3.8 Funding

Funding to reduce I&I can come from various sources, for various stages of a project. Recent and currently grants opportunities include:

1. Infrastructure Planning Grant Program – Ministry of Community & Rural Development

Available until July 29, 2009, this fund provided up to \$10k towards the comprehensive planning of projects and initiatives aimed at sustaining a communities infrastructure and environmental health.

2. Green Municipal Fund Waterways Projects – Federation of Canadian Municipalities

Available until March 31, 2010, this fund provides up to \$400k per project (\$4million total per applicant) towards projects that improve wastewater effluent quality. It is notable that the City of Victoria received \$3million of grant funding from the Green Municipalities Fund for its current James Bay I&I Pilot, which will study trenchless rehabilitation approaches to see which has the greatest ability to prevent rain and groundwater from entering the sanitary sewer system.

3. The Ministry of Community & Rural Development has recently offered numerous other grants that may have been applicable to I&I and related projects in the RDN. These funds are now fully allocated; however, similar types of funds are likely to become available in the future. Examples of allocated programs include:

- B.C.s Community Water Improvement Program
- Building Canada Fund
- Canada/B.C. Infrastructure Program
- Canada/B.C. Municipal Rural Infrastructure Fund

2.3.9 Experience from the National Water and Wastewater Benchmarking Initiative

In February 2008, The National Water and Wastewater Benchmarking Initiative circulated a survey to its I&I task force members to collect information on a range of I&I topics. Topics included I&I causes, investigation and mitigation resources, stakeholder communication, program reduction details,

programs successfulness, legal issues and more. Ten surveys were returned, a roll-up of which is presented as Appendix 2.

The RDN may find certain aspects of this survey useful to their own activities as it describes the types of problems Cities have, the level of resources being applied to solve problems, descriptions of flow monitoring and inspection programs and additional information that may help I&I mitigation planning.

2.4 Inflow and Infiltration in RDN Trunk Systems

2.4.1 System Integrity

A discussion with Bob Swanson, RDN's Wastewater Operations Supervisor, about the RDN's trunk system suggests that the system currently has no notable I&I problems, and that I&I from the City of Nanaimo has been significantly reduced in the last 5-10 years. He noted that CCTV work has been done in areas that were perceived to have problems, such as the 60" Departure Bay sewer that runs below sea level; however, only minor leaks have ever been found. Smoke testing has been used to identify and rectify cross connection and other issues such as leaking manhole lids, which have been rectified.

2.4.2 Rainfall Response

Storm flows in a trunk sewer are mainly the result of the collection system's storm response.

Typically, the RDN's trunk sewers perform well during regular intensity storm events (for example, events that occur less than once in every five years. In such events, the systems are able to convey wastewater and I&I volumes to the treatment plants without overflowing. However, in extreme storm events such as the 1 in 100 year event on December 3, 2007, where a combined storm and snow thaw event caused high levels of I&I in many of the regions sanitary sewers, the RDN's trunk sewers can be partially overwhelmed.

Data from a report detailing the December 3rd event⁵ is used below to indicate the magnitude of treatment plant flows received that day. The table below compares December 3rd flows to each plant's Average Dry Weather Flow (ADWF). Due to the magnitude and nature of the event, it is unsurprising that flows were over double the ADWF⁶, which BC's Municipal Sewage Regulation states should not exceed 2.0 x ADWF in less than a 5-year return period. However, it does serve to highlight each system's reactivity to high rainfall events.

⁵ Nadine Schwager RDN, *Wet Weather Report for December 3rd, 2007*

⁶ ADWF estimated from RDN records as the average flow from the driest month of each year during 2006 to 2008.

Table 4. December 3rd flows to PCCs

Pollution Control Centre	ADWF (m ³)	Dec 3 rd Flow (m ³)	Flow ratio
Greater Nanaimo (GNPCC)	27422	120800	4.4
French Creek (FCPCC)	7558	18,872	2.5
Nanoose (NPCC)	257	NA*	NA
Duke Point (DPPCC)	14	231**	17.0

*NPCC is a small plant permitted to accept 2270 m³/d

**DPPCC is a small plant permitted to accept 910m³/d

Greater Nanaimo Trunk System

The RDN has hydraulically modelled its trunk sewers and pump stations in the Greater Nanaimo Service Area, as recently as June 2008⁷. The model used data from both the City of Nanaimo and the RDN's sewer flow meters and rain gauges in the area. A report about the model concludes that at the peak of a 5 year storm event overflows are expected to occur at two overflow structures due to flows overwhelming the Departure Bay Pump Station. However, at this time the model is believed to be overly conservative as these structures have not been observed to spill in a 1 in 5 year storm event (model accuracy is being addressed).

A December 3, 2007 report stated the systems observed response to the 1 in 100 year event:

- On December 4th, there was an approximate 60% increase in TSS at GNPCC in both influent and effluent.
- Wellington Pump Station saw an increase in flow on December 3rd of about 60% above the day before. However, it did not back up during the wet weather event.
- Chase River Pump Station saw an increase in flow of about 260% above a typical December day. However, it did not back up during the wet weather event.
- Departure Bay Pump Station saw an increase in flow of about 210% over the previous day. DBPS was unable to keep up with the flow, allowing the interceptor to surcharge. The outfall at Brechin Point was estimated to overflow for approximately 4 hours.
- During inspection of the interceptor manholes along Departure Bay Beach during low tide on December 3, sewage was observed to spill out of a hole in the 2" vent line at manhole #10.
- The outfall vent in Morningside Park overflowed onto the ground (it should be noted that this vent has been decommissioned).

From the above information and discussion with RDN operations staff, it is concluded that the Greater Nanaimo sanitary collection and trunk sewer systems significantly react to extreme rainfall events (for example 1 in 100 year), to the point where RDN pump stations become partially overwhelmed, and

⁷ RDN Wet Weather Flow Management Phase 3 Update for the Greater Nanaimo Service Area

the quality of treatment plant effluent is affected. Collection and trunk systems also react strongly to lesser events (1 in 5 year).

It is noted in the Wet Weather Flow Management Update that future increases of leachate flow from the RDN landfill could significantly impact Departure Bay Pump Station capacity.

It is noted that the landfill's sump is considered as the largest point source of rainwater inflow into the Greater Nanaimo trunk system. The RDN's Solids Waste department is currently working on ways to manage the site to reduce this flow.

French Creek Trunk System

Modelling of the French Creek Service area is underway but not complete. However, the December 3, 2007 report stated that:

- At Bay Ave, the station ran with 3 pumps (firm pumping capacity) during most of the day.
- Hall Road Pump Station kept up with the flow with 1 pump.
- Lee Road Pump Station had all 3 pumps on for the day and was losing ground until early afternoon.

There was no comment about how the plant coped with flow that day.

It is noted that several trunk system manholes frames and covers have been replaced/sealed in this area to reduce I&I over the last 5 years.

Duke Point Trunk System

The Duke Point PCC is reported to have little infiltration flow, which is attributed to the areas low water table and a relatively compact sewer network⁸. The same report states that storm events have increased daily flow volumes at the plant to five times those observed during dry weather, which judging by the information in table 3 is conservative (a caveat in the hydraulic report noted the potential for storm flow readings to be exaggerated due to flume ragging).

Nanoose Trunk System

No capacity information has been reviewed for the Nanoose Service Area.

2.5 Inflow and Infiltration in Local Collection Systems

The operators of collection systems that feed into the RDN's trunk sewer networks were contacted to discuss I&I issues and remediation initiatives. Key points for each collection system are noted below:

⁸ RDN Duke Point Pollution Control Centre Hydraulic Capacity Assessment 2007

City of Nanaimo – Doris Fournier, Municipal Infrastructure Engineer

- Monitoring practiced since 2000. However, problems with data loggers and plugged up weirs caused weeks or months of data to be lost.
- New data loggers and more reliable measurement devices are currently being installed throughout the city that will report SCADA (Supervisory Control And Data Acquisition) systems.
- CCTV cameras have been purchased to inspect sewers and service connections.
- Approximately 15km of strategically selected sewers and manholes are to be inspected each year. Short and long term improvement plans being created using CCTV results.
- In 2010 \$450k of relining work (approx 650m of pipe) for mains and services is expected.
- Certain catchments have high I&I rates. Older areas of the Chase River catchment have some “Harewood wye’s” installed immediately off the main pipeline. These devices have an inspection wye which was capped. In most instances, the caps have corroded and failed leaving the inspection end of the wye open for groundwater infiltration or direct inflow. The number of services employing the Harewood wye are unknown. These are repaired whenever operations has the opportunity. Their locations are also being identified using CCTV inspection so specific mitigation projects can be implemented.
- Work has also been done to reduce I&I at manholes.
- Generally some work has been done, but much more is being planned.

In addition to the above information, the City of Nanaimo provided the RDN flow readings taken during the December storm event. This data identifies high rates of I&I at a number of stations. Such data is essential for determining where mitigation efforts should be applied.

Table 5. City of Nanaimo Collection System Flow Data, December 4th 2007

fms #	site location	4-Dec-2007			average readings (may-dec)			% increase
		time	level (cm)	flow (lps)	time	level (cm)	flow (lps)	
fms #1	Buttertubs	13:21	54.978	171.73	-	36.631	96.06	178.8%
	Buttertubs 2	13:23	19.337	34.45	-	11.992	15.15	227.4%
fms #2	Esplanade	14:07	17.234	31.31	-	7.961	7.38	424.3%
fms #4	Westdale	12:45	8.519	9.32	-	11.507	10.09	92.4%
fms #5	Townsite	no reading available			-	14.44	20.13	0.0%
fms #8	Departure Bay	12:55	28.013	77.77	-	21.653	54.91	141.6%
fms #12	7th Street	13:39	22.725	59.11	-	10.791	15.17	389.7%
fms #13	Park Ave	13:31	20.749	24.61	-	9.959	7.45	330.3%
fms #15	Stirling Ave	13:46	48.031	154.83	-	22.267	49.11	315.3%
fms #16	Maki Rd	14:00	33.708	68.52	-	17.607	28.07	244.1%

The District of Lantzville - No discussion held

- It is noted that the District is only just starting to connect to the local RDN trunk systems, such that current and future I&I flows should be negligible.

The Town of Qualicum Beach – Allan Cameron, Public Works Superintendent

- Smoke testing is performed in the fall to identify inflow sources
- Manhole lids have been bolted
- Manhole barrels are now being power grouted (equipment purchased)
- 1.8km of CCTV inspection completed this year. Services with suspected I&I problems are being located
- No relining has been performed. Pipes are all PVC and relatively new (less than 33 years old) and no sewer degradation is noted.
- Some cross connections have been found and disconnected – 4 or 5 noted in the Chartwell area

The City of Parksville – Mike Squire, Manager of Engineering

- A flow meter and weather station has been installed to report on I&I flows.
- Based on a 5 year return period, current I&I is estimated at 11,300 l/ha/d
- Manhole lids have been bolted
- Leaking manholes are being injected with epoxy
- \$90k of CCTV inspection completed on critical sewers last year which didn't indicate any significant problems
- Smoke testing has been completed in two of the City's older catchments
- The Foreshore area that is subject to tidal influence and high groundwater is known to have I&I problems
- Rathrevor Park, the responsibility of BC Parks, is believed to have stormwater sewers that connect into Parksville's collection system

RDN Collection Systems – Norm Burow, Chief Operator, Utilities

The RDN operate a number of collection systems including the:

Surfside Sanitary Sewer Service Area
French Creek Sewer Service Area
Barclay Crescent Sewer Service Area
Pacific Shores Sanitary Sewer Service Area
Fairwinds Sanitary Sewer Service Area

- Smoke testing has been done in most areas; the Morningstar area being the notable exception
- Some storm cross connections have been fixed, as have minor leaks in manhole structure
- CCTV inspection used primarily for operational problems as opposed to I&I investigation

2.6 Reducing Inflow and Infiltration Volume in the RDN

2.6.1 High level Analysis

The most cost effective way of addressing high I&I volumes within a sewer network is to identify the issues it is causing and quantify and cost the different options that could be used to mitigate them, so that cost benefit analysis can be performed.

For example, in the Greater Nanaimo area, lack of capacity at the Departure Bay Pump Station has been identified as cause of sewage overflows within its catchments. Estimation of volumes spilled and a future acceptable spill volume will allow for the development of whole life cost estimates for:

- adding in-line or off-line storm flow storage
- increasing pump station and downstream infrastructure capacity
- I&I reduction projects

It is unclear if cost estimates can be made for I&I reduction projects that will deliver a targeted level of reduction. In this example, of course, it will require input from the City of Nanaimo. However, the City of Nanaimo is making great strides into improving its understanding of I&I issues (see section 2.5), suggesting that this level of analysis may be possible.

2.6.2 Detailed Analysis and Goal Setting

Sanitary Sewer Overflow Monitoring

The RDN is learning a lot about its system through flow monitoring. Although, current sanitary overflow monitoring does not provide detailed estimates of spill duration and volume⁹. Such information is important when making decisions about I&I's cost implication to the community. It is therefore recommended that a sewer overflow monitoring program is created that records the frequency and extent of sewer overflows at all RDN and municipal sanitary overflows.

Workshops

It is clear from section 2.5 that, to various extents, RDN and municipal collection system managers are identifying their I&I problems and are taking steps to mitigate them, as set fourth in the 1997 LWMP. Steps taken include a number of mitigation techniques described in tables 2&3 (section 2.3.6). However, it appears from modelling and actual storm events that excessive I&I still occurs. It is therefore suggested that to build on this a series of workshop sessions are hosted for system operators to meet and discuss I&I problems, initiatives and successes.

⁹ See Appendix 3, *Liquid Waste Department Operating Procedures: Wet Weather – Monitoring Requirements*

Workshop sessions should have a clear purpose, articulate problems, identify strategies and set defined goals for all stakeholders. As inflow is typically the result of surface water run-off, the RDN and other municipalities' planning departments should have involvement in such workshops, as planners have the opportunity to manage stormwater flows.

It is recommended that the RDN should base workshops using the following type of approach:

- Define the problems that I&I is causing in each RDN trunk system, articulating regulatory commitments related to the issue as well as the financial, social and environmental risks posed, identifying high priority target areas (as indicated in 2.6.1)
- List all:
 - RDN investigation and mitigation work carried out in the last 10 years in its trunk and collection systems
 - known issues that are inside of the RDN's control and how and when they will be mitigated
 - known issues that are outside of RDN's control that require assistance from collection operators
- Request that each collection system operator lists:
 - work done in the last 10 years to investigate or mitigate I&I
 - known issues that are inside of their control and how and when they will mitigate them
 - known issues that are outside of their control (for example, I&I into Parksville's system from Rath Trevor Park) such that an action plan is created to solve the issue, which the RDN can choose to assist with as is appropriate
- Identify what mitigation techniques are working and which are not.
- Identify additional mitigation techniques that could be used (see tables 2 & 3, section 2.3.6)
- Identify how departments outside of wastewater operations can reduce inflow into sewers by redevelopment of existing impermeable areas and more consideration of the issue in future developments (include planners and engineers).
- Identify high priority areas for I&I investigation and agree on a strategy for implementation.
- Create an I&I mitigation action plan based on all information discussed, with well defined targets and timelines (goals) for both the RDN and all system operators

Hosting such a workshop will clarify to all stakeholders how their system's I&I problems affect the RDN, as well as promoting collaboration and knowledge share/learning between all stakeholders.

Preparing thoroughly for a workshop is essential to show to all stakeholders that the RDN is committed to reducing I&I and has the knowledge to strategically approach the problem. It will also make a productive outcome far more likely. Advanced preparation is expected from stakeholders.

Follow up workshops should be held to check progress against goals.

2.7 Managing sewage

The RDN wishes to reduce sewage flow as well as I&I in their system. As permitted sewage flow (as defined in section 2.2.1) is typically generated from the use of potable water within homes or buildings. The RDN's existing Watersmart programs educate on indoor water conservation and provide education literature on:

- Low flow toilet retrofits: replacing high volume flush toilets with more efficient low volume flush toilets.
- Low flow showerheads and faucet aerators: replacing less efficient showerheads and faucets with low-flow showerheads and faucet aerators.
- Clothes washers: replacing clothes washers with higher efficiency models.

The use of low flush toilet rebate programs are being considered in the RDN's local water service areas, and are already offered by the City of Nanaimo, the Town of Qualicum Beach, the City of Parksville and the District of Lantzville. Extending such programs to include free water reduction kits, such as the one below, may be a way of reducing water use in homes where the resident has no motivation to replace toilets and plumbing fittings. Such kits typically include faucet aerators, cistern water displacement bags, a low flow showerhead and dye capsules for leak testing.

Figure 13. Residential water reduction kit



Future provincial legislation will require new buildings to use water efficient plumbing fixtures as well purple pipe systems, which are designed to harvest rainwater and flows from lightly contaminated sources such as sinks and bathtubs (commonly referred to as greywater). However, as legislation will not be applied to existing properties it will have no affect on reducing current sewer flows.

Retrofitting existing properties with systems to collect greywater from inside of properties is not considered to be economically viable in B.C at this time due to the low cost of potable water.

Appendix 1: Extract from BC's Municipal Sewage Regulation, Item 17, Schedule 1.

MUNICIPAL SEWAGE REGULATION

[includes amendments up to B.C. Reg. 305/2007, October 5, 2007]

Average Dry Weather Flow or ADWF means the daily municipal sewage flow to a sewage facility that occurs after an extended period of dry weather such that the inflow and infiltration has been minimized to the greatest extent practicable and is calculated by dividing the total flow to the sewage facility during the dry weather period by the number of days in that period;

Inflow and infiltration

17 (1) The discharger must ensure that no person allows inflow and infiltration so that the maximum average daily flow exceeds 2.0 times ADWF to occur during storm or snowmelt events with less than a 5-year return period, unless

(a) if 2.0 times ADWF is exceeded at the treatment plant and for municipal sewage collection systems for which the contributory population to the treatment plant is equivalent to or exceeds 10 000 persons, the discharger addresses how I/I can be reduced as part of a liquid waste management plan, or

(b) if 2.0 times ADWF is exceeded at the treatment plant and for municipal sewage collection systems for which the contributory population equivalent to the treatment plant is less than 10 000 persons, the discharger either develops a liquid waste management plan or conducts a study and develops and implements measures that are developed in either the liquid waste management plan or the study such that I/I is reduced.

(2) Despite subcondition (1), if reductions below 2.0 times ADWF are not possible or cost effective based on a cost/benefit analysis, the discharger must

(a) provide full secondary treatment for the entire flow at all times, or

(b) undertake all of the following:

(i) provide at least primary treatment for flows greater than 2.0 times the ADWF;

(ii) utilize the full secondary treatment capacity of the treatment facility;

(iii) combine the primary and secondary effluent prior to discharge;

(iv) maintain a minimum receiving environment to discharge dilution ratio of 40:1;

(v) if disinfection is required, provide adequate excess disinfection capacity to ensure disinfection of the entire discharge flow.

Appendix 2: Results from Inflow and Infiltration Task Force Survey

Inflow and Infiltration Process Task Force Initial Program Comparison Survey Results

2/15/2008

City Name	Question 1: Please identify the wastewater collection problems that your I&I program is being designed to respond to.				Question 2: Please identify the wastewater treatment problems that your I&I program is being designed to respond to.			Question 3: Of the problems in Question 1 & 2, which are the most important, and why. Please explain:	Question 4: What was the trigger in your municipality that identified that you had an I&I problem in need of attention?
	Premature replacement through loss of capacity	SSO or CSO	Basement Flooding	Other, please specify	Premature expansion through loss of capacity	Bypass or overflows	Other, please specify		
City of Saskatoon			✓			✓		Basement flooding. One major incident in 2005 and two in 2007.	Basement flooding from large rain events.
Region of Peel			✓			✓		Basement flooding is most important because of the impact on residents	Areas with historical records of basement flooding
City of Victoria	✓	✓			✓	✓		1. L.W.M.P. mandates from province 2. Capacity and overflows tie in together for environmental reasons.	-L.W.M.P for the core area municipalities. -sewer pipe capacities for new developments with higher densities. -system (pipe) age & material
City of Calgary	✓	✓	✓			✓		Basement flooding (sewage back-up) is currently the biggest problem. Major storms in 2005 and 2007 resulted in nearly 1000 cases of sewage back-up.	Extreme rainfall in June 2005 resulted in extensive sewage back-ups (780), SSO's (3), lift station overflows (3), and treatment plant bypasses (3).
City of Chilliwack	✓	✓			✓			Question 2 - The cost to upgrade the WWTP.	No specific event.
Region of Halton	✓		✓	Reduce strains to pump stations & treatment plants		✓	Upsets at WWTPs, O&M cost reduction	Basement flooding, along with bypass and overflows are most important because these are reportable. Also, to confirm I/I rates used for design is an important task for us.	Significant basement flooding which occurred in May 2000 as a result of substantial rainfall.
Regional Municipality of York	✓	✓	✓	To reduce loads on treatment plants	✓	✓	To reduce loads on treatment plants	Capacity issues and treatment plant loads are most important for use. However, basement flooding and SSO is the most important for our local municipalities.	We noticed large responses at our treatment plants, pumping stations, and metering locations following a rain event. We also saw evidence of I&I in some of our wastewater modeling exercises.
Metro Vancouver		✓				✓		Both are important because they result in untreated wastewater to the environment.	Documented SSO's, and monitored flows with peak to dry weather flow ratio in excess of 2.
City of London		✓	✓			✓		Both are important.	Provincial ministry
District of Maple Ridge	✓			Optimal capacity use and Cost reduction			Not applicable	Cost reduction in volumetric charges is important	Differences of dry and wet weather flow as identified in the Master Sanitary Plan prepared by Earth Tech in 2000

Inflow and Infiltration Process Task Force Initial Program Comparison Survey Results

2/15/2008

City Name	Question 5: Briefly describe the resources that you have allocated to deal with your I&I program (approximate staffing, and annual funding expenditures)	Question 6: Does your Council understand the significance of I&I on the performance of your wastewater collection system and/or treatment plant(s)?	Question 6: Additional Comment	Question 7: Do you communicate resolution options to your customers (i.e. homeowners)?	Question 7: Explain	Question 8: Have you ever, or do you routinely have to resort to bypass pumping to avoid system backup and flooding during wet weather?	Question 9: Do you use real-time or predictive control as a means of maximizing collection system storage to alleviate I&I and mitigate flooding impacts?	Question 9: Additional Comment
City of Saskatoon	\$2.2 million - 4 staff - this includes other basement flooding response and investigation work.	Yes	Communication has been good on this point.	Yes	Sets of public meetings, websites, and brochures have all been used.	Occasionally	No	This is an area we are currently investigating and have funds committed towards.
Region of Peel	130,000 to annual sewer inspection 190,000 to inspection of maintenance chambers I/I studies and remedies is 700,000 annually 5,000,000 to repair and replacement 20 operations and 5 studies staff	Yes	We get calls even before a rain event from Councillors	Yes	downspout disconnect no grease down the drain limit water use during storms use of rain barrels	Almost Never	Yes	Use geotivity real time monitoring
City of Victoria	-staff of one -approx. annual funding of \$250,000 for investigations related works -I&I targeted rehab work yet to be done.	Yes	In process of informing council of issues related to I&I and it's potential impact on system capacities & future developments.	No		Never	No	
City of Calgary	1 - 2 FTE dedicated to inflow and infiltration program. Three I & I pilot studies planned in 2008. Estimate total cost of the studies is \$500,000.	No		Yes	Water Services staff contact homeowners to resolve problems.	Never	No	
City of Chilliwack	Still in preliminary stages. Have a annual budget of \$60,000. Fully equipped CCTV truck and crew.	No	Council has not been fully addressed in regards to this issue.	Yes	After tests have proven I&I, property owner is advised of repair requirements.	Never	No	
Region of Halton	2 full staff plus a 3 part time staff and one supervisor.	Yes	They understand more as it relates to basement flooding as opposed to impacts to the collection system/treatment facilities.	Yes	We do as it relates to removing private-side sources of I/I to reduce impacts on the wastewater system and prevent basement flooding.	Occasionally	No	This is something that we may want to move to in the future.
Regional Municipality of York	We have allocated staff to manage an inflow and infiltration study and we have retained a engineering consultant for the flow monitoring, investigations, analysis. Funds are allocated for the I&I project through our capital budget.	Yes	Our inflow and infiltration reduction project was approved by council.	No	Not yet, but we will be soon as our current projects approaches this part of our project. Within our project we included public communications such as flyers and a website.	Never	No	Not at this time but current program will address this issue with the development of flow control gates.
Metro Vancouver	Metro Vancouver owns and operates large mains and inspection and repair/replacement is part of our regular annual budget.	Yes	We're currently updating our Liquid Waste Management Plan and have drafted a discussion document for our board and the public that includes the significance of I&I.	Yes	Metro Vancouver's customers are our member municipalities, and we have discussed resolution options during the development of our Liquid Waste Management Plan.	Almost Never	Yes	
City of London	The City of London has a 20 year plan for all sewer works and included in this plan is \$120 M for CSO. We have one engineer working partime on this project using technical staff as required	Yes	Outlined in reports and presentations	Yes	Via bill inserts	Occasionally	Yes	To a minor degree at this time. More in the future.
District of Maple Ridge	No staff allocation. Annual funding (\$12,000 to \$ 65,000) for video inspections and flow monitoring	Yes		Yes	Open houses for remedial work	Never	Yes	

Inflow and Infiltration Process Task Force Initial Program Comparison Survey Results

2/15/2008

City Name	Question 10: Do you have any customers that are connected to your wastewater collection system that are unable to obtain insurance for basement flooding because repeated flood events?	Question 10: Estimated Number	Question 11: Have you had to pay settlement claims related to I&I flooding in the past 5 years?	Question 11: If yes, approximate value and year(s)	Question 12: Do you require backflow prevention valves to be installed on the sewer services for:				Question 13: Have you identified where your I&I is coming from?	Question 13: Degree of confidence?
					All new construction	In redevelopment (or infill development) areas	Only in known problem areas	Additional Comments?		
City of Saskatoon	Yes	Two	Yes	Very minimal in previous five years. There is a possibility of paying settlements from ongoing litigation in events in 2005 and 2007 however.	✓			Backflow retrofit program in place for 2005/07	Yes	High though still under investigation
Region of Peel	Yes	50	Yes	5 claims per year total \$8,000			✓		Yes	weeping tiles, downspouts, foundation drain systems, vandalism, broken pipes, manholes, improper storms connections
City of Victoria	No		No	Not to my knowledge.			✓		Yes	
City of Calgary	Yes	Unknown	No	City has not paid any claims. Most were paid by private insurance.				Not required. Homeowner's discretion.	No	Very low confidence, due to the limited number of flow monitoring sites, large catchment areas, and lack of resources to analyze data.
City of Chilliwack	No		No				✓		Yes	Aging infrastructure, manholes, pipes, cross connections. High water tables, and storm water run off. Degree of confidence 70%
Region of Halton	Yes	Less than 5 known.	No					Responsibility of the Local Municipalities	Yes	Coming largely from private-side stormwater connections and aging infrastructure - high level of confidence in areas that have been extensively studied.
Regional Municipality of York	No	NA. We are a two-tier municipality and our customers are the local municipalities within our region. We do not have this information from our local municipalities.	No	NA. We are a two-tier municipality and our customers are the local municipalities within our region. We do not have this information from our local municipalities.				Not Applicable	Yes	Our past studies have shown where I&I is coming from in some communities. We are currently looking at the whole Region.
Metro Vancouver		NA - our customers are our member municipalities.	No					That's up to each member municipality.	Yes	About 50% of our flow to the treatment plants is I&I, and of that a large percentage is believed to be from private property laterals.
City of London	Yes	Unknown	Yes	Confidential				We do not require backflow preventors	Yes	moderate
District of Maple Ridge	No		No					We don't require back flow prevention	Yes	80%

Inflow and Infiltration Process Task Force Initial Program Comparison Survey Results

2/15/2008

City Name	Question 14: Are the weeping tile (foundation drains) of any of your residential customers connected to your sewage collection system?	Question 14: If yes, please describe circumstances	Question 15: Are you undertaking or have you undertaken any flow monitoring within your collection system to attempt to quantify I&I?	Question 16: If yes to above, please briefly describe your flow monitoring program and its magnitude (permanent and temporary installations and catchment area, etc.	Question 17: Does your CCTV program include:					Question 18: Do you CCTV inspect your collection system post construction as a condition of acceptance?			
					Trunks	Collectors	Laterals	Services	We do not have a CCTV Program	Trunks	Collectors	Laterals	Services
City of Saskatoon	Yes	All homes built from approximately 1965 up to January 1, 2004.	Yes	CITY WIDE 6 real time rain gauges 22 real time sanitary monitors 5 temporary download monitors 3rotated through 35 sites 11 passive peak flow indicators		✓	✓	✓					
Region of Peel	Yes	but not supposed to be	Yes	30 permanent flow monitors on trunk sewers, 30 real time alarmed flow monitors in basement flooding areas	✓	✓				✓	✓	✓	✓
City of Victoria	Yes	Built as separate systems at the turn of the century, drainage bylaws prior to 1950 required storm drain lateral to be connected to storm drain main but allowed, by approval from Director, connections to the sanitary sewer. No records kept of which areas this occurred.	Yes	Permanent monitoring currently on 7 of 11 lift stations forcemains; remaining four to be done this year. temporary installations done thru contracts: 2005/06 = 9 open channel flow meters 2008 = 15 open channel flow meters 9 overflow locations City owned/CRD loaned flow meters 2005/06 = 5 open channel flow meters		✓	✓				✓		
City of Calgary	Yes	Weeping tile connections were permitted prior to 1973, in areas of high groundwater.	Yes	60 permanent flow monitors. Catchment areas 500 – 4000 ha +. Monitoring period May – Sept. Mixture of area – velocity meters and weir type meters. Typically 10-20 temporary flow monitors for special studies. Typical catchment area 200 – 500 ha.	✓	✓	✓			✓	✓	✓	
City of Chilliwack	Yes	Servicing existing homes with sanitary sewer, home owners connecting to system with no City inspection or knowledge.	No		✓	✓	✓			✓	✓	✓	
Region of Halton	Yes	Typically in older homes built prior to 1978.	Yes	106 flow monitoring stations within the collection system and WWTPs (15 temporary). Combination of manually collected information and SCADA collected information.		✓	✓	✓		✓	✓		
Regional Municipality of York	Yes	They are connected on the local municipal sewer system in some areas. This will be under review in our current study.	Yes	Our current flow monitoring includes 120 temporary flow meters and 15 heated rain gauges. Flow meters are placed in areas were problems have been identified and typically in older sewers that are not PVC. Flow meters were placed were the total length of pipe in the catchment was in the 5-7 km range. We will be constantly moving our meters if we do not see any response to a large rain event.	✓					✓			
Metro Vancouver	No	Officially no.	Yes		✓	✓				✓	✓		
City of London		yes, in areas built at certain times	Yes	21 flow monitors temporary and permanant.	✓	✓	✓			✓	✓	✓	
District of Maple Ridge	No		Yes	Temporary flow monitoring: 13 stations Total catchment Area: 3,096 ha	✓	✓	✓			✓	✓	✓	✓

Inflow and Infiltration Process Task Force Initial Program Comparison Survey Results

2/15/2008

City Name	Question 19: Have your municipality's I&I programs and mitigation efforts been a success thus far?	Question 19: Please explain why (or thoughts about why not)	Question 20: Do you subsidize flood prevention programs for any of your customers?						Question 21: Describe your current wastewater collection system design standards for Average Dry Weather Flow, Peak Wet Weather Flow, I&I Allowance (and Return Period)	Question 22: Do your design standards differ by type of development, redevelopment vs infill vs new construction? If so, please describe.
			Backflow preventer installation	Lot grading improvement	Weeping tile disconnection	Sump pump installation	Roof leader disconnection	Other, please specify		
City of Saskatoon	No	Public resistance to backflow upgrades and weeping tile disconnection in private homes. We are supported by Council however.	✓		✓	✓			290 l/capita/day (35/persons/ha) base plus Harmon peaking factor, 0.05 l/s per weeping tile connection (wet weather), 0.08 l/s/ha I/I (wet weather) - NO return period	No
Region of Peel	Yes	We've reduced basement flooding claims and increased are knowledge of system flows		✓		✓	✓		Except for unusual circumstances, the infiltration portion of sewage flow shall be 0.0002 m3/sec/ha for all types of land use. This factor applies to the gross area of all lands. When designing sewers that accept flows from an area greater than twenty five (25) years old, or where evidence indicates, an additional allowance shall be made for foundation drains equal to 0.08 litres/sec/foundation drain (0.00008 m3/sec/drain). Additional allowance for maintenance hole inflow: 0.00028 m3/sec/mh or equivalent of 0.000028 m3/sec/m of sewer length.	Yes
City of Victoria	No	-preliminary investigation stage thus far where we have identified some sources of I&I. -we are planning to undertake an extensive I&I reduction project starting in 2008 and continuing over the next 2-3 years, with an estimated cost of approx. \$3,000,000						no	Large models done by consultants. Peak Design Flow = Domestic Flow + Peaking Factor + I&I Domestic Flow = 225 liters/person/day Peaking Factor = Harmon or Babbitt formula I&I = we try to use actual I&I rates (where possible) from flow metered results	No
City of Calgary	Yes	Very limited mitigation efforts undertaken to date. Several storm cross connections were identified and removed as part of one I & I study.						No subsidy programs.	ADWF = population X 380 L/c/day (population based on 55 persons / ha) PDWF = ADWF X Harmon's Peaking Factor (min 2.5) PWWF = PDWF + I & I Allowance of 0.28 L/s/ha Required sewer size based on = PWWF / 0.86 Return Period: Not currently used for sanitary sewer design. Note: Sanitary Sewer Design Standards for Industrial and Commercial lands are under review and new standards may be published in the future.	No
City of Chilliwack	No	Still in preliminary stages. What corrections have been made have had minimal impact.						No, not at this time	ADWF = 410 litres/capita/day PWWF = 3.5 X ADWF I&I Flow Rate = 0.1 litres/sec/hect + ADWF	No
Region of Halton	Yes	The results of these efforts are still premature and there is lots more to do. Still hard to completely quantify the results of our I/I efforts.							With respect to flows, these standards vary from pipe size to pipe size. WRT I/I allowances, ours is 0.286l/sec/ha.	No
Regional Municipality of York	Yes	Our last program identified areas or concern. The local municipalites conducted some rehabilitation. We went back in and monitor and there was definent reduction in I&I.						Not Applicable	Dry weather I&I Allowance - 90 L/ca/d Peak I&I Allowance - 0.2 L/s/h ADWF - 265 l/c/d (res); 160 l/c/d (ICI) Peaking Factor - Harmon	No
Metro Vancouver	No	Municipalities have competing priorities, and the LWMP has only been in place for 5 years.						Municipal area of concern.	ADWF is a function of population PWWF is defined by basic service Our I&I allowance is 11,200 litres per ha per day	No
City of London	Yes	We have not initiated the program.	✓			✓			ADWF=250 I&I allowance=8640 l/ha/d PWWF=N/A Return Period=N/A	No
District of Maple Ridge	Yes	The I&I program has led to creation of capital projects to replace or reline						No	As per MMCD Design Standards. I&I Total Allowance: 11,200 l/ha/day	Type of development: yes Redevelopment vs Infill only if there is a change in land use. New construction: no

Inflow and Infiltration Process Task Force Initial Program Comparison Survey Results


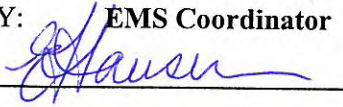
2/15/2008

City Name	Question 23:				Question 24: What is your normal period of highest rainfall? (eg: Nov to Feb)	Question 25: Are you familiar with any research, BMP, or any of your own studies on I & I that you might share with the participants? Please reference these.	Question 26: Please provide your opinion regarding where you would like this Task Force's efforts to be directed over the next few months	Question 27: Contact Information
	Return Period	Duration	Rainfall (mm)	Peak Intensity (mm/hr)				
City of Saskatoon	5 year	1 hour	28.9	28.9	May to September	Familiar with some weeping tile studies from cities of Winnipeg and Regina but I have no specific references.	Provide all of the information from the municipalities in an easily comparable form. It would also be useful to know the specific techniques municipalities are using to seek and control I/I and to share the limitations and successes of those experiences.	Galen Heinrichs, City of Saskatoon, galen.heinrichs@saskatoon.ca, 306 975 7522, , , , ,
Region of Peel					spring and fall	Infraguide OMBI and OCMBP		Jennifer Rose, Region of Peel, jennifer.rose@peelregion.ca, 905-791-7800 x. 4029, , , , ,
City of Victoria	1:25	17 hours over a 24 hour period	104mm	19mm/hr	January to April	-Inflow & Infiltration Management Plan done by consultant for the City. -BMP (National Guide to Sustainable Mun. Infrastructure) -various Capital Regional District studies on I&I. -could share results from proposed I&I reduction project that we will be	-private property I&I related issues -> rehab programs/incentives/strategies -sharing of other cities' experiences and findings. What worked, what didn't and at what costs.	Derk J. Wevers, City of Victoria, BC, dwevers@victoria.ca, 250-361-0552, , , ,
City of Calgary	Design Rainstorms Not Used for Sanitary Design				May, June, and July.	Computer Modeling Studies Completed to Date: Forest Lawn I/I Study – Phase 1 (2005), Glencoe South Calgary I & I Study, Anderson Road Sanitary Study (2007), Fish Creek West Sanitary Study (2007) Possible Future Studies: RDII Calibration Study (Mike Urban model), Use of Radar - Rainfall data in sanitary sewer modeling. BMP's: In 2006, the City installed plastic plugs in sanitary manhole lids in Palliser, Oakridge, Woodbine, and Woodlands communities. The manholes were located in street sags where street flooding may have occurred in June 2005. A consultant recommended plugging the pick holes as a first step after sewage back-ups occurred.	1) More information on how customer complaints are received, tracked, and used to assess system performance. 2) More information on flow monitoring practices (internal / external provider, resources allocated, data storage and ana	Colin R. Hansen, P. Eng. , City of Calgary - Water Resources, colin.hansen@calgary.ca, 403-268-1942, , , , ,
City of Chilliwack					October to March			Jared Brounstein, City of Chilliwack, brounstein@chilliwack.com, 604 793 2754, , , , ,
Region of Halton	n/a	n/a	n/a	n/a	March, April, October	Not at this time.	I/I reduction strategies aimed at basement flood prevention, cost-benefit analysis for remedial works and quantifiable results.	Matt Stefanik/John Duong, Halton Region, Ontario, Matthew.Stefanik@halton.ca, (905) 825-6000 x 7918, , , , ,
Regional Municipality of York	25 years	12 hours	73	18 mm/hr	March to May	King County Regional Infiltration?Inflow Control Study Miami-Dade Infiltration/Exfiltration/Inflow study Current study under way to be shared when finished.	Development of BMP	David Jansma, The Regional Municipality of York, david.jansma@york.ca, 905-830-4444 x5046, , , , ,
Metro Vancouver	5 yr	24 hr			Nov to Mar	Recent I/I study "Study of Effectiveness of I&I Measures" being finalized.	How do we deal with private property laterals in a practical and timely manner?	Ed von Euw, Metro Vancouver, ed.voneuw@metrovancouver.org, 604.436.6900, , , , ,
City of London					Available on Environment Canada Website	No.	Comparison of level of service standards as they related to flood protection for various municipalities. Do they use a specific design storm?	Scott Mathers, City of London, smathers@london.ca, 519-661-2500 x5472, , , , ,
District of Maple Ridge	10 years	Is the calculated Time of Concentration (Tc)		based on calculated Tc	November to February	No	BMP and successful programs	Velimir Stetin, District of Maple Ridge, vstetin@mapleridge.org, 604-467-7495, , , , ,

Appendix 3: Liquid Waste Department Operating Procedures: Wet Weather – Monitoring Requirements

REGIONAL DISTRICT OF NANAIMO
Liquid Waste Department

OPERATING PROCEDURES

SUBJECT: Wet Weather – Monitoring Requirements	PROCEDURE NO.: LWD-OP-10
	PAGE: 1 of 2
EFFECTIVE DATE: January 22, 2009	LAST REVISED: January 22, 2009
APPROVED BY: Manager of Liquid Waste SIGNATURE: 	PREPARED BY: EMS Coordinator SIGNATURE: 

1.0 PURPOSE

- 1.1 To provide operating staff with direction on monitoring requirements during an extreme wet weather event.

2.0 RESPONSIBILITY

- 2.1 It is the responsibility of the Chief Operator to provide this procedure to staff.
- 2.2 It is the responsibility of the staff to read, understand and follow these procedures during an extreme wet weather event.
- 2.3 It is the responsibility of the EMS Coordinator, Environmental Technician and Liquid Waste Manager to assist where necessary to ensure that all areas of the procedure are completed during an event.

3.0 PROCEDURES

- 3.1 The Liquid Waste Coordinator or person designated by the liquid Waste Coordinator is required to monitor weather forecasts and alert the Liquid Waste Manager, Operations Supervisor and Chief Operators of any upcoming weather events that should be monitored.
- 3.2 Greater Nanaimo Pollution Control Centre:
 - 3.2.1 Operator or EMS Coordinator or Environmental Technician are to check:
 - Brechin Point for sewage overflow
 - Millstone Siphon for sewage overflow
 - Departure Bay Beach for leaking manholes
 - 3.2.2 Record individual pump hours and wet well levels every half hour for:
 - Chase River Pump Station
 - Departure Bay Pump Station
 - Wellington Pump Station.

- 3.3 Duke Point Pollution Control Centre:
- 3.3.1 To be monitored as per normal from Greater Nanaimo Pollution Control Centre.
- 3.3.2 Operator or Liquid Waste Coordinator or Environmental Technician to check the manhole located in the ditch near the DPPCC for possible ICC infiltration by checking manhole upstream and down stream of this point. ICC is located 931 Maughan Road. (See Attachment I: Map of manhole locations)
- 3.4 French Creek Pollution Control Centre:
- 3.4.1 Operator or Liquid Waste Coordinator or Environmental Technician to check Surfside for leaking manholes.
- 3.4.2 Record individual pump hours and wet well levels every half hour for :
- Hall Road Pumpstation
 - Bay Ave Pumpstation
 - Lee Road Pumpstation
- 3.5 Nanoose Pollution Control Centre:
- 3.5.1 To be monitored as per normal from French Creek pollution Control Centre.
- 3.6 Observations are to be compiled by the EMS Coordinator and the results to be discussed at the next LWD meeting following a wet weather event to identify any issues that need to be address for future wet weather events.

4.0 ATTACHMENTS

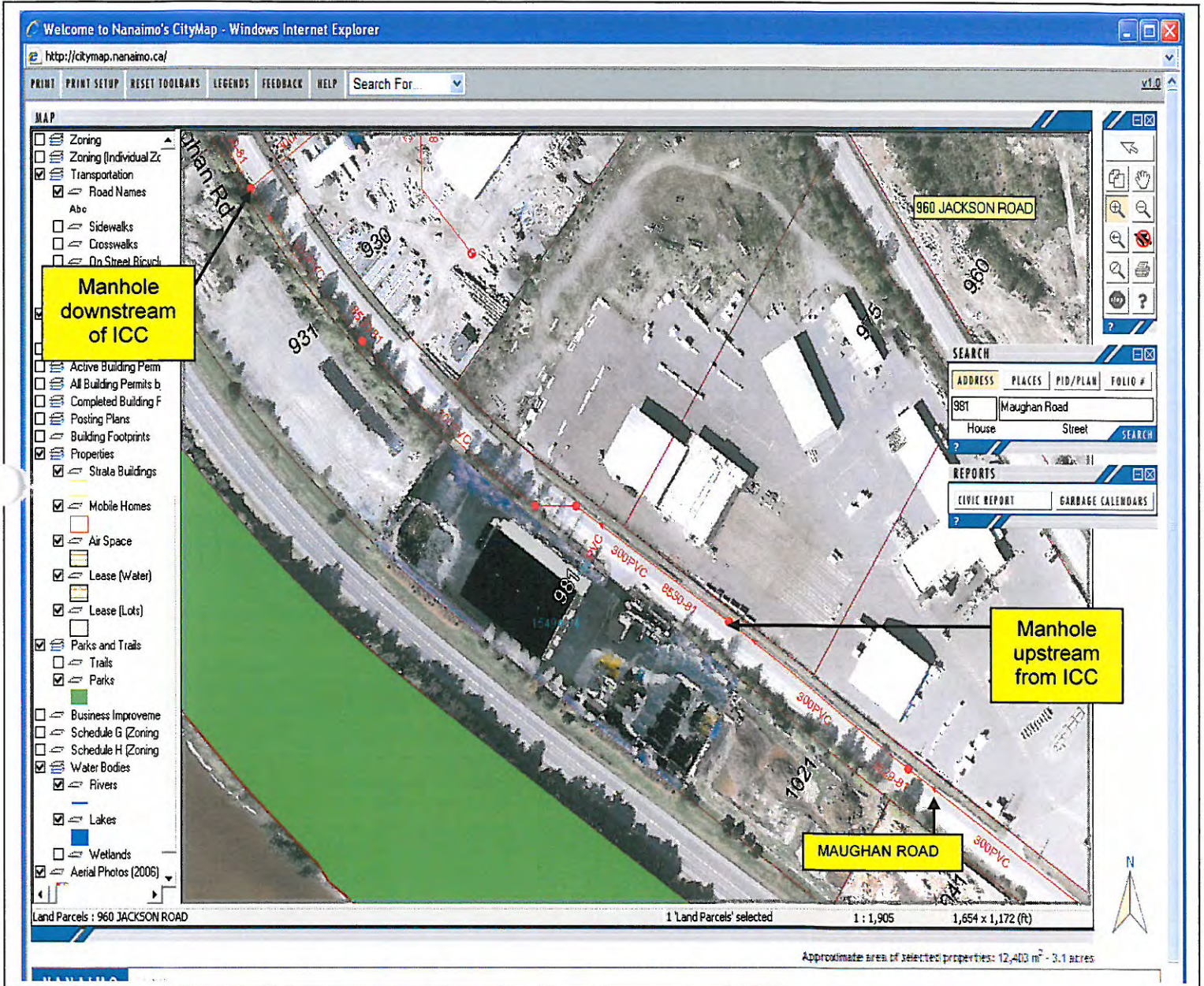
- 4.0 Attachment I: Map of manhole locations near DPPCC

Liquid Waste Department	Page 2 of 2	Prepared by: EMS Coordinator	Last Revised: 22 Jan 2000
Emergency Response Procedures Manual [Wet Weather Monitoring Requirements]		Approved by: Manager of Liquid Waste	

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LIQUID WASTE DEPARTMENT

Map of manhole locations near DPPCC (931 Maughan Road)



Liquid Waste Department	Page 1 of 1	Prepared by: EMS Coordinator	Last Revised: 22 Jan 2000
Emergency Response Procedures Manual [Map of manhole locations near DPPCC]		Approved by: Manager of Liquid Waste	

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Appendix C:

1997 LWMP Summary of Commitments

	1997 LWMP COMMITMENTS	MET	COMMENT
SOURCE CONTROL PROGRAM	A district sewer use bylaw to regulate the admission of wastewater into the sanitary sewer systems.	<input checked="" type="checkbox"/>	Sewer Use Bylaw No. 1225 "A Bylaw to Regulate the Discharge of Waste Into All Sewers Connected to Sewage Facilities Operated by the Regional District of Nanaimo" was adopted in March 2002.
	An educational program to support the sewer use bylaw.	<input checked="" type="checkbox"/>	The Source Control education and outreach program was developed by Wastewater Services' staff to support the sewer use bylaw.
	A cost benefit study to evaluate the merits of various source control program elements and prioritize program elements.	<input checked="" type="checkbox"/>	The report 'Cost-Benefit Analysis for Source Control In the Regional District of Nanaimo' was finalized in June of 1998. Recommendations in the report include: preparing an inventory of non-domestic discharges to the sewer system (completed in-house); developing educational materials (garburators; FOGS/restaurant sector; dental sector); Amending the sewer-use bylaw (completed in 2002); collecting material from other jurisdictions related to codes of practice (ongoing); establishing and maintaining contacts with source control programs in other jurisdictions (ongoing).
	<i>Conditional on findings in cost-benefit study:</i>		
	• Inventory non-domestic discharges to sewer systems; budget \$90,000.	<input checked="" type="checkbox"/>	An inventory of non-domestic discharges into the sewer systems was completed internally and formed the basis of Bylaw 1225.
	• Monitor discharges to characterize wastewater in the District; budget \$72,000.	<input checked="" type="checkbox"/>	Monitoring formed the basis of the inventory of non-domestic discharges into the sewer system and served to characterize wastewater within the district. From this, Bylaw No. 1225 and public outreach materials were developed and distributed (garburators, FOGS/restaurant sector; dental sector).
	• Determine contaminant levels to be contained in the bylaw; budget \$60,000.	<input checked="" type="checkbox"/>	Based on the outcomes of the inventory, a complete list of contaminant levels were included in Bylaw No. 1225.
	• Initiate collection and development of educational material as part of the overall education program; budget \$30,000.	<input checked="" type="checkbox"/>	Publications were collected and used to develop the RDN's own source control communication material on issues such as fats, oils, greases and garburators.
• Consider developing codes of practice, <i>if warranted</i> , following analysis of inventory results.	<input checked="" type="checkbox"/>	Through an in-house inventory of non-domestic discharges to the sewer system, elevated levels of mercury were found in biosolids and traced to the dental sector. Codes of practice were considered for the dental sector. However, a comprehensive outreach program targeted at the dental sector resulted in significant and measurable reductions in mercury concentrations in biosolids. Based on the positive impact of the outreach program, codes of practice were not adopted for the dental sector.	
• Establish and maintain contact with knowledgeable representatives of other jurisdictions to share information on successful/unsuccessful source control strategies, educational approaches, and data collection.	<input checked="" type="checkbox"/>	The RDN has and continues to share information with other jurisdictions regarding successful/unsuccessful source control strategies, educational approaches, and data collection. For example, Wastewater Services is a member of the Source Control Working Group facilitated by the BC Water and Waste Association.	
VOLUME REDUCTION PROGRAM	Develop a volume reduction program to control inflow and infiltration and to reduce water use within buildings.	<input checked="" type="checkbox"/>	Since 2005, volume reduction programs (water conservation in homes/businesses/building) have been guided by the WaterSmart initiative under the guidance of Water Services (formerly Utilities). Activities have included public outreach, communication, and workshops to support or enhance water conservation activities across the Region.
	Establish a committee to coordinate and oversee all water conservation activities within the District.	<input checked="" type="checkbox"/>	Through the Drinking Water and Watershed Protection function, a committee meets regularly to review, update and pursue opportunities for water quality improvement and water conservation initiatives.
	Cost benefit study to evaluate the merits of various volume reductions measures, to set priorities for recommended volume reduction measures and to define scope and budget; budget \$35,000.	<input checked="" type="checkbox"/>	The WaterSmart initiative was launched in 2005, with financial support from Land and Water BC. The 'Team Water Smart Final Report' (2005) outlines various strategies and priorities to support water conservation and volume reduction throughout the RDN. Through the Drinking Water and Watershed Protection function, a committee meets regularly to review, update, and pursue opportunities for water quality improvement and water conservation initiatives.
	Continue and expand I&I programs in Nanaimo, Parksville and Qualicum Beach.	<input checked="" type="checkbox"/>	The RDN continues to meet with municipalities to monitor flow and address I&I issues on a semi-annual basis.
	Install flow monitoring equipment at Lee Road pumping station for I&I analysis of French Creek; budget \$30,000.	<input checked="" type="checkbox"/>	Flow monitoring stations were located at the Ocean Place meter (on the interceptor line) and at the Johnstone Road meter. These flow meters facilitate flow monitoring and I&I analysis for flows into the FCPC.
	Flow analysis in the District's interceptor sewer system.	<input checked="" type="checkbox"/>	Flow monitoring stations are closely monitored, checked, and calibrated to evaluate flows from Parksville and Qualicum Beach. The RDN has established a comprehensive flow monitoring program that includes analysis of flows through the interceptor system. Flows from Municipalities is reviewed at the semi-annual flow monitoring meetings.
	Comprehensive I&I analysis study program by the City of Nanaimo; budget \$500,000.	<input checked="" type="checkbox"/>	The RDN contracted Associated Engineering to complete two phases of a Wet Weather Flow Management Strategy in 2001 and 2004. The City of Nanaimo has and continues to establish capital plans to address inflow and infiltration at critical locations within Municipal boundaries. Progress towards inflow and infiltration continues to be shared at semi-annual flow monitoring meetings.
	Enhance RDN's existing water conservation education program; budget \$30,000.	<input checked="" type="checkbox"/>	The RDN's Water Services department is responsible for 8 drinking water systems in the RDN. As part of this service, Water Services has developed a region-wide water conservation program that offers education and outreach to homeowners and businesses with respect to indoor and outdoor water conservation.

1997 LWMP COMMITMENTS		MET	COMMENT
STORMWATER MANAGEMENT	The RDN will approach member municipalities, neighbouring Regional Districts and federal/provincial agencies to discuss formation of a committee to coordinate stormwater management issues and foster regional stormwater management planning.	<input checked="" type="checkbox"/>	The RDN worked with Environment Canada, BC Ministry of Community, Aboriginal and Women's Services and Water, Land, and Air Protection, and the Georgia Basin Ecosystem Initiative to produce 'Stormwater Planning: A Guidebook for British Columbia'.
	Cost benefit study to determine the District's role in coordinating stormwater management activities in the District; budget \$20,000.	<input checked="" type="checkbox"/>	A draft stormwater management plan was prepared in 2002. The 5-year action plan established a budget and cost/benefit analysis for basic stormwater planning, public awareness, and regulation of land development. Implementation of the plan was hindered by a lack of political, financial, and staff resources. A more comprehensive Drinking Water and Watershed Protection Action Plan(DWWP) was adopted in 2008. All electoral areas and member municipalities participate in the DWWP.
	Include discharges into the storm drain system in the inventory of non-domestic discharges to the sanitary sewer; budget \$20,000.	<input checked="" type="checkbox"/>	Storm water system discharges are reported under Bylaw no. 1225 "A Bylaw to Regulate the Discharge of Waste Into All Sewers Connected to Sewage Facilities Operated By the Regional District of Nanaimo", including source, quality, volume and possible contaminants.
	The RDN, as part of its overall education plan, will develop materials to inform domestic and non-domestic dischargers to the storm drainage systems about the need for source controls, and what specific groups can do to ensure that the program results in reduced contaminant loading to receiving waters: budget \$20,000.	<input checked="" type="checkbox"/>	As part of the Drinking Water and Watershed Protection, the RDN will be developing a comprehensive program that includes outreach/education, low impact development standards, and other strategies to safeguard watershed health through stormwater management.
	Establish and maintain contact with representatives of other jurisdictions to share information on regulatory, educational, data collection and funding sources for water quality monitoring programs.	<input checked="" type="checkbox"/>	The RDN, through the Drinking Water and Watershed Protection Plan, continues to liaise with other jurisdictions to share information on water quality monitoring programs. For example, the RDN is an active participant with Convening for Action Vancouver Island's water management and sustainability initiative.
	Create local service area to facilitate construction, operation, and maintenance of stormwater facilities <i>when necessary</i> . The RDN will undertake measures to protect or enhance watershed areas, riparian zones, identified areas of aquifer recharge, beaches and protect marshland from drainage or infill.	<input checked="" type="checkbox"/>	Under Bylaw No. 1363 'A Bylaw to Establish a Service Area in a Portion of Electoral Areas 'F' and 'G' for the Purposes of Providing a Community Storm Water Management Service' (2004), the RDN has established in the River's Edge Community. Across the District, however, stormwater infrastructure is either under jurisdiction of the Ministry of Transportation and Infrastructure, a Municipality, or a private entity (such as in the Fairwinds community).
	The District will continue to monitor the effectiveness of the water stewardship initiatives within the District to coordinate and support similar initiatives elsewhere in the District.	<input checked="" type="checkbox"/>	Through the Drinking Water and Watershed Protection function, member municipalities as well as the Fairwinds development corporation, participate in and advance initiatives that support water stewardship initiatives throughout the Region.
ODOUR CONTROL	When feasible, eliminate odours emitted from it's present and future wastewater treatment plants and associated interceptors and pump stations. The District will undertake to study past, current, proposed and potential odour elimination measures and to establish an effective implementation plan.	<input checked="" type="checkbox"/>	The RDN contracted their engineering consultant to produce an odour reduction strategy for the GNPCC and FCPC, respectively. The odour reduction strategy for the FCPC was updated in 1997, 2000, 2006, and a foul air management strategy was completed in 2008. The odour management strategy for the GNPCC was updated in 2001 and 2003. An application was recently made for a grant to upgrade the GNPCC's odour management strategy in 2012. Odour complaints have been reduced at the FCPC from 227 complaints in 1999 to none in 2011. Odour complaints increased to 14 in 2012, however, the most of the complaints were attributed to decomposing herring roe on the nearby beach. There were only 3 odour complaints at the GNPCC in 2012.
	The District will initiate formal consultation and information sharing and exchange procedures, in continuum with all interested resident associations, or where there is no formal resident association, a group of interested residents living within a 3 kilometer radius.	<input checked="" type="checkbox"/>	The RDN conducted meetings with the French Creek resident associations until mid-2007. After this period, very few odour complaints were reported and residents stopped attending local meetings. The RDN reports on odour control measures and odour complaints in annual reports that are made available to the public and to the Ministry of Environment. Odour complaints are also entered into the environmental management system to track how complaints are addressed through adjustments to infrastructure and personal response to residents.
	The District will approach and maintain contact with local, Provincial, and Federal government agencies and private sector companies knowledgeable in wastewater treatment and other odour emitting processes to discuss and evaluate past, present, proposed, and potential odour eliminating measures.	<input checked="" type="checkbox"/>	The RDN's engineering consultants incorporate the latest in odour control strategies into the pre-design for any wastewater infrastructure.
	The District will research and document studies, proven practices, procedures and physical control facilities that are applicable to wastewater treatment plants, interceptors and associated pump stations.	<input checked="" type="checkbox"/>	Through the Benchmarking initiative, the RDN collaborates and shares odour control strategies and practices with municipalities, districts, and other levels of government.
	Following assessment of the foregoing, the District will evolve a plan which will immediately implement policies, procedures, processes, odour control monitoring and control works for the existing wastewater facilities as well as for future expansions, modifications, and new construction of relevant facilities.	<input checked="" type="checkbox"/>	As above, the RDN has completed and continues to update odour control strategies for the FCPC and the GNPCC. Odour issues at the NBPC are monitored through the software associated with the environmental management system.
	The District will establish odour emission standards for all inplant process stages and within the contiguous communities, for existing and future facilities.	<input checked="" type="checkbox"/>	As reported in the Wastewater Services Annual Reports, odour emissions standards are based on multiple complaint days at (or around) collection and treatment infrastructure.
	Through the OCP updating process will emphasize the need for maintaining appropriate zoning the vicinity of wastewater treatment plants.	<input checked="" type="checkbox"/>	Treatment plants are located on large lots that offer significant visual and odour buffers. Areas around wastewater treatment facilities are zoned institutional or commercial.

1997 LWMP COMMITMENTS		MET	COMMENT
RURAL AREAS	New sewage systems will be restricted to those determined to be necessary under the RGS and updated OCPs, or to address problem areas (such as failed onsite systems) in existing development	<input checked="" type="checkbox"/>	No new collection systems were introduced into areas not designated by an OCP. For example, the new collection system in Cedar services portions of the growth containment boundary. There were servicing studies in areas to address problem areas, including Barclay Crescent, Cedar, Gabriola Island, Extension, Nanoose and Shaw Hill, Deep Bay, Bowser. However, given the per-property costs associated with the installation of and connection to the collection system, with the exception of Barclay Crescent, residents voted against the construction of the collection system. Some properties adjacent to a service area were allowed to connect to the collection system for health and environmental reasons.
	Use a three phase procedure to assess sewage treatment, reuse and disposal facility needs for future Village Centres (now Growth Containment Boundaries) that may be established under OCPs, to assess sewage system needs.	<input checked="" type="checkbox"/>	The three phase process consists of: 1 - Preliminary Assessment; 2- Pre-Design Assessment; 3-Project Implementation. The initial phases of this process has been applied to Wembley Road, Barclay Crescent, Madrona, West Bay Estates/Dolphin Drive, Cedar Estates, and Bowser Village. These areas were identified under OCPs as Village Centres or areas with problem systems.
	The District will be holder of the Permit or OCs for all new sewage systems processed under MOE jurisdiction. The District will review its role with respect to new sewage systems processed under VIHA.	<input checked="" type="checkbox"/>	In a 2007 report, Associated Engineering reviewed the RDN's role relative to new sewage systems processed under VIHA jurisdictions and concluded that the staff and financial resources to acquire and operate package treatment plants would be prohibitive. Further, the acquisition and operation of package treatment plants outside urban containment would contradict the OCP and RGS goals. Private onsite systems that fall under the MWR do not require consultation with or approval from local governments.
	All existing discharges permitted by the MOE must comply with the LWMP. The District may elect to take over an existing permit.	<input checked="" type="checkbox"/>	Private onsite systems that could fall under the purview of the MSR do not require consultation with or approval of local governments.
	The RDN, will establish minimum standards for sewage systems that are under jurisdictions of the MOE, to ensure the use of proven innovative technology, reliability, redundancy and cost effectiveness.	<input checked="" type="checkbox"/>	In 2005, authority to determine the standards for a private sewage systems were devolved to private industry through the Sewerage System Regulation. Again, private onsite systems with flows that require an MOE permit do not require consultation with or approval by local government.
	The RDN will proactively and cooperatively work with VIHA to monitor and to assess sewage system requirements and develop solutions for failed onsite systems that are under MOH jurisdiction.	<input checked="" type="checkbox"/>	The RDN's request to the MOH could not be accommodated. Package treatment plants fall under federal legislation that does not recognize individual local government policies. Further, regulation change in 2005 transferred responsibility for onsite system planning onto authorized persons. The RDN has, however, developed an outreach to inform residents how to properly maintain a septic system.
	The RDN, in consultation with stakeholders and VIHA, will investigate alternate minimum standards for onsite systems to supplement existing MOH sewage disposal regulations.	<input checked="" type="checkbox"/>	In 2005, authority to determine the standards for private onsite systems was devolved to the private sector through the Sewerage System Regulation.
	The District, at its option, may allow finance, design, finance and/or operate by the private sector providing the District's minimum standards for sewage systems are met, and providing financial guarantees in the form of bonding are in place to ensure performance, including ongoing operation and maintenance.	<input checked="" type="checkbox"/>	The RDN does not have authority to allow the private sector to operate private wastewater collection or treatment facilities. In 2011, the RDN drafted a bylaw that stipulated conditions under which the RDN would acquire a package treatment plant from a private entity (a private onsite system).
	The District will establish septage receiving and treatment facilities in conjunction with the private sector.	<input checked="" type="checkbox"/>	To minimize odours around the FCPC, the RDN attempted to establish septage receiving facilities in 1999. In the November 10th, 1998 Board meeting, staff were instructed to prepare a request for proposal for septage handling by a private firm. Following this process, a private firm was identified and the Board directed staff to issue a bylaw "to prohibit septage from being accepted at Regional District Facilities if a private septage handling firm exists that can accept septage from within the RDN for a fee no greater than the price schedule" as it was proposed. It followed that the private firm would build a septage receiving site in south Nanaimo and would have to charge a rate that was \$0.02 to \$0.03 greater than their proposal. It was recommended that the RDN raise septage rates to pay for improvements at facilities, in lieu having only one facility operated by a private firm.
	All sewage systems will be based on user pay, through establishment of a sewer local service area.	<input checked="" type="checkbox"/>	All wastewater infrastructure is paid for by the service area that directly benefits from improvements.
The District will encourage marine operators and Federal small craft harbours to provide boat discharge facilities with a connection or trucking to a District approved sewer system or wastewater treatment facility.	<input checked="" type="checkbox"/>	The RDN amended Bylaw No. 988 (A Bylaw to Amend Regional District of Nanaimo Truck Liquid Waste Disposal), to include marine sewage reception facilities in 2008. In so doing, the RDN reduced the sewage disposal rates for marine sewage reception facilities, encouraging marinas to provide and pump out their discharge facilities.	

1997 LWMP COMMITMENTS		MET	COMMENT
GNPCC	Problem areas that require a sewage system and Village Centres determined through the OCP process to require a sewage system may be connected by trunk sewer to the District's interceptor sewer system.	<input checked="" type="checkbox"/>	In 2005, the provincial government contributed approximately \$2.4 million dollars to connect 250 properties in lower Lantzville to the GNPCC through the RDN's interceptor.
	The District will work with the City of Nanaimo to ensure sewer system planning within the City allows capacity for possible trunk sewer contributions to the District's interceptor sewers from Village Centres and problem areas in the Electoral Areas.	<input checked="" type="checkbox"/>	In 2007, through Bylaw No. 1004, the City of Nanaimo allowed 222 properties in Cedar Village to connect to DPPCC. In 2010/2011, the RDN began working with the City of Nanaimo and the Suneymux First Nation to connect the First Nation to the City's collection system.
	Expand and upgrade GNPCC to provide secondary treatment service for up to 120,000 people. The estimated cost for expansion and upgrading of the GNPCC to service 120,000 people is: \$35,000,000 and associated operating cost is \$2,500,000.	<input checked="" type="checkbox"/>	Process selection for upgrade and expansion, including secondary treatment, at the GNPCC was initiated in 2010. Upgrading the GNPCC facility to provide secondary treatment by a target date of 2018 is suggested for discussion purposes to solicit feedback during the consultation process. Factoring in inflation and an increase in the cost of construction, the estimated costs for upgrade is \$61,800,000.
	Parallel the Chase River forcemain and to upgrade the pump station at an estimated cost of \$830,000. Scheduled for 1998.	<input checked="" type="checkbox"/>	In 1998, a second 450 mm diameter force main was constructed to twin the existing Chase River forcemain.
	Upgrade and expansion of Wellington Pump Station, estimated at \$220,000	<input checked="" type="checkbox"/>	An odour control system has been installed at the Wellington Pump Station. The Wellington Pump Station has historically low flows that has not necessitated facility upgrade or expansion.
	Upgrade and expansion the Chase River Pump Station, estimated at \$790,000	<input checked="" type="checkbox"/>	In addition to twinning the forcemain (noted above), Chase River Pump Station upgrade and expansion projects include: increasing pumping capacity (2000), installation of flow meters (2000), odour control improvements (2000), construction of a septage receiving facility (2001), installation of a new backup generator (2002), influent gate control upgrade (2002), construction of a new chemical storage and chemical feed system, improved ventilation and installation of an ion generator.
	Upgrade and expansion of the Departure Bay Pump Station, estimated at \$1,200,000	<input checked="" type="checkbox"/>	The Departure Bay Pump Station's pump controls have been upgraded (to Allstrom control units) and an odour control system has been installed.
	Interceptor sewer expansion (2000-2005), estimated at \$2,210,000	<input checked="" type="checkbox"/>	Flows have been less than anticipated due to successful I&I reduction and volume reduction programs. Therefore the sewer expansion is not yet necessary.
	The District will continue to investigate and promote additional opportunities for environmentally responsible use of reclaimed water and biosolids, including educational and marketing programs.	<input checked="" type="checkbox"/>	At the GNPCC water reclaimed and used as wash-down water. For nearly a decade, biosolids have been beneficially reused in landfill closures, mine reclamation, and applied on the Vancouver Island University's forest. These activities are promoted on the RDN website and at treatment plant 'open house' events.
	The District will work with the City of Nanaimo to investigate locations and treat requirements for septage receiving facilities.	<input checked="" type="checkbox"/>	A septage receiving facility was built in 2001 at the Chase River pump station.
The District will install additional ferrous chloride (or alternate reactants) facilities to control corrosion and odour potential with the sewage system.	<input checked="" type="checkbox"/>	Ferrous chloride facilities have been operational since 2000.	

1997 LWMP COMMITMENTS		MET	COMMENT
FCPCC	The school District 69 LWMP Phase 1, French Creek Service Area Sewage Treatment and Disposal, that authorized the recent expansion of the FCPC will be revoked when this LWMP is approved.	<input checked="" type="checkbox"/>	Phase 1 was superseded by the approved Liquid Waste Management Plan (see the MOE approval letter as date January 28, 1999).
	Problem areas that require a sewage system and Village Centres determined through the OCP update process to require a sewage system may be connected to the French Creek Local Service Area.	<input checked="" type="checkbox"/>	Barclay Crescent Sewer Service Area was added in 2004. Servicing the Madrona area failed in a referendum.
	Hall Road Pump Station upgrade, estimated at \$170,000	<input checked="" type="checkbox"/>	The Hall Road Pump Station upgrade was completed in 2012.
	Lee Road Pump Station upgrade, estimated at \$230,000	<input checked="" type="checkbox"/>	Upgrade projects at the Lee Road Pump Station have included: twinning of the forcemain, installation of new controls and a new electrical kiosk, installation of a fourth pump, replacement of other pumps, construction of a new sluice gate.
	Lee Road Forcemain twinning, estimated at \$220,000	<input checked="" type="checkbox"/>	The Lee Road forcemain has been twinned when the pump station was upgraded in 2010.
	Bay Avenue Pump Station upgrade, estimated at \$345,000	<input checked="" type="checkbox"/>	Bay Avenue Pump Station continues to handle loads and its performance will be monitored. The upgrade is now scheduled for 2025.
	Isolate low lying areas to Parksville interceptor \$230,000	<input checked="" type="checkbox"/>	In 2006 Associated Engineering determined that the Parksville interceptor was adequately sized to manage flows until 2026. Associated Engineering did not recommend improvements to the interceptor until 2026.
	A later stage expansion (10-15) years will include Stage 3 expansion of FCPCC and paralleling of the outfall at an estimated cost of \$15,900,000 and associated operating cost of \$1,320,000.	<input checked="" type="checkbox"/>	Stage 3 expansion and paralleling the outfall are scheduled for 2015-2025
	The RDN will work with the City of Parksville to review the current OCP growth projections and its distribution with the objective of eliminating the future need to parallel the upstream section of the interceptor sewer. In addition, and as an alternative, Parksville will be encouraged to investigate modifications to its sewer collection system to divert sewage flow from upstream to downstream sections of the interceptor at less cost than paralleling the interceptor.	<input checked="" type="checkbox"/>	In 2006, Associated Engineering used the City of Parksville's OCP to prepare a report detailing improvements required for the interceptor. As above, interceptor, as well as the Bay Avenue Pump Station, are adequately sized to handle increasing flows until 2026 or full build out as estimated by the OCP.
The RDN will continue to investigate and promote additional opportunities for environmentally responsible use of reclaimed water and biosolids, including educational and marketing programs.	<input checked="" type="checkbox"/>	Effluent is used for spray irrigation at the Morningstar Golf Course and is used as wash-down water at the treatment plant. Biosolids are land applied on the Vancouver Island University's forest. Both of these activities are marketed at open house events held at the treatment plant.	
NBPC	Upon completion of the updated OCP, those areas identified for eventual connection to a sewage system will be added to the Fairwinds Sewer Local Service Area. The estimated cost to extend trunk sewer service to these areas is \$4,203,000. The following trunk sewer extensions are included: - Trunk sewer from Nanoose Bay WPCC to Madrona - Trunk sewer from NBPC to Red Gap (serves Red Gap and Garry Oak).	<input checked="" type="checkbox"/>	A sewer servicing study investigating the potential connection of Red Gap to the NBPC was completed in 2008. However, property owners in the area did not proceed with this project because of the costs associated with the new infrastructure. A servicing study for Madrona, undertaken in 2009, indicated that there was greater benefit to connect the Madrona area to the FCPCC. When the issue was put to referendum, it was rejected by residents.
	The District will ensure sewer system planning within the Fairwinds development allows capacity and statutory right of way corridors for the future trunk sewer contributions from the remainder of the Service Area.	<input checked="" type="checkbox"/>	Amendments to the Fairwinds neighborhood plan include provisions for wastewater infrastructure to convey effluent to the NBPC.
	Expansion to service 12,000 people and upgrading of the treatment process to secondary will form the basis for planning improvements to NBPC. The next stage of future expansion and upgrading will be capacity for up to 6,000 people, the provision of secondary treatment, use of reclaimed water for irrigation, process water, and wash-down water, discharge of the remainder of effluent through the existing marine outfall and transport of biosolids to FCPCC for treatment and beneficial reuse. The estimated capital cost ... to service 6,000 people is \$3,210,000 and the associated operating cost is \$200,000/year.	<input checked="" type="checkbox"/>	The approved 1997 LWMP contemplated an upgrade from primary to secondary treatment by 2010. This timeline was not met because there were too few residents in the area to support the additional tax burden. The RDN funds services based on a user pay principle, by establishing service area bylaws. Therefore, the entire cost of upgrading the NBPC must be borne by residents living in the service area. The funding mechanism for the upgrade schedule contemplated in the 1997 LWMP was based on projected growth and service area expansion with a NBPC population base of 6000 by 2010. NBPC currently provides chemically enhanced primary treatment for a population of approximately 1,350 and discharges roughly 273 m ³ /day. The RDN recognizes the importance of upgrading treatment to MWR and WSER standards, and also recognizes the need to do so in a manner that considers the capacity of residents to fund the proposed upgrades. For these reasons, the RDN will submit a LWMP amendment seeking to revise the commitment schedule for upgrade to secondary treatment. Through the LWMP amendment process, the RDN has undertaken scope and cost studies with the objective of establishing a reasonable timeline for implementation of secondary treatment that takes into consideration current utilization, anticipated growth, and regulatory requirements. For discussion purposes during the consultation process, the RDN is proposing options for upgrading the NBPC to secondary

SUMMARY OF COMMITMENTS FROM THE APPROVED LIQUID WASTE MANAGEMENT PLAN (Completed in 1997 and Approved in 1999)

DPPCC	The DPPCC was financed and constructed by the private sector in 1997 and will be turned over to the District to own and operate. Operating costs are estimated at \$60,000/year.	<input checked="" type="checkbox"/>	The DPPCC was transferred to the RDN in 1998.
	Problem areas that require a sewage system and Village Centres determined through the OCP updating process to require a sewage system may be connected by a trunk sewer to the DPPCC.	<input checked="" type="checkbox"/>	The Duke Point Sewer Service Connection Agreement between the RDN and City of Nanaimo was signed in 2007. This agreement allowed properties within Electoral Area 'A' to connect to the DPPCC. The RDN was allowed to connect up to a maximum of 222 equivalent single family units. Bylaw No. 1445 'A Bylaw to Amend the Boundaries of the Cedar Sewer Service Area' was approved in 2007.

Appendix D:

Nanoose Bay Pollution Control Centre Upgrade Study

Regional District of Nanaimo
Nanoose Pollution Control Centre Upgrade Study -
Report

Prepared by:

AECOM Canada Ltd.

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Project Number:

114501

Date:

March 26, 2010

March 26th, 2010

Project Number: 114501.03

Mr. Sean De Pol
Manager of Wastewater Services
Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC V9T 6N2

Dear Sean,

Re: Nanoose Pollution Control Center Upgrade Study - Report

In order to support the RDN in developing a strategic upgrade plan for the Nanoose Pollution Control Centre (NPCC), AECOM has reviewed past cost estimates and design reports prepared for the RDN as they relate to the optimization and upgrade of the NPCC to secondary treatment.

AECOM has with the help of the RDN gathered the most up-to-date plant performance, population growth, and future development information to put the upgrade to secondary treatment into the most relevant context. This report provides updated cost estimates for trunk sewers to connect the various service areas to the NPCC, as well as cost estimates to upgrade the NPCC to secondary treatment without increasing flow capacity. Several cost estimates have also been provided to upgrade the NPCC to secondary treatment and increase its service capacity.

Please provide any comments on this report to the undersigned at 604-473-8518, or to Norm Barmeier, Project Engineer, at 604-298-6181.

Sincerely,

AECOM Canada Ltd.

For review.

Will F. Wawrychuk, P.Eng.
Program Manager

Encl:

/nb

1. NPCC Performance

1.1 Hydraulic Capacity

The Nanoose Pollution Control Centre (NPCC) was originally designed for a population of 3,000 (1250 properties¹), an average dry weather flow of 530 m³/d, and a peak wet weather flow of 2,780 m³/d. During construction only enough pumping capacity was installed to serve a population of 1,500 (625 properties¹), the existing sedimentation tanks can support primary treatment for a population of 3,000 (1250 properties¹) with the addition of sludge pumps.

The NPCC currently sees an average flow of approximately 220 m³/d and a maximum flow of approximately 450 m³/d. It is of particular note that this plant does not encounter peak hourly flows that approach the rated peak flow capacity of 2,780 m³/d. The plant currently operates at approximately 42% of its original design capacity.

- 1. The NPCC catchment collection system is relatively new and is isolated from wet weather flows; minimal I&I.
- 2. The NPCC average daily flow is currently 220 m³/d.
- 3. The NPCC has an hydraulic capacity of 2,780 m³/d.

Flow data from the annual monitoring reports for NPCC has been summarized and plotted in Figure 1 to illustrate the change in flow through the plant since 1999. The average annual flow has increased from 120 m³/d to 220 m³/d over the past 10 years.

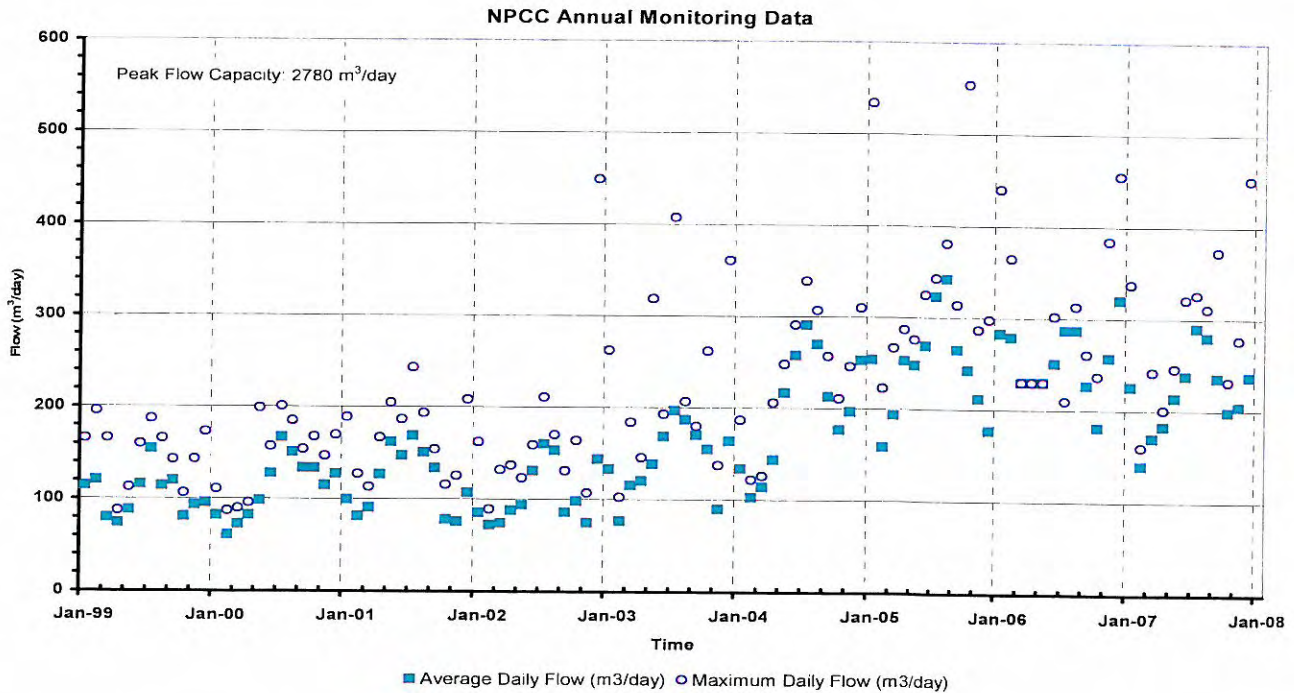


Figure 1 Summary of Annual Monitoring Reports – Average and Maximum Daily Flows

The plant was originally designed to handle approximately five times the average dry weather flow in order to accommodate peak hourly flows associated with wet weather events. However the collection system

¹ assume 2.4 residents per property

connected to the NPCC is strictly a sanitary sewer system which is isolated from storm water inflow. Operations staff has confirmed that the collection system is also relatively new and little infiltration through cracks or poor piping joints has been observed.

1.2 Population Projections for the Area Serviced by the NPCC

Based on the Nanose Bay Official Community Plan there are nine areas that form part of the NPCC catchment area. These are Madrona, Beach Comber, Delanice Way, Dolphin Drive, Schooner Cove, Garry Oak, Red Gap, the Department of National Defence, and Fairwinds. Madrona will be serviced by the French Creek Pollution Control Center. Fairwinds is the only neighbourhood currently physically connected to the NPCC. In addition, there are 129 parcels of land at Gary Oak with the potential to connect immediately, for a total of 846 physical sanitary sewer connections to the plant. The remaining areas use private septic fields.

The Schooner Cove condominium complex was connected this summer and has added an estimated 49 residential connections to be serviced by NPCC bringing current active sewer connections to 766, however according to the latest billing information provided by the RDN only 596 connections are being actively billed.

There have been several population projections made in the past and Table 1 summarizes past lot counts, house counts, and latest population projections. Generally, the actual population growth and sewer connections observed have been significantly less than had been projected in the past. The observed population growth is approximately 0.3%.

Table 1 House Count and Population Projections

Area	2006 lot count	2009 house count*	2009 Population based on house count**	Projected population based on OCP build out**
Madrona	n/a	n/a	n/a	0 - Connecting to FCPCC
Beachcomber	n/a	465	1116	1320
Delanice Way	n/a	27	67	84
Dolphin Drive	366	328	788	1174
Schooner Cover	n/a	49***	118	449
Garry Oak	138	129	310	762
Red Gap	165	252-290	504-580	1000-1100
DND	n/a	n/a	40-74	131
Fairwinds	658	623***	1495	5366
TOTALS			~3600	~10400

Notes: * the current house count is based on recent discussions with RDN staff.

** Populations are based on a factor of 2.4 people per lot applied to the projected OCP build out lots

*** denotes houses that are physically connected to the NPCC

Table 3 Conceptual Cost Estimates for Various Technologies

Technology	1996 Cost Estimate (\$)
Oxidation Ditch	\$3,060,000
Sequencing Batch Reactor	\$2,910,000
Trickling Filter/Solids Contact	\$3,220,000
Ecofluid	\$3,890,000
Hydroxyl	\$4,110,000
Solar Aquatics	\$3,560,000
ZenoGem	\$3,710,000

It is important to note that the design basis for the upgrade to secondary treatment put forward in 1996 assumed that the existing primary sedimentation tanks would be converted to SBR basins, and that three additional SBR basins would be required to service an anticipated 6,000 people.

AECOM prepared an independent conceptual level cost estimate to convert the NPCC to secondary treatment using SBR technology based on an ADWF of 530 m³/d. This cost estimate is summarized in Table 4 below. AECOM estimates it will cost approximately \$3,500,000 to convert the NPCC to secondary treatment using SBR technology without making allowances for expansion of the plant for additional flow capacity.

Table 4 Conceptual Cost Estimate – Secondary Upgrade to SBR for more Residents

Item	Description	AECOM Estimate (\$)		
		1,500 resident	3,000 residents	6,000 residents
1.0	General	\$65,000	\$65,000	\$65,000
2.0	Structural	\$316,000	\$602,000	\$1,024,000
3.0	Process Mechanical	\$1,234,000	\$2,911,000	\$4,190,000
4.0	Building Mechanical	\$85,000	\$85,000	\$85,000
5.0	Electrical	\$250,000	\$350,000	\$500,000
6.0	Instrumentation	\$250,000	\$350,000	\$600,000
	Subtotal	\$2,200,000	\$4,363,000	\$6,464,000
	Engineering (15%)	\$330,000	\$654,450	\$969,600
	Contractor's Overhead and Profit (10%)	\$220,000	\$436,300	\$646,400
	Subtotal	\$2,750,000	\$5,453,750	\$8,080,000
	Contingency Allowance (25%)	\$687,500	\$1,908,813	\$2,828,000
	TOTAL (not including taxes)	\$3,437,500	\$7,362,563	\$10,908,000

The 1996 Dayton and Knight report also recommends SBR in combination with thickening untreated waste biosolids and trucking the thickened biosolids to the FCPCC for treatment and reuse.

AECOM therefore also prepared an independent conceptual level cost estimate to convert the NPCC to secondary treatment using SBR technology and adding sludge thickening and dewatering capabilities based on a population of 3,000 and 6,000. This cost estimate is summarized in Table 4 above. AECOM estimates it will cost approximately \$7,500,000 to treat sewage from 3,000 residents and approximately \$11,000,000 for 6,000 residents by converting the NPCC to secondary treatment using SBR technology. The property is large enough to accommodate the additional infrastructure required for this upgrade.

Detailed cost estimates are attached as Appendix B.

3. Conclusions

Based on the review that AECOM has completed of previous information, and updated capital cost estimates, the following can be concluded:

- NPCC is currently running at 42% of full capacity and providing adequate primary treatment.
- An upgrade to secondary treatment for 1,500 residents will cost approximately \$ 3,500,000 using SBR technology.
- An upgrade to secondary treatment for 3,000 residents will cost approximately \$ 7,500,000 using SBR technology.
- An upgrade to secondary treatment for 6,000 residents will cost approximately \$ 11,000,000 based on SBR technology and the inclusion of sludge thickening equipment.
- Trunk sewers to connect the entire catchment area will cost approximately \$ 6,500,000.

APPENDIX A
TRUNK SEWER COST ESTIMATE DETAILS

Updated trunk sewer cost estimate – Delanice Way Pump Station

Area	2009 Estimates	1997 Estimate
Pump Station – 2 – 350 m ³ /d pumps, ± 5 HP c/w S/B generator	\$225,000	\$150,000
Forcemain, paved road; 75 mm, 600 m x \$200/m	\$120,000	\$42,000
Forcemain, unpaced easement; 75 mm, 200 m x \$150/m	\$30,000	\$13,000
Forcemain tie-ins	\$3,000	n/a
Allowance for rock 450 m ³ x \$150/m ³	\$67,500	\$36,000
Clearing, allowance	\$3,000	\$2,000
Subtotal	\$448,500	\$243,000
Engineering & Contingency (30% in 1997, 40% in 2009)	\$179,400	\$73,000
Subtotal	\$627,900	\$316,000
GST (7% in 1997, 5% in 2009)	\$31,395	\$22,000
TOTAL	\$659,295	\$338,000

Updated Trunk Sewer Cost Estimate – Beachcomber Pump Station (Option B*)

Area	2009 Estimates	1997 Estimate
Pump Station – 2 – 1640 m ³ /d pumps, ± 25 HP c/w S/B generator	\$325,000	\$200,000
Forcemain, paved road; 200 mm, 2200 m x \$270/m	\$594,000	\$308,000
Forcemain, unpaced easement; 200 mm, 1900 m x \$225/m	\$427,500	\$202,000
Forcemain and sewer tie-ins	\$10,000	n/a
Gravity sewer, unpaved easement; 250 mm, 400 m x \$360/m	\$144,000	\$61,000
1050 mm sanitary manholes 4 x \$4000 each	\$16,000	n/a
Allowance for rock 2550 m ³ x \$150/m ³	\$382,500	\$204,000
Allowance for clearing, 2.8 ha x \$20,000/ha	\$56,000	\$34,000
Subtotal	\$1,955,000	\$1,009,000
Engineering & Contingency (30% in 1997, 40% in 2009)	\$782,000	\$301,000
Subtotal	\$2,737,000	\$1,310,000
GST (7% in 1997, 5% in 2009)	\$136,850	\$91,000
TOTAL	\$2,873,850	\$1,401,000

* Refer to Dayton and Knight 1996 Pre-Design Report Phase 1 for details

Updated Trunk Sewer Cost Estimate – Red Gap Pump Station

Area	2009 Estimates	1997 Estimate
Pump Station – 2 – 2380 m ³ /d pumps, ± 50 HP c/w S/B generator	\$350,000	\$225,000
Forcemain, paved road; 200 mm, 2100 m x \$270/m	\$567,000	\$294,000
Forcemain, proposed road; 200 mm, 2000 m x \$225/m	\$450,000	\$212,000
Forcemain and sewer tie-ins	\$10,000	n/a
Gravity sewer, proposed road; 250 mm, 300 m x \$360/m	\$108,000	\$46,000
1050 mm sanitary manholes 3 x \$4000 each	\$12,000	n/a
Allowance for rock 1370 m ³ x \$150/m ³	\$205,500	\$110,000
Subtotal	\$1,702,500	\$887,000
Engineering & Contingency (30% in 1997, 40% in 2009)	\$681,000	\$266,000
Subtotal	\$2,383,500	\$1,153,000
GST (7% in 1997, 5% in 2009)	\$119,175	\$81,000
TOTAL	\$2,502,675	\$1,234,000

Updated Trunk Sewer Cost Estimate – Garry Oak Pump Station

Area	2009 Estimates	1997 Estimate
Pump Station – 2 – 2750 m ³ /d pumps, ± 35 HP c/w S/B generator	\$350,000	\$250,000
Forcemain, paved road; 100 mm, 15 m x \$225/m	\$3,375	\$1,500
Forcemain and sewer tie-ins	\$4,000	n/a
Allowance for rock	\$1,500	\$1,500
Subtotal	\$358,875	\$253,000
Engineering & Contingency (30% in 1997, 40% in 2009)	\$143,550	\$76,000
Subtotal	\$502,425	\$329,000
GST (7% in 1997, 5% in 2009)	\$25,121	\$23,000
TOTAL	\$527,546	\$352,000

APPENDIX B
SECONDARY UPGRADE COST ESTIMATE DETAILS

Pre-Design Cost Estimate – 1500 People

Rev 0

Item	Description	Quantity	Unit	Unit Price	Total Material	Total Labour	Extension (\$)
1.0	GENERAL						
1.1	Mobilization/Demobilization	1	LS	\$40,000			\$40,000
1.2	Start-up and Commissioning	1	LS	\$5,000			\$5,000
1.3	Landscaping	1	LS	\$20,000			\$20,000
	TOTAL 1.0 - GENERAL						\$65,000
2.0	STRUCTURAL						
2.1	Modify Existing Primary Sedimentation Tanks						
2.1.1	Demolition and modification	1	LS	\$50,000			\$50,000
2.2	New SBR Basins						
2.2.1	Two new basins similar in size to modified sed tanks (12x2.75x3.6)	1	LS	\$116,000			\$116,000
2.3	Building and Gallery Modifications						
2.3.1	Extension to accommodate new equipment	1	LS	\$150,000			\$150,000
	TOTAL 2.0 - STRUCTURAL						\$316,000
3.0	PROCESS MECHANICAL						
3.1	Headworks						
3.1.1	In-Channel Spiral Screen	1	ea	\$100,000	\$100,000	\$35,000	\$135,000
3.1.2	Manual Screen (bypass)	1	ea	\$15,000	\$15,000	\$5,000	\$20,000
3.2	SBR						
3.2.1	Blowers (one per basin + common standby - 7.5 kW each)	5	ea.	\$20,000	\$100,000	\$35,000	\$135,000
3.2.2	Fine Bubble Aeration	1	ea.	\$40,000	\$40,000	\$14,000	\$54,000
3.2.3	SBR Decanters and Controls	4	ea.	\$65,000	\$260,000	\$90,000	\$350,000
3.2.4	Waste Solids Pumps	2	ea.	\$7,500	\$15,000	\$5,000	\$20,000
3.2.5	Effluent Pumps	2	ea.	\$45,000	\$90,000	\$30,000	\$120,000
3.2.6	Piping, Valves and Gates	1	ea.	\$300,000	\$300,000	\$100,000	\$400,000
	TOTAL 3.0 - PROCESS MECHANICAL						\$1,234,000
4.0	BUILDING MECHANICAL						
4.1	Odour Control	1	LS	\$85,000			\$85,000
	TOTAL 4.0 – BUILDING MECHANICAL						\$85,000
5.0	ELECTRICAL						
5.1	Electrical	1	LS	\$250,000			\$250,000
	TOTAL 5.0 - ELECTRICAL						\$250,000
6.0	INSTRUMENTATION						
6.1	Instrumentation	1	LS	\$250,000			\$250,000
	TOTAL 6.0 - INSTRUMENTATION						\$250,000
	TOTAL						\$2,200,000

Pre-Design Cost Estimate – 3000 People

Rev 0

Item	Description	Quantity	Unit	Unit Price	Total Material	Total Labour	Extension (\$)
1.0	GENERAL						
1.1	Mobilization/Demobilization	1	LS	\$40,000			\$40,000
1.2	Start-up and Commissioning	1	LS	\$5,000			\$5,000
1.3	Landscaping	1	LS	\$20,000			\$20,000
	TOTAL 1.0 - GENERAL						\$65,000
2.0	STRUCTURAL						
2.1	Modify Existing Primary Sedimentation Tanks						
2.1.1	Demolition and modification	1	LS	\$50,000			\$50,000
2.2	New SBR Basins						
2.2.1	Two new basins similar in size to modified sed tanks (12x2.75x3.6)	1	LS	\$116,000			\$116,000
2.2.2	Two new, deeper basins (12x3.3x5.6)	1	LS	\$136,000			\$136,000
2.3	Building and Gallery Modifications						
2.3.1	Extension to accommodate new equipment	1	LS	\$300,000			\$300,000
	TOTAL 2.0 - STRUCTURAL						602,000
3.0	PROCESS MECHANICAL						
3.1	Headworks						
3.1.1	In-Channel Spiral Screen	1	ea	\$100,000	\$100,000	\$35,000	\$135,000
3.1.2	Manual Screen (bypass)	1	ea	\$15,000	\$15,000	\$5,000	\$20,000
3.2	SBR						
3.2.1	Blowers (one per basin pair + common standby – 10 kW each)	4	ea.	\$30,000	\$120,000	\$35,000	\$155,000
3.2.2	Fine Bubble Aeration	1	ea.	\$110,000	\$110,000	\$20,000	\$130,000
3.2.3	SBR Decanters and Controls	6	ea.	\$65,000	\$390,000	\$120,000	\$510,000
3.2.4	Waste Solids Pumps	6	ea.	\$7,500	\$45,000	\$16,000	\$61,000
3.2.5	Effluent Pumps	2	ea.	\$60,000	\$120,000	\$30,000	\$150,000
3.2.6	Piping, Valves and Gates	1	ea.	\$660,000	\$660,000	\$225,000	\$875,000
3.3	Sludge Thickening and Dewatering						
3.3.1	Sludge Thickening DAFs	1	ea.	\$150,000	\$150,000	\$60,000	\$210,000
3.3.2	Dewatering Centrifuge	1	ea.	\$350,000	\$350,000	\$110,000	\$460,000
3.3.3	Piping Valves and Gates	1	ea.	\$150,000	\$150,000	\$55,000	\$205,000
	TOTAL 3.0 - PROCESS MECHANICAL						\$2,911,000
4.0	BUILDING MECHANICAL						
4.1	Odour Control	1	LS	\$85,000			\$85,000
	TOTAL 4.0 – BUILDING MECHANICAL						\$85,000
5.0	ELECTRICAL						
5.1	Electrical	1	LS	\$350,000			\$350,000
	TOTAL 5.0 - ELECTRICAL						\$350,000
6.0	INSTRUMENTATION						
6.1	Instrumentation	1	LS	\$350,000			\$350,000
	TOTAL 6.0 - INSTRUMENTATION						\$350,000
	TOTAL						\$4,363,000

Pre-Design Cost Estimate – 6000 People

Item	Description	Quantity	Unit	Unit Price	Total Material	Total Labour	Extension (\$)
1.0	GENERAL						
1.1	Mobilization/Demobilization	1	LS	\$40,000			\$40,000
1.2	Start-up and Commissioning	1	LS	\$5,000			\$5,000
1.3	Landscaping	1	LS	\$20,000			\$20,000
	TOTAL 1.0 – GENERAL						\$65,000
2.0	STRUCTURAL						
2.1	Modify Existing Primary Sedimentation Tanks						
2.1.1	Demolition and modification	1	LS	\$50,000			\$50,000
2.2	New SBR Basins						
2.2.1	Two new basins similar in size to modified sed tanks (12x2.75x3.6)	1	LS	\$116,000			\$116,000
2.2.2	Six new, deeper basins (12x3x5.6)	1	LS	\$408,000			\$408,000
2.3	Building and Gallery Modifications						
2.3.1	Extension to accommodate new equipment	1	LS	\$450,000			\$450,000
	TOTAL 2.0 - STRUCTURAL						\$1,024,000
3.0	PROCESS MECHANICAL						
3.1	Headworks						
3.1.1	In-Channel Spiral Screen	1	ea		\$100,000	\$100,000	\$35,000
3.1.2	Manual Screen (bypass)	1	ea		\$15,000	\$15,000	\$5,000
3.2	SBR						
3.2.1	Blowers (one per basin + common standby - 15 kW each)	5	ea.	\$30,000	\$150,000	\$35,000	\$185,000
3.2.2	Fine Bubble Aeration	1	ea.	\$160,000	\$600,000	\$35,000	\$195,000
3.2.3	SBR Decanters and Controls	8	ea.	\$65,000	\$520,000	\$180,000	\$700,000
3.2.4	Waste Solids Pumps	8	ea.	\$7,500	\$60,000	\$40,000	\$100,000
3.2.5	Effluent Pumps	2	ea.	\$75,000	\$150,000	\$30,000	\$180,000
3.2.6	Piping, Valves and Gates	1	ea.	\$1,000,000	\$1,000,000	\$350,000	\$1,350,000
3.3	Sludge Thickening and Dewatering						
3.3.1	Sludge Thickening DAFs	2	ea	\$150,000	\$300,000	\$100,000	\$400,000
3.3.2	Dewatering Centrifuge	1	ea	\$350,000	\$350,000	\$110,000	\$460,000
3.3.3	Piping, Valves and Gates	1	ea	\$250,000	\$250,000	\$80,000	\$330,000
	TOTAL 3.0 - PROCESS MECHANICAL						\$4,190,000
4.0	BUILDING MECHANICAL						
4.1	Odour Control	1	LS	\$85,000			\$85,000
	TOTAL 4.0 – BUILDING MECHANICAL						\$85,000
5.0	ELECTRICAL						
5.1	Electrical	1	LS	\$500,000			\$500,000
	TOTAL 5.0 - ELECTRICAL						\$500,000
6.0	INSTRUMENTATION						
6.1	Instrumentation	1	LS	\$600,000			\$600,000
	TOTAL 6.0 - INSTRUMENTATION						\$600,000
	TOTAL						\$6,464,000

Technical Memorandum

To	Shelley Norum	Page	1
CC	Sean De Pol		
Subject	Nanoose Pollution Control Center Cost Estimate Update		
From	Susan Spruston, P.Eng.		
Reviewed By	David Lycon, P.Eng.		
Date	July 16, 2012	Project Number	6024625

BACKGROUND

In response to the request from the Regional District of Nanaimo on June 1, 2012, the preliminary cost estimate for the secondary upgrade to the Nanoose Pollution Control Center has been updated for a population of 2,000 PE. This estimate is based on the Nanoose Pollution Control Center Upgrade Study that was completed by AECOM in March 2010.

DESIGN BASIS

A summary of the design parameters are provided in Table 1 below.

Table 1. Design Parameters

Parameter	Value
Population	2,000
ADWF, m ³ /d (based on 350L/c/d)	700
Influent BOD ₅ Concentration, mg/L	165
Influent BOD ₅ Load, kg/d	116

As per the pre-design study that was completed in 2010 it is assumed that the secondary expansion would consist of the following works:

- Conversion of the existing primary sedimentation tanks to SBRs.
- Construction of two additional/larger SBR tanks.
- Supply and installation of a new headworks screens, one mechanical fine screen and one bypass screen.
- Supply and install of new aeration blowers, waste solids pumps, effluent pumps and associated piping, valving and gates.
- Expansion to the existing building and gallery to accommodate the new mechanical equipment.
- Electrical and instrumentation components to complete the works noted above.

COST ESTIMATE

Table 2. presents a cost estimate breakdown, the total project cost is estimated to be **\$4,101,000**.

Table 2. Cost Estimate – 2,000 PE

Description	AECOM Estimate
1.0 General	\$ 135,000
2.0 Civil	\$ 66,000
3.0 Structural	\$ 455,000
4.0 Process Mechanical	\$ 1,331,000
5.0 Building Mechanical	\$ 100,000
6.0 Electrical	\$ 280,000
7.0 Instrumentation	\$ 280,000
Sub-Total	\$ 2,647,000
Engineer and Administration (25%)	\$ 660,000
Contingency (30%)	\$ 794,000
Total	\$ 4,101,000

The following assumptions were made in development of the estimate above.

- Sludge will continue to be shipped to FCPCC with storage in the existing sludge storage tank. During the design of the secondary expansion it is recommended that an analysis be completed to review the economics of dewatering on site prior to hauling off-site.
- Civil costs exclude ground improvements and dewatering. Further investigation shall be completed during the design. The contingency value allocated above should cover these costs if required.
- Excludes any remedial work on existing tankage or systems that may be recommended to be completed at the time of the upgrade.

Appendix E:

Regional Liquid Waste Advisory Committee Terms of Reference, Membership List
and Meeting Minutes

Terms of Reference

March 2008

Regional Liquid Waste Advisory Committee

Purpose

The primary role of the Regional Liquid Waste Advisory Committee (RLWAC) will be to advise the Board on the review and implementation of its Liquid Waste Management Plan (LWMP). The RDN's original LWMP was approved by the Province in 1997.

Committee Roles and Responsibilities

The RLWAC will:

- Provide recommendations to the Board regarding programs and policies relating to liquid waste management;
- Liaise between their constituents or organizations and the RDN by providing feedback to the RDN and increasing awareness of liquid waste issues;
- participate on smaller ad-hoc committees dealing with specific issues or tasks;
- provide advice and feedback on consultation activities with the general public;
- provide input and feedback on technical reports, discussion papers, and other documents prepared for the committee's information;
- review and become familiar with the RDN's LWMP;
- provide input and feedback on the amendment of the LWMP;
- review reports prepared by the RDN or its consultants;
- review and become familiar with the existing liquid waste management system in the RDN;
- identify tools and techniques to be employed in the monitoring and evaluation of the LWMP and its implementation; and
- make recommendations to increase the effectiveness of the LWMP.

Membership Criteria/Selection

The committee will consist of 22 members. Members will be selected by the Board through an application process. Membership representation will be as follows:

2 members	Business (e.g. Septage Haulers / On-Site Septic System Contractors – 1 north / 1 south)
2 members	Environment Community (e.g. Georgia Strait Alliance)
4 members	General Public (2 north / 2 south)
4 members	RDN Board (representative of municipalities, electoral areas, north and south)
4 members	Municipal staff (Nanaimo, Parksville, Qualicum Beach and Lantzville)
1 member	Ministry of Environment
1 member	Environment Canada
1 member	Department of Fisheries and Oceans
1 member	Central Vancouver Island Health Unit
2 members	First Nations

Membership may be changed as needs or issues arise and other organizations may be called on such as Ministry of Transportation and Islands Trust. The application for committee membership will be promoted through advertisements in local media. Applications must demonstrate the applicant's:

- representation of one of the sectors listed above;
- willingness and ability to commit to volunteering the necessary time to the committee;
- interest in liquid waste issues in the RDN;
- willingness and ability to consider issues from all sectors and geographical perspectives within the community;
- experience related to liquid waste issues;
- willingness and ability to work towards consensus on issues being addressed by the committee.

Selection of members will attempt to create a committee with a balance of representation:

- geographically;
- demographically; and
- with a variety of interests and perspectives.

Term

Members will be appointed by the RDN Board for the duration of the LWMP review expected to last 18 to 24 months. Alternate member appointments will be approved by the Committee as required. No substitute members will be permitted. If a member must resign from the committee, their position will be filled through the application process.

In general, there will be monthly meetings of the committee although, periodically more frequent meetings may be required. Meetings are expected to be held mid-day.

Members are expected to attend all committee meetings and participate in public consultation activities. Lack of attendance may result in members having their membership revoked at the discretion of the committee. There is no remuneration for participation on the committee but if committee activities coincide with meal times, meals will be provided.

Decision Making

Committee recommendations to the RDN Board will be made by consensus whenever possible. If necessary, votes may be taken and minority reports may be submitted to the Board in addition to the majority opinion.

RLWAC meetings will be open to the public, however non-RLWAC members will not have speaking or voting privileges. Delegations that wish to address the committee must seek approval from the committee through a written request. Acceptance of a delegates request to speak to the committee will be at the discretion of the committee.

Chairperson

The chair will be one of the RDN Board members appointed to the Committee in order to provide a direct link between the advisory committee and the Board.

- NS
- SDP
- file



REGIONAL
DISTRICT
OF NANAIMO

February 15, 2008

File No.: 5345-30

Chief Viola Wyse
Snuneymuxw First Nation
668 Centre Street
Nanaimo, BC
V9R 4Z4

Dear Chief Wyse:

Re: Regional District of Nanaimo Liquid Waste Advisory Committee

The Regional District of Nanaimo is embarking on a review of our Liquid Waste Management Plan (LWMP). To assist in the review the RDN has formed the Regional Liquid Waste Advisory Committee (RLWAC).

The LWMP review will include a review of source control programs, stormwater management, sewer service area strategies, programs for on-site disposal systems, innovative treatment and re-use opportunities, and other liquid waste management issues and initiatives.

The review will also consider the LWMP in the context of Official Community Plans and the Regional Growth Strategy.

The RDN respectfully invites Snuneymuxw First Nation representation to a position on the committee. If SFN wishes to participate in the review process, please advise us by March 14, 2008 as to your appointed representative. The Committee will be meeting in April and agenda materials will be forwarded in advance to committee representatives.

Questions on the review process may be directed to me or to Sean DePol, Manager of Liquid Waste, at 390-6560.

Regards,

John O. Finnie, P. Eng
General Manager of Environmental Services

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

- NS
- SAP
- file



February 15, 2008

File No.: 5345-30

Chief David Bob
Nanoose First Nation
209 Mallard Way
Lantzville, BC
V0R 2H0

Dear Chief Bob:

Re: Regional District of Nanaimo Liquid Waste Advisory Committee

The Regional District of Nanaimo is embarking on a review of the 1997 Liquid Waste Management Plan (LWMP). To assist in the review the RDN has formed the Regional Liquid Waste Advisory Committee (RLWAC).

The LWMP review will include a review of source control programs, stormwater management, sewer service area strategies, programs for on-site disposal systems, innovative treatment and re-use opportunities, and other liquid waste management issues and initiatives.

The review will also look at the LWMP in the context of Official Community Plans and the Regional Growth Strategy.

The RDN respectfully invites Nanoose First Nation representation on the committee. If NFN wishes to participate in the review process, please advise us by March 14, 2008 as to your appointed representative. The Committee will be meeting in April and agenda materials will be forwarded in advance to committee representatives.

Questions on the review process may be directed to me or to Sean DePol, Manager of Liquid Waste, at 390-6560.

Regards,

John O. Finnie, P. Eng
General Manager of Environmental Services

6300 Hammond Bay Rd.
Nanaimo, B.C.
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RDN Website: www.rdn.bc.ca

Norum, Shelley

From: Magnan, Alain <MagnanA@pac.dfo-mpo.gc.ca>
Sent: Tuesday, September 11, 2007 11:10 AM
To: Schwager, Nadine
Subject: RE: RDN Liquid Waste Advisory Committee

Hi Nadine,

Fisheries and Oceans Canada (DFO) appreciates the offer provided by the Regional District of Nanaimo to take part in the Liquid Waste Advisory Committee. Issues such as stormwater management and volume reduction programs are relevant to the protection and enhancement of fish and fish habitat. Unfortunately, at this time, DFO South Coast Area does not have sufficient resources to effectively take part in this committee. Please provide my regards to the committee and good luck on your endeavours.

Yours truly,

Alain (AI) Magnan, R.P.Bio., CPESC
Project Assessment Biologist
Habitat Management
South Coast
Fisheries and Oceans Canada
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Biologist, Evalueateur de projets
Peches et Oceans
Gestion de l'habitat
Cote sud
3225, chemin Stephenson Point
Nanaimo (C.-B.) V9T 1K3

-----Original Message-----

From: Schwager, Nadine [<mailto:NSchwager@rdn.bc.ca>]
Sent: Friday, September 07, 2007 9:46 AM
To: rick.morgan@nanaimo.ca; msquire@parksville.ca; bobweir@qualicumbeach.com; spears@lantzville.ca; Hunse, Laura A ENV:EX; Jean-Francois.Ferry@ec.gc.ca; Magnan, Alain; glenn.gibson@viha.ca
Cc: john.elliott@nanaimo.ca; GO'Rourke@parksville.ca; twyla@lantzville.ca; randy.alexander@gov.bc.ca; Lee, Clair; De Pol, Sean
Subject: RDN Liquid Waste Advisory Committee

The RDN is embarking on a review of the 1997 Liquid Waste Management Plan (LWMP) and is forming the Regional Liquid Waste Advisory Committee (RLWAC).

The LWMP review will include a review of:

- source control programs
- volume reduction programs
- stormwater management
- odour control programs
- rural area issues
- sewer service area strategies
- applicability of package sewage treatment plants
- programs for on-site disposal systems
- applicable legislation and criteria
- innovative treatment and re-use opportunities
- implementation schedules, costs and financing

The review will also look at the LWMP in the context of the Official Community Plans and the Regional Growth Strategy.

The RDN has allocated a position on the committee to a member of your staff. The Terms of Reference have been attached. Please forward us a letter, fax or email indicating who you are appointing to the committee by Monday, September 24, 2007. The RDN Board will make official appointments to the Committee at the next Board meeting.

<<Terms of Reference.pdf>>

Nadine Schwager, AScT

Liquid Waste Coordinator
Environmental Services
Regional District of Nanaimo
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The first local government in British Columbia to be ISO 14001 Registered for Environmental Management

REGIONAL DISTRICT OF NANAIMO

**ACTIVE REGIONAL LIQUID WASTE
ADVISORY COMMITTEE MEMBERS**

Regional District of Nanaimo Board

- 1) Director Bill Bestwick, Chair (City of Nanaimo)
- 2) Director George Holme (Electoral Area E; former Chair)
- 3) Director George Anderson (City of Nanaimo)
- 4) Director Brian Dempsey (District of Lantzville)

Business Community

- 1) Michelle Jones (north)
- 2) Blair Nicholson (south)

Environment Community

- 1) Christianne Wilhelmson, Georgia Strait Alliance
- 2) Vacant

First Nations

- 1) James Wesley, Snuneymuxw First Nation
- 2) Vacant

General Public

- 1) Douglas Anderson (south)
- 2) Frank Van Eynde (north)
- 3) Vacant
- 4) Vacant

City of Nanaimo

John Elliot

City of Parksville

Vaughn Figueira

Town of Qualicum Beach

Bob Weir

District of Lantzville

Fred Spears

Ministry of Environment

Kirsten White

Baljeet Mann (alternate)

Environment Canada

James Arnott

Vancouver Island Health Authority

Gary Anderson

Glenn Gibson (alternate)

Department of Fisheries and Oceans

Vacant (declined)

PAST REGIONAL LIQUID WASTE ADVISORY COMMITTEE MEMBERS

Regional District of Nanaimo Board

Director Bill Holdom (City of Nanaimo)
Director Joe Burnett (Electoral Area A)
Mayor Teunis Westbroek (Town of Qualicum Beach)
Director Merv Unger (City of Nanaimo)
Director Sandy Herle (Parksville)

General Public

Gary Tuyls (North)
Karen Limin (South)

City of Nanaimo

Trevor Cooke
Rick Morgan
Tom Hickey

City of Parksville

Mike Squire
Al Metcalf
Gary O'Rourke

Ministry of Environment

Laura Hunse
Blake Medlar
Bryce Watson

Environment Canada

Julia Brydon
Jean-Francois Ferry
Snehal Lakhani

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, FEBRUARY 7, 2008 IN THE RDN BOARDROOM

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Sandy Herle	Director (Parksville)
Merv Unger	Director (Nanaimo)
Laura Hunse	Ministry of Environment
Blake Medlar	Ministry of Environment
Gary O'Rourke	City of Parksville
John Elliot	City of Nanaimo
Fred Spears	District of Lantzville
Gary Anderson	Vancouver Island Health Authority
Gary Tuyls	Public Representative (North)
Karen Limin	Public Representative (South)
Douglas Anderson	Public Representative (South)
Michelle Jones	Business Representative (North)
Blair Nicholson	Business Representative (South)
Christianne Wilhelmson	Environment Representative

Also in attendance:

Sean De Pol	Manager of Liquid Waste
Nadine Schwager	Liquid Waste Coordinator
David Forgie	Associated Engineering
Manjit Herar	Associated Engineering
Carol Mason	Chief Administrative Officer
John Finnie	General Manager of Environmental Services
Wayne Moorman	Manager of Engineering
Mike Donnelly	Manager of Utilities
Paul Thompson	Manager of Long-Range Planning
Bob Swanson	Operations Supervisor
Mike Brophy	Chief Operator, Southern Communities
Harold Halvorson	Chief Operator, Northern Communities
Dennis Trudeau	General Manager of Transportation Services

Absent:

Jean-Francois Ferry	Environment Canada
Bob Weir	Town of Qualicum Beach

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Director Holme called meeting to order at 12:15 p.m.

OLD BUSINESS

None

NEW BUSINESS**a) *Introductions / Opening Remarks***

Sean De Pol introduced himself as the Manager of the Liquid Waste Department for the Regional District of Nanaimo (RDN) and provided opening remarks regarding the Liquid Waste Management Plan (LWMP) review and amendments project.

All meeting attendees were then asked to introduce themselves. When this was complete, Sean De Pol continued.

Sean De Pol stated that the LWMP Review and Amendments process will likely take 12 to 18 months to complete. During this time, approximately 12 discussion papers based off of the existing LWMP will be produced.

Key components of the LWMP include the following:

- Environment
- Development and expansion (service areas)
- Programs
- Capital projects
- Implementation

Why are we conducting this review? The existing LWMP was approved in 1999. Since this time changes related to the plan have occurred. The LWMP makes reference to provincial and federal regulations as well as the RDN's Regional Growth Strategy and Official Community Plans. Many of these references need to be updated. As well, new programs, policies and technologies not currently in the plan will be examined. Some of the areas that will be looked at include innovative technologies, service strategies, packaged sewage treatment systems and on-site septic systems.

All Liquid Waste Advisory Committee (LWAC) Meetings will be open to the public. However, the public will normally not be allowed to speak to the LWAC directly. Any comments/feedback from the public must be received through their LWAC representative.

b) *Liquid Waste Department Overview*

Nadine Schwager provided an overview of the Liquid Waste Department including the following:

- Municipalities and Electoral Areas that make up the RDN.
- Municipalities are responsible for operating collection systems in their respective areas.
- The RDN is responsible for 20 pump stations, four wastewater treatment facilities and two septage-receiving facilities.
- Effluent is discharged to surface water via four marine outfalls.

- Biosolids are reused as part of the Forest Fertilization Project at Malaspina College.
- Sewer Use Bylaw.
- RDN's Environmental Management System – ISO 14001 Registered.
- Benchmarking.

Gary Tuyls asked if receiving environment monitoring is done at the outfalls. Nadine Schwager stated yes. *Nadine Schwager to provide information on receiving environment monitoring requirements for next meeting.*

c) *Liquid Waste Management Plan Overview*

LWMP planning horizon is typically 20 years. This time frame is necessary so that changes in technology and effluent criteria are addressed.

RDN (Nadine Schwager) to publicly advertise the LWMP review in Electoral Area Updates, Regional Perspectives and post a list of LWAC members and their areas of representation.

RDN's LWMP was completed in 1997 and approved in 1999. The approved LWMP is being reviewed to address current issues and policies. The process will involve input and consensus building from all committee members.

d) *Discussion Paper No. 1 – Review of Existing Conditions*

Overview of Discussion Paper No. 1:

- Existing service areas for each treatment plant.
- Potential future service areas.
- Capacities of the treatment plant.
- Effluent quality and flow requirements for each treatment plant based on approved Operational Certificates or discharge permits.
- Milestone dates for scheduled treatment plant upgrades.

David Forgie explained what the Canadian Council of Ministers of the Environment (CCME) is. CCME is working towards establishing a uniform level of treatment that, when approved, would be mandated across Canada. Environment Canada would be the regulating body through a revised Fisheries Act Regulation. Currently each province sets its own wastewater treatment requirements and as such, there is much variability from province to province. Jean Francois Ferry is a representative from Environment Canada (but was not in attendance).

David Forgie to forward Nadine Schwager information received from Jean Francois Ferry pertaining to Environment Canada's General Guidance for Technical Advisory Committees in BC Developing LWMP. Nadine Schwager to circulate document to the LWAC.

David Forgie discussed service areas and potential development areas in Greater Nanaimo, French Creek, Nanoose, and Duke Point.

As a group, the LWAC will need to decide what will occur in the RDN and over what time frame.

Nadine Schwager pointed out that no effluent is sent to the golf course from Nanoose. *Associated Engineering to correct the PowerPoint slide and Discussion Paper.*

David Forgie discussed design capacities of the treatment plants and average daily flows.

David Forgie explained what “BOD” and “TSS” are. BOD is an acronym for Biochemical Oxygen Demand. TSS is an acronym for Total Suspended Solids.

- BOD is a laboratory measurement of wastewater strength. It is one of the main indicators of the quantity of pollutants present. BOD is a parameter used to measure the amount of oxygen that will be consumed by micro organisms during the biological reaction of oxygen with organic materials. Typically, wastewater coming into a treatment plant has a BOD range from 180 to 250 mg/L. Effluent requirements are typically less than 45 mg/L BOD.
- TSS is a water quality measurement in which the quantity of suspended solids present is measured by filtering the wastewater through a membrane filter (1.2-um pore size). In wastewater, it is one of the main indicators of the quantity of pollutants present. Typically, wastewater coming into a treatment plant has a TSS range from 180 to 250 mg/L. Effluent requirements are typically less than 45 mg/L TSS.

David Forgie then discussed upcoming discussion papers.

- Discussion Paper No. 2 – Policies Regarding On-site Treatment
- Discussion Paper No. 3 – Policies Regarding Connection of New Subdivisions and Policies Regarding Developer Installed Package Treatment Plants.

Blake Medlar explained that package treatment plants could be beneficial because many developers are treating the wastewater to higher standards so that it may be reused for toilet flushing, etc. with excess treated effluent being conveyed to a major wastewater treatment plant.

David Forgie then discussed future discussion papers:

- Determination of remaining treatment capacities at the existing treatment plants including capacity to accept additional service populations and need to increase capacity sooner than previously established milestones.
- Investigation of current issues including existing flows to treatment plants compared to established capacity, ability of treatment plants to meet effluent requirements under current flow regime, and estimated existing and future service populations.
- Estimation of the costs to develop treatment plant upgrades including capital costs (based on previous studies), O&M costs (based on previous studies), and revised time line for upgrades and expenditures.

David Forgie then discussed future LWMP steps which will include the following:

- LWAC meetings to review/discuss discussion papers over the next 12 to 18 months.
- Presentation of summary report to RDN Board.
- Public Information Meeting to present findings of this LWMP review to the public.
- Submission of the LWMP review report to the Ministry of Environment.

Blake Medlar added that the amount of public input required would be determined as we move through this LWMP review process. John Finnie stated that there would be likely more than one public information meeting, possibly in different venues throughout the RDN, i.e. north and south.

Nadine Schwager will look into posting discussion papers on the RDN website so that they are accessible to the public. Also to post information on committee members, meetings, presentations, and background information on wastewater treatment.

Christianne Wilhelmson stated that, according to a CRD poll, the public like to receive information via the mail and internet. *Christianne Wilhelmson will provide Nadine Schwager with the reference document.*

Sandy Herle recommended that all acronyms used in the discussion papers and presentations be defined so that everyone understands what is being discussed. *Associated Engineering will provide a handout with acronyms and definitions with discussion papers.*

David Forgie to provide Nadine Schwager with a copy of "Wastewater Basics" which could be distributed to the LWAC and posted to the RDN website. David Forgie to do a brief presentation on "Wastewater Basics" at the next meeting.

e) LWAC Meeting Structure

Meetings to be held on Thursdays.

Nadine Schwager will print and distribute agendas. LWAC members are to bring their own copy of the discussion paper (limited copies available at meeting to conserve paper).

Nadine Schwager will post information, as required, on the RDN website.

Gary O'Rourke asked what the role of the LWAC is. David Forgie responded that the LWAC's role is to provide input, not necessarily technical, but feedback from those they are representing. The objective of the meetings is to discuss the issues and then come to a consensus agreement regarding a plan of action. Intent is not to rewrite the existing LWMP – just to review and revise it, as required, based on current issues and policies.

Merv Unger asked if tours of the wastewater treatment facilities would be available. The RDN responded that they would be happy to provide tours of the facilities for interested LWAC members. *Nadine Schwager to organize tours.*

Douglas Anderson asked if stormwater would be assessed. Sean De Pol stated that stormwater management; volume reduction, etc. will be looked at. John Finnie stated that the Board's directive is to look at stormwater.

Christianne Wilhelmson asked if the possibility of digesting liquid and organic solid waste together would be addressed in this review. Sean de Pol stated that only liquid wastes would be looked at, organic solid waste is currently part of another diversion project.

Gary Tuyls asked if there are any combined sewer systems in the RDN. Sean De Pol stated that there are no combined sewers. However, there is inflow and infiltration occurring during storm events.

Blair Nicholson commented on the CRD's sewer-use bylaw and how the RDN does not have anything like it to check to see if restaurant owners are doing their part to maintain grease traps, etc.

Douglas Anderson asked how the discussion process would take place. David Forgie explained that each LWAC member is to read the discussion paper(s) prior to attending the meeting. At the meeting, a brief presentation on the discussion paper will be made. Following the presentation, there will be a period for open discussion and consensus building.

NEXT MEETING

Next meeting is scheduled for Thursday, April 3, 2008 at 12 p.m., RDN Committee Room (during meeting March 20 was proposed as the next meeting, but has since been changed).

ADJOURNMENT

Director Holme adjourned the meeting at 2 p.m.

REGIONAL DISTRICT OF NANAIMO

**MINUTES OF THE
LIQUID WASTE ADVISORY COMMITTEE
LIQUID WASTE MANAGEMENT PLAN REVIEW
HELD ON THURSDAY, APRIL 3, 2008
IN THE RDN COMMITTEE ROOM**

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Sandy Herle	Director (Parksville)
Merv Unger	Director (Nanaimo)
Laura Hunse	Ministry of Environment
Gary O'Rourke	City of Parksville
Bob Weir	Town of Qualicum Beach
John Elliot	City of Nanaimo
Fred Spears	District of Lantzville
James Wesley	Snuneymuxw First Nation
Gary Anderson	Vancouver Island Health Authority
Gary Tuyls	Public Representative (North)
Karen Limin	Public Representative (South)
Douglas Anderson	Public Representative (South)
Michelle Jones	Business Representative (North)
Blair Nicholson	Business Representative (South)
Christianne Wilhelmson	Environment Representative

Also in attendance:

Sean De Pol	Manager of Liquid Waste, RDN
Nadine Schwager	Liquid Waste Coordinator, RDN
David Forgie	Associated Engineering (BC) Ltd.
Kelly Bush	Associated Engineering (BC) Ltd.
Bev Farkas	Recording Secretary, RDN

Absent:

Jean-Francois Ferry	Environment Canada
---------------------	--------------------

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Director Holme called meeting to order at 12:15 p.m.

INTRODUCTIONS

Introductions were made around the table as new members have joined the committee.

APPROVAL OF AGENDA

MOVED Joe Burnett, SECONDED Karen Limin, that the agenda be approved.

CARRIED

MINUTES

MOVED Joe Burnett, SECONDED Michelle Jones, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of February 7, 2008 be adopted.

CARRIED

LWMP Review Process / Role of the Committee

Sean De Pol gave an overview of the steps involved in the LWMP Review Process and the role of the committee, emphasizing the need for input from committee members.

WASTEWATER BASICS

Members were provided with a report by Associated Engineering entitled “Wastewater Basics” and Dave Forgie gave a powerpoint presentation explaining the topic and recognized that the subject matter was very familiar to some committee members and was not familiar to others. Members were encouraged to read the report prior to attending the May 1st tour of the Pollution Control Centres.

RECEIVING ENVIRONMENT MONITORING

Nadine Schwager explained that receiving environment monitoring requirements are included in permits and operations certificates but that these requirements vary at each plant. Monitoring is being carried out at Duke Point Pollution Control Centre at present and the requirements for the other three plants will be resolved with the Ministry.

PUBLIC CONSULTATION PLAN / WEBSITE

Nadine Schwager provided the members several handouts including the Public Consultation Plan. Ms. Schwager noted that the plan has been approved by the Board and that the new webpages will be available on the website within one day. An updated membership list will also be available on the website, however no contact information will be provided there; an email address (lwmp@rdn.bc.ca) has been created and all enquiries to members will go through this address and be forwarded on to members by Ms. Schwager. It was noted that the committee is still in need of an additional Environment Representative as well as an additional Public Representative (North).

POLLUTION CONTROL CENTRE TOURS

An itinerary for the Pollution Control Centre tours scheduled for May 1st was distributed and members were asked to notify Ms. Schwager if they are unable to attend. George Holme indicated he will not be attending the tour.

DISCUSSION PAPER #2 – ON-SITE TREATMENT SYSTEM ISSUES

Group discussion centered around on-site treatment systems; it was confirmed that the new sewage regulations do not require RDN to have an active role in monitoring systems but the RDN may need to look at expanding their role. Laura Hunse said that if the RDN were to take on this role bylaws must be in place within the LWMP.

Gary Anderson explained the application process at VIHA. Applications are not refused but if VIHA has a concern about an application it is forwarded to APEGBC (Association of Professional Engineers and Geoscientists of BC) or ASTTBC (Applied Science Technologists & Technicians of BC). In situations where there is a health hazard reported, a field visit is made and if necessary an Order to Repair is issued.

VIHA cannot act until there is an actual health hazard. Homeowners are responsible to contact an authorized person for design and installation and are required to keep a maintenance log of pumpouts. Mr. Anderson suggests approximately 50 Orders to Repair were issued in 2007; it is a fairly regular process.

Sean De Pol stated that Pump and Haul systems in the RDN are considered a long term solution and if this focus is to change to a temporary solution, not to accommodate development, bylaw changes would be required. The RDN Pump and Haul Bylaw does not govern whether or not a holding tank can be installed, but governs the rate charged for disposal as a significant discount is provided for properties with a valid Pump and Haul permit. There are currently 49 active Pump and Haul permits in the RDN with a number of these being on raw land.

The committee discussed several options for installation and maintenance programs of new on site systems as well as maintenance programs for existing systems. The following points were discussed:

- ◆ Greywater – is considered sewage, treated the same as hazardous water and not permitted for irrigation.
- ◆ There are 12,000 on-site systems in the RDN (*Nadine Schwager will do further research to verify number*)
- ◆ Take action when systems fail – monitor that maintenance is completed.
- ◆ On site inspections usually requested only for house sales and not for general maintenance. (*Blair Nicholson will provide a report on how many inspections his company does on property transfers and how many actually fail*). Mr. Nicholson added that the average price of an inspection is \$249 including a video and approximately \$300 for a pumpout.
- ◆ RDN covenants are being registered on new subdivision properties for maintenance of systems.
- ◆ As a group – where should we be permitting on-site? Where should we prevent or deny subdivisions?
- ◆ VIHA covenants are being registered to protect areas on new properties to allow for placement of septic tanks and drain fields – developers are being asked to show primary and secondary sewage disposal sites for each lot. If a Type 1 system is not suitable for the development property, VIHA will recommend the subdivision does not proceed.
- ◆ Would a private-private, private-public, or a public-public system be more efficient?
- ◆ What would legal implications be if RDN takes on monitoring role? Do we even have that authority?
- ◆ If private-private – paperwork to be administered by RDN, homeowner to have annual inspection and report goes to RDN. If no report RDN follows up.
- ◆ Downside of RDN not getting involved with additional roles is health and environmental damage.
- ◆ Need to obtain information from Capital Regional District – how did they get to where they are with monitoring? *Blair Nicholson and Nadine Schwager will obtain information from CRD.*

The RDN had presented 3 questions and the following general consensus was reached:

1) What should the RDN's role be in regards to approval / construction of new systems? For time being, RDN's role expected to stay status quo. We shouldn't get involved in this step of the process unless we have to.

2) What purpose should holding tanks / pump and haul serve in the RDN? Should be utilized as a temporary measure until a system is replaced, or a sewer connection is made, not as a long-term solution.

3) What role should the RDN take in maintenance of existing systems? No real consensus reached. Leaning towards private-private, some support for private-public, but question of whether we should

implement a management system at all. More details on options and what we can do to be provided after we see the results of the education program.

The following points about an education program were discussed:

- ◆ Educate the committee first – then educate the public.
- ◆ Focus on education program only - many people would not want more government inspections.
- ◆ Encourage older system owners with a financial incentive.
- ◆ Educate people about the financial consequences of not maintaining system.
- ◆ Include realtors in education program.
- ◆ Education program supported but there is a need for regulations and inspections
- ◆ Wait to get feedback from the education program before deciding on taking on any additional roles.

NEXT MEETING

Next meeting to be announced. The tour of the pollution control centres is May 1, 2008.

ADJOURNMENT

Chairman Holme adjourned the meeting at 2:40 pm.

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, JUNE 5, 2008 IN THE RDN COMMITTEE ROOM

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Merv Unger	Director (Nanaimo)
Julia Brydon	Environment Canada
Kirsten White	Ministry of Environment
Blake Medlar	Ministry of Environment
Fred Spears	District of Lantzville
Gary Tuyls	Public Representative (North)
Frank Van Eynde	Public Representative (North)
Douglas Anderson	Public Representative (South)
Michelle Jones	Business Representative (North)
Blair Nicholson	Business Representative (South)
Christianne Wilhelmson	Environment Representative

Also in attendance:

John Finnie	General Manager, Environmental Services, RDN
Sean De Pol	Manager of Liquid Waste, RDN
Nadine Schwager	Liquid Waste Coordinator, RDN
Harold Halvorson	Chief Operator, RDN
Mike Brophy	Chief Operator, RDN
David Forgie	Associated Engineering (BC) Ltd.
Kelly Bush	Associated Engineering (BC) Ltd.
Bev Farkas	Recording Secretary, RDN

Absent:

Sandy Herle	Director (Parksville)
Gary O'Rourke	City of Parksville
Bob Weir	Town of Qualicum Beach
John Elliot	City of Nanaimo
James Wesley	Snuneymuxw First Nation
Gary Anderson	Vancouver Island Health Authority
Karen Limin	Public Representative (South)

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Director Holme called the meeting to order at 12:10 p.m.

INTRODUCTIONS

Three new members, Frank Van Eynde, Kirsten White and Julia Brydon were welcomed and introduced themselves to the committee.

APPROVAL OF AGENDA

MOVED Joe Burnett, SECONDED Merv Unger, that the agenda be approved.

CARRIED

MINUTES

MOVED Frank Van Eynde, SECONDED Joe Burnett, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of April 3, 2008 be adopted.

CARRIED

MATTERS ARISING FROM THE MINUTES

Douglas Anderson noted that that the RDN website does not effectively inform viewers that the LWMP is under review. *Nadine Schwager will have the website changed to make this clear to viewers.*

ON SITE SYSTEMS, HOLDING TANKS, MAINTENANCE PROGRAMS

Nadine Schwager gave a powerpoint presentation on follow-up matters from the last LWAC meeting. Ms. Schwager noted that the May 1st tour was successful and that approximately half of the committee attended; individual tours can still be arranged on request. A preview of the Septic Education program will be presented at the next LWAC meeting by RDN co-op student, Sara Ellis.

In regard to the powerpoint information, John Finnie clarified that the RDN does not support community sewer outside the Urban Containment Boundary. The policy is for sewer *within* the UCB. *Nadine Schwager, Douglas Anderson and Sean De Pol to follow up for September meeting and have planning staff attend.*

DISCUSSION PAPER #3 – POLICIES REGARDING DEVELOPER INSTALLED TREATMENT PLANTS

Dave Forgie of Associated Engineering (BC) Ltd. provided an overview of Discussions Paper #3. The following questions presented in the Discussion Paper were discussed by the committee:

- ◆ Should the RDN enter into ownership, operation and maintenance of package treatment systems?
There was consensus that the RDN should enter into ownership, operation and maintenance of package treatment plants.
- ◆ To what degree should the RDN be involved in the operation and maintenance of systems acquired?
RDN have trained staff and contracting out may be an issue with the Union. The Ministry would work with the RDN in respect of requirements and RDN would apply directly to MOE. If RDN assumes plants when built, the RDN could have involvement in design, construction etc. Developer would sign over plant to RDN as in the case of DPPCC and NPCC. The subdivision process would be the trigger for providing requirements to developer.
- ◆ What standards of wastewater treatment should be established?
This would be dependent on standards. Start by aiming high; toxic chemicals to be removed from waste streams, aim for heat reclamation. Goal is to make sure it is economical. Public should get an idea of the full picture – what are the benefits (lowering heating costs, etc.)

- ◆ Which wastewater treatment technologies would be acceptable for use?
Need to be “ahead of the game” with technologies, (ie. awareness of endocrine disrupting chemicals to be considered) the public will demand this.
- ◆ What is the acceptable minimum size of the system?
Size of system would have to be on a case by case basis. Private companies determined <60 units is not economical. CVRD uses <50 as the guideline with some flexibility. Smaller systems cannot support themselves for instance a 16 unit development would struggle to pay for a system failure. Important to consider the point of discharge; safe point of discharge would be difficult for a 50 or 60 home system.
- ◆ When a developer constructs a system, should there be a requirement to provide additional treatment plant capacity for servicing adjacent existing homes?
Additional capacity for servicing existing adjacent homes should be required of the developers. Must look at needs of community around subdivision and build in the opportunity for systems to be expandable; not certain who will pay. Latecomer fees may be applicable.

OTHER

*Nadine Schwager will email links to committee members for access to the provincial report on **integrated resource management**.*

John Finnie explained that regional districts’ ability to fund is service area based. The RDN will think about aggregating PTPs into a single service area into which all PTP participants would pay.

Mr. Finnie asked the committee to look ahead to public consultation as the public will be very interested, including those with existing systems.

Mr. Finnie also noted that the RDN has no stormwater systems and needs to **support** better rainwater and stormwater systems in developments.

NEXT MEETING

Next meeting will be held Thursday, September 4, 2008 from 12:00-2:00 pm in the RDN Committee Room

ADJOURNMENT

Chairman Holme adjourned the meeting at 2:07 pm.

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, SEPT 4, 2008 IN THE RDN COMMITTEE ROOM

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Merv Unger	Director (Nanaimo)
Kirsten White	Ministry of Environment
Blake Medlar	Ministry of Environment
Fred Spears	District of Lantzville
Gary Tuyls	Public Representative (North)
Frank Van Eynde	Public Representative (North)
Douglas Anderson	Public Representative (South)
Michelle Jones	Business Representative (North)
Christianne Wilhelmson	Environment Representative
Doug Glenn	Vancouver Island Health Authority
Sandy Herle	Director (Parksville)
Gary O'Rourke	City of Parksville
John Elliot	City of Nanaimo

Also in attendance:

John Finnie	General Manager, Environmental Services, RDN
Sean De Pol	Manager of Liquid Waste, RDN
Nadine Schwager	Liquid Waste Coordinator, RDN
Lindsay Dalton	Liquid Waste Coordinator, RDN
Ellen Hausman	Environmental Technician, RDN
Paul Thompson	Manager of Long Range Planning, RDN
Sara Ellis	Special Projects Assistant, RDN
Rebecca Graves	Recording Secretary, RDN

Absent:

Bob Weir	Town of Qualicum Beach
James Wesley	Snuneymuxw First Nation
Gary Anderson	Vancouver Island Health Authority
Karen Limin	Public Representative (South)
Julia Brydon	Environment Canada
Blair Nicholson	Business Representative (South)
Harold Halvorson	Chief Operator, RDN
Mike Brophy	Chief Operator, RDN
David Forgie	Associated Engineering (BC) Ltd.
Kelly Bush	Associated Engineering (BC) Ltd.
Bev Farkas	Recording Secretary, RDN

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Director Holme called the meeting to order at 12:15 p.m.

INTRODUCTIONS

Two new members, Lindsay Dalton and Ellen Hausman, were welcomed and introduced to the committee.

APPROVAL OF AGENDA

MOVED Frank Van Eynde, SECONDED Gary Tuyls, that the agenda be approved.

CARRIED

MINUTES

No motion to adopt minutes from the Regional Liquid Waste Advisory Committee regular meeting of June 5, 2008 due to changes brought forward by Kirsten White (MOE). Minutes to be amended.

CARRIED

LWMP OVERVIEW

Sean De Pol began a powerpoint presentation on the LWMP review process to date. The LWMP review process was described. This was followed by a summary of issues discussed during previous meetings. Included was an overview of facilities, onsite treatment issues, and package treatment plants.

ADJOURNMENT

Meeting was interrupted due to evacuation approx. 12:25 p.m.

REGIONAL DISTRICT OF NANAIMO

**MINUTES OF THE
LIQUID WASTE ADVISORY COMMITTEE
LIQUID WASTE MANAGEMENT PLAN REVIEW
HELD ON THURSDAY, OCTOBER 2, 2008
AT OLIVER WOODS COMMUNITY CENTRE**

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Sandy Herle	Director (Parksville)
Merv Unger	Director (Nanaimo)
Kirsten White	Ministry of Environment
Blake Medlar	Ministry of Environment
Gary Anderson	Vancouver Island Health Authority
Fred Spears	District of Lantzville
Gary O'Rourke	City of Parksville
Bob Weir	Town of Qualicum Beach
Gary Tuyls	Public Representative (North)
Frank Van Eynde	Public Representative (North)
Douglas Anderson	Public Representative (South)
Michelle Jones	Business Representative (North)
Christianne Wilhelmson	Environment Representative

Also in attendance:

John Finnie	General Manager, Environmental Services, RDN
Sean De Pol	Manager of Liquid Waste, RDN
Lindsay Dalton	Liquid Waste Coordinator, RDN
Nadine Schwager	Liquid Waste Coordinator, RDN
Ellen Hausman	Environmental Technician, RDN
Sara Ellis	Special Projects Assistant, RDN
David Forgie	Associated Engineering (BC) Ltd.
Kelly Bush	Associated Engineering (BC) Ltd.
Bev Farkas	Recording Secretary, RDN

Absent:

John Elliot	City of Nanaimo
James Wesley	Snuneymuxw First Nation
Julia Brydon	Environment Canada
Blair Nicholson	Business Representative (South)

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Director Holme called the meeting to order at 12:25 p.m.

APPROVAL OF AGENDA

MOVED Frank Van Eynde, SECONDED Joe Burnett, that the agenda be approved.

CARRIED

MINUTES

MOVED Merv Unger, SECONDED Frank Van Eynde, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of June 5, 2008 be adopted as amended.

CARRIED

MOVED Merv Unger, SECONDED Joe Burnett, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of September 4, 2008 be adopted.

CARRIED

UPDATE AND OVERVIEW

Sean De Pol presented an update and overview of progress to date. Programs will be implemented after the LWMP review is submitted for approval at the end of summer 2009.

Blake Medlar confirmed that the LWMP review will be submitted to the Minister and not to the local Ministry office.

Sean De Pol added that there are several additional discussion papers in the works: cost estimates, integrated resource management (organic and sewer sludge with solid waste).

DISCUSSION PAPER – SOURCE CONTROL

Lindsay Dalton presented the Discussion Paper on Source Control and asked the committee to consider the overall question “what improvements, if any, should be made to the RDN’s source control program?” The committee discussed the following points:

- ◆ Develop education programs in support of RDN sewer use bylaw #1225.
- ◆ No access to enforcement – should Bylaw 1225 be included in the municipal ticketing bylaw?
- ◆ Important to minimize consumer fatigue relative to conservation messages – work with others; professionals, teachers, community groups.
- ◆ Education is a factor with non-compliance.
- ◆ Non-compliance is more effectively handled by bylaw enforcement than by LW staff.
- ◆ Enforcement should be last resort – it is expensive and time consuming. We have the ability to draw on bylaw enforcement if needed, it is more important to rely on education.
- ◆ *S. De Pol to formalize access to bylaw enforcement.*
- ◆ User fees and application fees for discharging are an option to consider.
- ◆ *N. Schwager and L. Dalton will review the bylaw* (there have only been 4 permits issued this year).
- ◆ Term “compliance” more appropriate than “enforcement”. Enforcement is only one component of compliance; other components are promotion, education and verification.
- ◆ Codes of Practice for industries are a very important tool – allow you to target industries that can cause the most harm; Codes of Practice have not been developed as the budget and staff have not been available.
- ◆ The 1997 LWMP requested a review of Codes of Practice; 2 studies were done and an inventory obtained; *L. Dalton will review this and bring back information to the Committee.*
- ◆ Staffing and resources must be approved by Board if Codes of Practice to be developed.

- ◆ Abbotsford finances the monitoring of source control by charging per BOD, etc. with composite samplers paid for by dischargers.
- ◆ Continue to share knowledge with municipal partners; what are our concerns? What are the concerns of our municipal partners?
- ◆ Consider other partnerships as well; modules are out there for education and information.
- ◆ Chemicals in pharmaceuticals and cosmetics are showing up as a problem in the liquid waste stream.
- ◆ Will the source control program be reviewed on a regular basis? Will there be objectives, measures and target dates to see efficiency?

SEPTIC EDUCATION UPDATE

Sara Ellis thanked the Committee for their comments regarding the Septic Education kits that were previously handed out. The kits will be available at upcoming Open Houses to be held at FCPCC and GNPCC on October 4 and 18 respectively. There will also be workshops presented in late 2008.

Douglas Anderson asked for a box of kits to give out and suggested they be handed out with all RDN building permits, occupancy permits and be promoted by the BC Onsite Wastewater Association who could forward the information to all designers and installers.

Lindsay Dalton informed the Committee that the Capital Regional District is focusing on mandatory servicing regulation and public education; they require proof that septic tanks are pumped out by 2010 or proof of maintenance of an on-site system. Sean De Pol responded that we will focus on septic education and see the results from the CRD's program. John Finnie noted the challenges with a mandatory servicing / pumpout, eg. Access to private property, etc.

DISCUSSION PAPER - FLOW & PLANT CAPACITIES

David Forgie and Kelly Bush of Associated Engineering (BC) Ltd. presented the discussion paper and discussion ensued regarding the future of plant capacities.

NEXT MEETING

Next meeting will be held Thursday, November 6, 2008 from 12:30-2:30 pm at Oliver Woods Community Centre.

ADJOURNMENT

Chairman Holme adjourned the meeting at 2:25 pm.

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, NOVEMBER 6, 2008 AT OLIVER WOODS COMMUNITY CENTRE

Present:	George Holme	Meeting Chair, Director Electoral Area 'E'
	Joe Burnett	Director Electoral Area 'A'
	Kirsten White	Ministry of Environment
	Blake Medlar	Ministry of Environment
	Fred Spears	District of Lantzville
	Gary O'Rourke	City of Parksville
	Bob Weir	Town of Qualicum Beach
	John Elliot	City of Nanaimo
	Gary Tuyls	Public Representative (North)
	Frank Van Eynde	Public Representative (North)
	Douglas Anderson	Public Representative (South)
	Blair Nicholson	Business Representative (South)
	Michelle Jones	Business Representative (North)
	Christianne Wilhelmson	Environment Representative

Also in attendance:

John Finnie	General Manager, Environmental Services, RDN
Sean De Pol	Manager of Liquid Waste, RDN
Harold Halvorson	Chief Operator, FCPCC, RDN
Lindsay Dalton	Liquid Waste Coordinator, RDN
Ellen Hausman	Environmental Technician, RDN
David Forgie	Associated Engineering (BC) Ltd.
Will Wawrychuk	Earth Tech (Canada) Inc.
Bev Farkas	Recording Secretary, RDN

Absent:	Sandy Herle	Director (Parksville)
	Merv Unger	Director (Nanaimo)
	Gary Anderson	Vancouver Island Health Authority
	James Wesley	Snuneymuxw First Nation
	Julia Brydon	Environment Canada

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Director Holme called the meeting to order at 12:30 p.m.

APPROVAL OF AGENDA

MOVED Frank Van Eynde, SECONDED Joe Burnett, that the agenda be approved.

CARRIED

MINUTES

Kirsten White asked that the minutes of the October 2 LWAC meeting be amended to note that the levels of contaminants in the source control bylaw must align with the 2006 version of the Environmental Management Act.

MOVED Joe Burnett, SECONDED Frank Van Eynde, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of October 2, 2008 be adopted as amended. CARRIED

NEW INTRODUCTIONS

Sean De Pol introduced Harold Halvorson, Chief Operator of the French Creek Pollution Control Centre. Will Wawrychuk of Earth Tech (Canada) Ltd. was introduced to the Committee. Earth Tech is the newly appointed Consulting Engineering firm for the RDN's Liquid Waste Department and will begin its work with the RDN as of January 1, 2009. Associated Engineering (BC) Ltd. will continue to work with the Liquid Waste Management Plan review and will continue to work with the RDN on several projects.

DISCUSSION PAPER – OPTIONS FOR SECONDARY TREATMENT

Lindsay Dalton introduced the discussion paper by saying that it serves as a point of reference for future discussion, as well as an overview of some of the technology being considered for secondary treatment.

Dave Forgie presented the Discussion Paper on Options for Secondary Treatment (at GNPCC and NPCC) and discussed these options with the Committee. The following points/questions were raised:

- ◆ Review is of existing types of processes – secondary only (Membrane Bio Reactors could be considered tertiary).
- ◆ What option is favoured regarding Integrated Resource Management? The option requiring the least amount of aeration (probably Trickling Filter / Solids Contact)
- ◆ What option produces the most methane? The option with low sludge age and high sludge quantity such as the membrane bioreactor.
- ◆ Need to consider receiving environment – Environmental Impact Study may be required.
- ◆ Environmental Impact Studies have been done for Five Fingers Outfall and for Duke Point.
- ◆ Secondary treatment options can be added onto in future to further increase efficiency – there are several processes for adding on other technologies.
- ◆ Concern re discharging Endocrine Disrupting Chemicals and Pharmaceuticals and Personal Care Products into the ocean. These are in nanograms which suggests low risk discharging into ocean.
- ◆ Membrane bio-reactor the best technology for removal of EDCs and PPCPs, but has high capital and O&M costs.
- ◆ Household detergents – level of phosphorous is the concern here; solution is to encourage the use of low impact products. Education could be helpful in encouraging the use of environmentally friendly detergents.

Blake Medlar noted that the discussion paper should identify dates for upgrades as there are established dates in the Liquid Waste Management Plan. Mr. Medlar also stated that fecal coliforms and turbidity are not “non-applicable” requirements of MSR secondary treatment as identified in the discussion paper.

Christianne Willhelmson asked about the technology selected for the discussion paper. She wondered if ‘modular technology’ and IRM(integrated resource management), were considered.

Dave Forgie replied that the options presented were part of process selection and would also include consideration of IRM.

There are many opportunities for Integrated Resource Management and Earth Tech will be working with the RDN on this. Lindsay Dalton commented that the agenda for the February 2009 meeting will focus on Integrated Resource Management.

Gary Tuyls stated that as a member of the public, he was concerned about the bio-accumulation of endocrine disrupting chemicals and personal care and pharmaceutical products.

Dave Forgie replied that there was little threat of bioaccumulation given the quality of and location of marine discharge.

Doug Anderson asked about the goals and objectives of the liquid waste advisory committee.

Sean De Pol will bring Terms of Reference for the committee to the next meeting for review.

Sean De Pol will review the Environmental Impact Studies (Ministry has a copy of these studies) and will bring them forward to the Committee.

OPEN HOUSE UPDATE

Ellen Hausman gave a report on the Open House events held at FCPCC on October 4th and GNPCC on October 18th. The open houses were attended by a total of 167 residents and several community groups gave informative presentations. Tours of the plants were given and attendees came away with greater knowledge of the wastewater treatment process.

ODOUR CONTROL

Sean De Pol and Lindsay Dalton spoke to the ongoing odour control efforts at the treatment plants. Through the Liquid Waste Department's Environmental Management System odour complaints are monitored and addressed immediately. Odour control will remain a priority; the goal is to achieve zero multi-complaint days.

MEMBERSHIP

Lindsay Dalton suggested that the Committee may remain as it is but stated that there is a vacant position on the Committee for a public representative. The position will be posted in the local newspapers in the near future but committee members were encouraged to contact Lindsay if they are aware of anyone who may be interested.

OTHER

Lindsay Dalton informed the Committee that Sara Ellis will be conducting free public workshops on the Septic Education Program; November 24th in Nanoose and November 26th in Cedar.

It was determined that the Committee is satisfied with current distribution of agenda packages. Additional agenda packages are available by request.

John Finnie commented on the apparent confusion with the Committee – “What is our goal?” Mr. Finnie noted that the approved plan is already in place and the Committee is reviewing the plan, adding that consideration must be given to new programs, new opportunities, new ideas and information to update. *A meeting with the Ministry of Environment re MSR would be very beneficial and should be held very soon.*

NEXT MEETING

Next meeting will be held Thursday, December 4, 2008 from 12:30-2:30 pm at Oliver Woods Community Centre.

ADJOURNMENT

Chairman Holme adjourned the meeting at 2:25 pm.

REGIONAL DISTRICT OF NANAIMO

**MINUTES OF THE
LIQUID WASTE ADVISORY COMMITTEE
LIQUID WASTE MANAGEMENT PLAN REVIEW
HELD ON THURSDAY, DECEMBER 4, 2008
AT OLIVER WOODS COMMUNITY CENTRE**

Present:	George Holme	Meeting Chair, Director Electoral Area 'E'
	Joe Burnett	Director Electoral Area 'A'
	Merv Unger	Director (Nanaimo)
	Bob Weir	Town of Qualicum Beach
	John Elliot	City of Nanaimo
	Fred Spears	District of Lantzville
	Julia Brydon	Environment Canada
	Blake Medlar	Ministry of Environment
	Gary Tuyls	Public Representative (North)
	Douglas Anderson	Public Representative (South)
	Christianne Wilhelmson	Environment Representative

Also in attendance:

John Finnie	General Manager, Environmental Services, RDN
Sean De Pol	Manager of Liquid Waste, RDN
Lindsay Dalton	Liquid Waste Coordinator, RDN
Ellen Hausman	Environmental Technician, RDN
Sara Ellis	Special Projects Assistant and Recording Secretary, RDN
David Forgie	Associated Engineering (BC) Ltd.

Absent:

Gary O'Rourke	City of Parksville
Kirsten White	Ministry of Environment
Gary Anderson	Vancouver Island Health Authority
Frank Van Eynde	Public Representative (North)
Michelle Jones	Business Representative (North)
Blair Nicholson	Business Representative (South)
James Wesley	Snuneymuxw First Nation

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:32 p.m.

APPROVAL OF AGENDA

MOVED M. Unger, SECONDED J. Burnett, that the agenda be approved.

CARRIED

MINUTES

MOVED M. Unger, SECONDED J. Burnett, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of November 6th, 2008 be approved.

CARRIED

DISCUSSION PAPER #7 – COST ESTIMATES FOR UPGRADES

D. Forgie presented a Discussion Paper on *Cost Estimates for Upgrading/Expanding Treatment Capacity* and discussed options with the Committee. The following points/questions were raised:

- The 1997 LWMP contained costs and timelines for treatment plant upgrades and expansions. As costs of upgrades have increased since 1998, costs needed to be updated to 2008 dollars.
- Approach used available construction cost indices such as Engineering News Records (ENR), Construction Cost Index (CCI) for North America, Seattle and Toronto, and Stats Canada to estimate capital and operation and maintenance costs.
- Secondary treatment of effluent is required for RDN Pollution Control Centres.
- Cost of upgrades, particularly for secondary treatment at GNPCC, are substantial.
- Grant programs will be utilized where possible.
- DCCs are based on historic costs and have not kept pace with current costs.
- FCPCC was built without any provincial or federal grants, consequently the budget for this facility is tight.
- Nanoose upgrade is dependent on increased population, but the decision to upgrade will not be solely based on the population. The MOE and RDN will discuss this in more detail later.
- Staffing levels in the Liquid Waste Department will be contingent upon population increase, facility expansion, and the move to secondary treatment process at GNPCC.
- In response to G. Tuyls question regarding UV disinfection, D. Forgie noted that UV disinfection would not be required for GNPCC expansion to secondary treatment
- Currently 175 connections to the Lantzville system with an additional 400 to be connected. Lantzville has received grant funding for their sewer collection system.
- J. Burnett said that Cedar would be coming online at the end of February 2009. The DPPCC is also at its leveraged capacity. D. Forgie added that DPPCC has UV disinfection.
- B. Medlar noted that the RDN may need to upgrade Operator's certification with the GNPCC upgrade to secondary treatment. B. Weir is concerned that there is a shortage of Operators in the field and B. Medlar replied that this issue should be taken to UBCM.
- Concerns were raised over the capacity of Vancouver Island University to handle biosolids as the amount of sludge increases with secondary treatment. This issue will be looked at in the March 5th LWAC discussion paper.

UPDATE – ENVIRONMENTAL MANAGEMENT SYSTEM

S. De Pol gave an overview of the Environmental Management System (EMS). Developed by the International Standards Organization and referred to as ISO 14001, an EMS is a continual cycle of planning, implementing, reviewing and improving of an organization's responsibilities, procedures, processes, and resources to meet its environmental policy and business objectives. The benefits include overall improvement in environmental performance, improved environmental compliance, reduction in actual/potential environmental impacts, and an increase in operating efficiency and control. Information is openly communicated internally, as well as externally through open houses and by request; data and Environmental Management Plans are also available upon request.

Officially registered in 2005, the Regional District of Nanaimo (RDN) was the first local government to achieve ISO 14001 registration in British Columbia.

MOVED Chairman Holme, SECONDED J. Burnett that the committee receive the report on Environmental Management Systems for information.

CARRIED

UPDATE – BENCHMARKING

S. De Pol spoke about the Benchmarking program that is in place. The National Water and Wastewater Benchmarking Initiative is a program that allows participants to compare and review the performance of their utility against other utilities to identify areas where they are doing well and areas for improvement. The RDN has participated in this program since 2002 and pays \$15,000 annually for its participation. The LWD's consultant, EarthTech/AECOM is responsible for the program.

S. DePol noted that Benchmarking reports exist but have not been taken to the Board to date. J. Finnie added that the reports are comparatives but there are seldom two organizations that are doing everything the same (ie. same programs, same treatment processes). Comparing similar organizations and staffing levels can identify potential improvements. F. Spears noted that Benchmarking serves as a tool for professional development.

MOVED Chairman Holme, SECONDED J. Burnett that the committee receive the report on Benchmarking for information.

CARRIED

COMMITTEE TERMS OF REFERENCE

S. De Pol discussed the rationale behind the LWMP review: the RDN was encouraged by the Ministry to review the LWMP every 5 years. S. De Pol also discussed the upcoming schedule of discussion papers (schedule in hand-out package); discussion papers focus on key areas of the plan.

Three options were discussed for future LWAC meetings:

1. Keep running the Committee in the same conventional form.
2. Keep running the Committee and have sub-committees to focus on specific areas. There would be a sub-committee leader who puts together Agendas and points of discussion. These sub-committees would meet back with LWAC and summarize their discussions.
3. Keep running the Committee and host workshops on an as needed basis in order to allow LWAC members to discuss issues on a more informal basis. Workshops would be directed by an LWAC member and facilitated by RDN staff.

S. De Pol replied that the workshop would be a less formal setting and would come from the perspective of committee members and not from an RDN or consultant's perspective. RDN would come to the meetings to facilitate and take the ideas to the entire committee. J. Finnie replied that the workshops are an alternate to a sub-committee. People could be pulled in from outside the committee to the workshop.

C. Wilhelmson supports the idea of the workshops. She felt there was a lot of expertise from around the table that can be brought back to the committee. She reminded members that it is about creating a plan together.

The LWMP may need to be reviewed and amended every couple years instead of five. The planning process is slow and things move too fast for the plan to deal with.

The consensus was that the Committee would move towards a Committee/Workshop format (to be held as needed), and L. Dalton would begin organizing this via email in January 2009.

OTHER

S. Ellis provided an update on the SepticSmart Education Program. Two workshops were hosted in November with a total of 270 people attending. Feedback was positive and more workshops are planned for 2009.

NEXT MEETING

Next meeting will be held Thursday, March 5, 2009 from 12:30-2:30 pm at Oliver Woods Community Centre.

ADJOURNMENT

Chairman Holme adjourned the meeting at 2:30 pm.

REGIONAL DISTRICT OF NANAIMO
MINUTES OF THE
LIQUID WASTE ADVISORY COMMITTEE
LIQUID WASTE MANAGEMENT PLAN REVIEW
HELD ON THURSDAY, MARCH 12, 2009
AT RDN BOARD CHAMBERS

Present:	George Holme	Meeting Chair, Director Electoral Area ‘E’
	Joe Burnett	Director Electoral Area ‘A’
	Bob Weir	Town of Qualicum Beach
	John Elliot	City of Nanaimo
	Fred Spears	District of Lantzville
	Julia Brydon	Environment Canada
	Kirsten White	Ministry of Environment
	Blake Medlar	Ministry of Environment
	Gary Tuyls	Public Representative (North)
	Blair Nicholson	Business Representative (South)
	Christianne Wilhelmson	Environment Representative

Also in attendance:

John Finnie	General Manager, Water and Wastewater Services, RDN
Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Ellen Hausman	Environmental Technician, RDN
Sara Ellis	Special Projects Assistant, RDN
Mike Donnelly	Manager of Water Services, RDN
Bev Farkas	Recording Secretary, RDN
Paul Lucas	Vancouver Island University
Marise Wickman	Vancouver Island University

Absent:

Teunis Westbroek	Director, RDN
Bill Holdom	Director, RDN
Gary Anderson	Vancouver Island Health Authority
Frank Van Eynde	Public Representative (North)
Douglas Anderson	Public Representative (South)
Michelle Jones	Business Representative (North)
James Wesley	Snuneymuxw First Nation

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:35 p.m.

APPROVAL OF AGENDA

MOVED F. Spears, SECONDED J. Burnett, that the agenda be approved.

CARRIED

MINUTES

MOVED B. Weir, SECONDED J. Burnett, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of December 4, 2008 be approved. CARRIED

RDN WATER SERVICES

L. Dalton introduced M. Donnelly, Manager of Water Services for the RDN. Mr. Donnelly discussed the connection between the water and wastewater departments and the common challenges of both departments (*presentation attached*). In the past Water and Wastewater worked without the development of unified goals; Senior government pressures along with increased environmental awareness and climate change will require that those goals be developed jointly in the future. A requirement of the province's Living Water Smart program "purple pipes" (grey water) will be required in all new construction by 2010. L. Dalton noted that is increasingly important for grant applications to draw a link between water use / planning and wastewater production and treatment. It was noted that irrigation has a huge impact on water use and may even double in summer months. Obtaining certification for installation of irrigation systems is important as is education on water conservation.

BIOSOLIDS

S. DePol introduced P. Lucas and M. Wickman from Vancouver Island University. P. Lucas presented the committee with information regarding the history of the biosolids application project located at Vancouver Island University's 1,000 ha. woodlot. Mr. Lucas described the process involving transporting, storing and applying the biosolids to the woodlot. The program complies with the Ministry of Environment's Organic Matter Recycling Regulations (OMRR). The untreated soil samples and the biosolids are tested for heavy metals and the results are far below the maximum limits for heavy metals as set out in OMRR. P. Lucas encouraged continuation of the project by noting the following points:

- Trees in the area need assistance (biosolids are 3% nitrogen and 97% cellulose) and benefit from biosolids application
- Each section is refertilized every four years
- Everything that is harvested is replanted
- No accidents or incidents at site
- Ministry of Environment audit successful – 2004
- Growing public acceptance of program
- Complaints have dropped from several per year to nil
- Two Registered Provincial Foresters involved in program
- Local economic boost
- Beneficial re-use of biosolids

P. Lucas added that the quality of the wood is not negatively affected – wood below the live green crown is good quality wood. C. Wilhelmson asked if testing was performed for additional substances such as pharmaceuticals. P. Lucas responded that the soil and biosolids are tested for heavy metals and that OMRR does not currently require testing of pharmaceuticals. C. Wilhelmson stated that spreading biosolids is not a long term option as it is too risky as those chemicals will eventually get into the soil. S. DePol added that the risk to on-site septic systems would be comparable. P. Lucas stated that "volatilization" occurs as a portion of the nitrogen evaporates into the air for up to one year. In responding to questions about the inventory of trees on-site, P. Lucas noted that the area is approximately 95% douglas fir, with some western red cedar, offsite hemlock, lodgepole pine and cedar, on a site that has been previously replanted.

S. DePol stated that the Environmental Protection Agency supports biosolid application on forests or farmlands and that the Vancouver Island University site may become a pilot site for Canadian Counsel of Ministers of the Environment standards on how to manage biosolids

ANNUAL MONITORING REPORTS

E. Hausman provided the committee with a report entitled “Wastewater Services Annual Wastewater Treatment Plant Reports” for their review. It was noted that RDN facilities are generally well within permit levels. GNPCC is affected by wet weather and there is more I&I in wet years. J. Elliot stated that The City of Nanaimo has made progress in line replacements over the past couple years and has installed temporary flow monitors in problematic areas to address this issue.

NEXT MEETING

The Discussion Paper on Integrated Resource Management will be presented at the next meeting and following the meeting, there will be a workshop organizing session. The intent is to develop a format that allows RLWAC members in attendance to freely explore issues of interest to them. The next meeting will be held Thursday May 7, 2009 from 12:30-2:30 at Oliver Woods Community Centre.

ADJOURNMENT

Chairman Holme adjourned the meeting at 1:50 pm.

REGIONAL DISTRICT OF NANAIMO

**MINUTES OF THE
LIQUID WASTE ADVISORY COMMITTEE
LIQUID WASTE MANAGEMENT PLAN REVIEW
HELD ON THURSDAY, MAY 7, 2009
AT OLIVER WOODS COMMUNITY CENTRE**

Present:	George Holme	Meeting Chair, Director Electoral Area 'E'
	Bill Holdom	Director, RDN
	Bob Weir	Town of Qualicum Beach
	Fred Spears	District of Lantzville
	Rick Morgan	City of Nanaimo
	Tom Hickey	City of Nanaimo
	Kirsten White	Ministry of Environment
	Blake Medlar	Ministry of Environment
	Gary Tuyls	Public Representative (North)
	Blair Nicholson	Business Representative (South)
	Frank Van Eynde	Public Representative (North)
	Douglas Anderson	Public Representative (South)
	Michelle Jones	Business Representative (North)
	Christianne Wilhelmson	Environment Representative

Also in attendance:

John Finnie	General Manager, Water and Wastewater Services, RDN
Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Chris Midgley	Sustainability Coordinator, RDN
Ellen Hausman	Environmental Technician, RDN
Sara Ellis	Special Projects Assistant, RDN
Bev Farkas	Recording Secretary, RDN
David Lycon	AECOM
Catherine Dallaire	AECOM

Absent:

Joe Burnett	Director Electoral Area 'A'
Teunis Westbroek	Director, RDN
John Elliott	City of Nanaimo
Gary Anderson	Vancouver Island Health Authority
James Wesley	Snuneymuxw First Nation
Srenal Lakshmi	Environment Canada

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:30 p.m.

MINUTES

MOVED F. Van Eynde, SECONDED G. Tulys, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of March 12, 2009 be approved. CARRIED

REPORTS

Corporate Carbon Neutral (presentation by Chris Midgley)

L. Dalton introduced C. Midgley, Sustainability Coordinator for the Regional District of Nanaimo. C. Midgley gave a presentation on Corporate Carbon Neutral as it relates to Liquid Waste Integrated Resource Management. (presentation attached). Following the presentation, the following points were discussed:

- Cost of selling carbon offsets will be dictated by market; currently CO₂ is valued at \$30/tonne
- Private companies may continue buying offsets rather than reducing emissions, however the cost will increase over time. In addition there will be watchdog organizations and social implications. Currently the private sector is under no obligation to reduce emissions.
- The RDN Source 1 (direct) emissions from the treatment plants are not included in the RDN emissions inventory. This will be addressed in the Climate Change Plan and not in the LWMP.
- It is anticipated that internal offsets within the organization will balance out; this has not yet been clarified.

Integrated Resource Management (discussion paper)

L. Dalton introduced David Lycon and Catherine Dallaire of AECOM. D.Lycon gave a presentation overview of the Discussion Paper on Integrated Resource Management Opportunities for the RDN, which had been distributed to committee members for review prior to the meeting (presentation attached). Following the presentation, the following points were discussed:

- GNPCC Cogeneration project equipment has been procured and construction is expected to begin this summer.
- AECOM has recommended that the opportunity for co-digestion of organic solid waste and wastewater treatment plant sludge not be considered. Based upon the RDN's Solid Waste Management Plan, the RDN is moving towards a cost-effective, timely and sustainable diversion of organic waste from its solid waste stream.
- GNPCC is not suitable for handling organic solid waste.
- Composting may be a more accepted ecological choice in the public eye.
- Should calculate the value of the current biosolids product applied to forest lands.
- There is an environmental cost in wasting current infrastructure; a cost in wasting what we already have.
- Technology has been around for some time and the RDN has been using some of these technologies for years such as heating buildings and re-using wastewater in treatment plants. The RDN also supplies effluent water for golf course irrigation.
- Important to focus on the fact that RDN has already been doing this; something to be proud of.
- Much of this language is already in the LWMP.
- Emerging contaminants will be considered as more information becomes available.

OPEN DISCUSSION

L. Dalton announced that the committee workshop format would not go forward but invited members to participate in a dialogue and discussion session at each RLWAC meeting. The following topics were addressed:

- Need better sense of how committee input has been integrated - feedback is needed
- Workshops or workgroups could select and research one IRM item and report back to committee.
- Issue of sewage outside municipal boundaries and future village nodes to be discussed at June meeting.
- On-site systems will be revisited at September meeting.
- Important that VIHA and RDN Planning are involved in relevant meetings such as rural servicing and on-site servicing.
- Composting facility being built in Chemainus and will be fully operational in approximately two months; committee will be welcome to attend a tour at that time.
- Draft calendar of LWMP components is available from L.Dalton on request.
- LWMP contains section dealing with marinas and pump out stations. *C.Wilhelmson will provide more information.*

NEXT MEETING

The next meeting will be held Thursday, June 4, 2009 from 12:30 to 3:30 pm at Oliver Woods Community Centre.

ADJOURNMENT

Chairman Holme adjourned the meeting at 1:55 pm.

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON FRIDAY, JUNE 19, 2009 IN THE RDN BOARD CHAMBERS

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
John Elliott	City of Nanaimo
Mike Squire	City of Parksville
Bob Weir	Town of Qualicum Beach
Fred Spears	District of Lantzville
Gary Anderson	Vancouver Island Health Authority
Gary Tuyls	Public Representative (North)
Blair Nicholson	Business Representative (South)
Douglas Anderson	Public Representative (South)
Michelle Jones	Business Representative (North)

Also in attendance:

Ed Mayne	Director, City of Parksville
Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Paul Thompson	Manager of Long Range Planning, RDN
Susan Palmer	Regional Growth Strategy Consultant
Sara Ellis	Special Projects Assistant, RDN
Bev Farkas	Recording Secretary, RDN

Absent:

John Finnie	General Manager, Water and Wastewater Services, RDN
Bill Holdom	Director, RDN
Teunis Westbroek	Director, RDN
Kirsten White	Ministry of Environment
Blake Medlar	Ministry of Environment
James Wesley	Snuneymuxw First Nation
Srenal Lakshmi	Environment Canada
Frank Van Eynde	Public Representative (North)
Christianne Wilhelmson	Environment Representative
Ellen Hausman	Environmental Technician, RDN

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:35 p.m. G. Holme introduced Susan Palmer, Regional Growth Strategy Consultant and Steve Henderson of Island Timberlands.

MINUTES

MOVED G. Tuyls, SECONDED G. Anderson, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of May 7, 2009 be approved.

CARRIED

REPORTS

Regional Growth Strategy

Paul Thompson, Manager of Long Range Planning gave a presentation (attached to minutes) discussing the Regional Growth Strategy review and noted that while the RGS is an important document as it relates to Wastewater Services in the RDN, the Liquid Waste Management Plan will be relied upon to provide more detail.

Rural Areas Discussion Paper

L. Dalton provided information on the Rural Areas Discussion Paper (attached to minutes) provided to the committee members. The following discussion points were made:

The discussion paper was in relation to Section 3.5, Rural Areas, of the LWMP.

Having intensively reviewed this section of the LWMP, Staff have concluded that this section should be divided into 2 distinct parts: Onsite Systems and Community Sewer in Electoral Areas.

In the presentation, Staff also amended the definitions of Community Sewer and Onsite Systems. Community Sewer is located in designated growth areas and refer to any wastewater treatment system that is owned by the RDN. Onsite Systems are located outside areas designated growth areas and refer to any privately owned type 1, 2, or 3 septic system. The discussion paper will be amended to reflect these changes.

The LWMP supports the RGS and will continue to limit new community sewer systems to those areas determined to be necessary under updated OCPs or to address problem areas (threats to environment or health) in existing development.

Outlined in the existing LWMP is a 3 phase process for assessment and implementation of Community Sewer projects; this section will be updated and will remain in the LWMP.

Community sewer to support desired population densities in designated growth areas or to remedy environmental and health problems are often difficult to implement as they are predicated on a public assent process and require that users pay for service. Hence, community sewer is often cost prohibitive to property owners and developers and is rarely pursued by property owners.

Presently the RDN does not qualify for provincial/federal grant programs as it does not meet the requirement of either a 1-hectare minimum zoning bylaw or a soil analysis:

- A one hectare minimum parcel size bylaw would require updating OCPs and would be a requirement of all properties in the RDN. Such a bylaw would have to be retroactive and amalgamate all historical zoning.
- A soil analysis is cost prohibitive as it would also apply to properties across the whole region, (maps have been prepared). It may be possible to put the onus on property owners proposing development on properties of less than 1 hectare but uncertain if the Ministry would accept this and if it would be eligible for funding.

RDN is arranging a meeting with the Province to discuss a clear definition for funding purposes.

To provide support to property owners with onsite systems, the RDN has the SepticSmart education program. This program has been very well received and is very important to educate owners about basic maintenance of their systems.

Also, \$15, 000 has been allocated to a mandatory septic maintenance program feasibility study.

UBCM has made a motion addressing concerns regarding installing septic systems near wells. In addition a report by Sewerage System Regulations Coalition has been submitted to UBCM.

NEW BUSINESS

S. Henderson, Senior Land Manager, Island Timberlands requested that he be permitted to become a committee member. S. DePol responded that the Terms of Reference for the committee do not permit an additional member in this capacity. As membership was advertised in spring of 2008 it would not be advisable to open up the committee for new members at this time.

NEXT MEETING

The next meeting will be held Thursday, September 3, 2009 from 12:30 to 3:00 pm at the RDN Committee Room.

ADJOURNMENT

Chairman Holme adjourned the meeting at 1:50 pm.

G. Holme, Chairman

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, SEPTEMBER 3, 2009 IN THE RDN BOARD CHAMBERS

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
John Elliott	City of Nanaimo
Mike Squire	City of Parksville
Bob Weir	Town of Qualicum Beach
Fred Spears	District of Lantzville
Douglas Anderson	Public Representative (South)
Michelle Jones	Business Representative (North)
John Finnie	General Manager, Water and Wastewater Services, RDN
Bill Holdom	Director, RDN
Teunis Westbroek	Director, RDN
Blake Medlar	Ministry of Environment
Bryce Watson	Ministry of Environment
Christianne Wilhelmson	Environment Representative
Frank Van Eynde	Public Representative (North)

Also in attendance:

Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Carey McIver	Manager of Solid Waste Services, RDN
Ellen Hausman	Wastewater Coordinator, RDN
Sara Ellis	Special Projects Assistant, RDN
Bev Farkas	Recording Secretary, RDN

Absent:

Joe Burnett	Director Electoral Area 'A'
Blair Nicholson	Business Representative (South)
Gary Tuyls	Public Representative (North)
Gary Anderson	Vancouver Island Health Authority
James Wesley	Snuneymuxw First Nation
Snenal Lakshmi	Environment Canada

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:30 p.m.

MINUTES

It was noted that the minutes of the June 19, 2009 Regional Liquid Waste Advisory Committee did not have attachments as stated in the minutes. *The attachments will be forwarded to committee members.*

MOVED F. Van Eynde, SECONDED D. Anderson, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of June 19, 2009 be approved.

CARRIED

BUSINESS ARISING FROM MINUTES

The RDN has met with the Ministry and is working to address moving forward with grants. Presently the RDN does not qualify for any provincial grants due to the 1 hectare rule. In addition, the RDN does not qualify for any federal grants requiring the existence of the 1 hectare rule. G. Holme noted that this issue will be brought forward at UBCM.

REPORTS

Church Road Treatment Plant (Presentation – C.McIver)

C. McIver, Manager of Solid Waste presented information (attached to minutes) discussing the Church Road Transfer Station upgrade and how water and wastewater will be managed at the site. The new buildings will qualify for LEED certification.

Volume Reduction (Discussion Paper – A. Bell / AECOM)

A. Bell reviewed the discussion paper provided to the committee.

RDN operates 4 treatment plants and associated trunk system. The RDN is dependant on municipalities to minimize Inflow and Infiltration (I&I) occurs primarily in the collection system, not trunk the system.

Inflow was described as rainfall dependent. It is characterized by water that is discharged into a wastewater system. Infiltration was described as rainfall and groundwater dependent. It is characterized by water that enters a wastewater system from the ground through pipes or manholes, for example.

I&I can be identified by higher than normal wastewater flows.

In some cases, up to 50% of I&I can come from private sources, ie. from homes and other buildings. Property owners can use several methods to minimize I&I, including using rain barrels and planting rain gardens – both of which are included in the Team Watersmart education program.

The RDN has a flow monitoring program in place; no significant I&I issues have been identified in the RDN trunk system.

Each of the Municipalities provided an overview of I&I in their systems. Key points are as follows:

The City of Nanaimo has an extensive flow monitoring program and is working to remedy known problem areas.

The District of Lantzville has a new collection system and should have minimal I&I.

The City of Parksville has installed a flow meter and a weather station to monitor I&I and steps are being taken to address I&I issues.

The Town of Qualicum Beach is working to identify and address sources of I&I.

It was recommended that the RDN and partner municipalities establish workshops dedicated to collaboratively resolving I&I problems.

Guiding Principles (Presentation – L. Dalton)

L. Dalton reviewed the Statement of Regional Objective and Guiding Principles as provided to the committee and asked members to contact her with their feedback.

In response to the question if our Wastewater Services department was going in the same direction as the Solid Waste Services department regarding buildings, it was stated that 10% of the effluent from FCPCC goes to irrigate the Morningstar Golf Course during summer months and the GNPCC has just tendered a co-generation project which will see biogas (methane from sludge) burned to produce enough electricity to power the facility.

The availability of grants to support future similar projects will be sought as promoting integrated systems may be the only way to obtain grants.

With respect to the guiding principle “Responsibilities to Our Environment” it was noted that our goal should be to cause no harm to the environment.

Schedule Update (L. Dalton)

L. Dalton presented the committee with the updated schedule for upcoming RLWAC meetings (attached to minutes). Following the February 2010 discussions will take place regarding public consultation.

OTHER

B. Medlar introduced Bryce Watson who will be representing Ministry of Environment while Kirsten White is on maternity leave.

NEXT MEETING

The next meeting will be held Thursday, November 5, 2009 from 12:30 to 3:00 pm at the RDN Committee Room.

ADJOURNMENT

Chairman Holme adjourned the meeting at 2:15 pm.

G. Holme, Chairman

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, NOVEMBER 5, 2009 IN THE RDN BOARD CHAMBERS

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Teunis Westbrook	Director, RDN
Bob Weir	Town of Qualicum Beach
Fred Spears	District of Lantzville
Bryce Watson	Ministry of Environment
Christianne Wilhelmson	Environment Representative
Michelle Jones	Business Representative (North)
Blair Nicholson	Business Representative (South)
Frank Van Eynde	Public Representative (North)
Gary Tuyls	Public Representative (North)
Trevor Cooke	City of Nanaimo

Also in attendance:

Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Ellen Hausman	Wastewater Coordinator, RDN
Sara Ellis	Special Projects Assistant, RDN
Bev Farkas	Recording Secretary, RDN

Absent:

Bill Holdom	Director, RDN
John Elliott	City of Nanaimo
Mike Squire	City of Parksville
John Finnie	General Manager, Water and Wastewater Services, RDN
Snenal Lakshmi	Environment Canada
Blake Medlar	Ministry of Environment
Gary Anderson	Vancouver Island Health Authority
James Wesley	Snuneymuxw First Nation
Douglas Anderson	Public Representative (South)

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:30 p.m.

MINUTES

MOVED F. Van Eynde, SECONDED T. Westbrook, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of September 3, 2009 be approved. CARRIED

REPORTS

LWMP Format (Presentation – L. Dalton)

L. Dalton noted that the committee has now gone through the review process of the LWMP and it is time to create a revised plan. L. Dalton introduced the new format for the Liquid Waste Management Plan. The new format will mirror the environmental management program entries that are part of the environmental management system. This will allow for continual improvement of the Liquid Waste Management Plan and, once approved, the revised LWMP will be kept current through both internal and external audits. Following the completion of the review process, L. Dalton explained the intent to continue the Regional Liquid Waste Advisory Committee, into the future, following an update to the Terms of Reference.

Community Wastewater Systems (Presentation – L. Dalton)

Suggestions were made for rewording portions of the Community Wastewater System presentation. *L. Dalton will review and make changes as necessary.*

It was noted that using assessed values is not an effective method for dealing with some environmentally threatened properties. S DePol responded that DCC's or capital charges are used.

Private Systems (Presentation – L. Dalton)

The committee reviewed the presentation and discussed the following:

- VIHA filings are received by the RDN; these properties can be entered into a database to monitor private systems from this point forward, however historical records to date are not reliable.
- RDN will have the ability to collect information on the location of effluent when haulers discharge at septage disposal sites.
- RDN has the ability to require mandatory tank inspections by haulers.
- First year of mandatory pumpouts has been completed at CRD and was successful.
- New Pump and Haul bylaw to be prepared as Pump and Haul is not a sustainable way to manage wastewater on site.

NEW BUSINESS

L. Dalton informed the committee that two successful open houses took place in October at FCPCC and GNPCC with a total of 144 residents attending.

S. DePol advised that a *tour will be arranged in the New Year for the Liquid Waste Advisory Committee and Regional Solid Waste Advisory Committee members to visit a composting facility* in the Comox/Courtenay area which accepts biosolids. B.Nicholson also indicated a desire to arrange a tour to a new composting plant in Chemainus run by Coast (VI) Environmental Ltd.

NEXT MEETING

The next meeting will be held Thursday, January 7, 2010 from 12:30 to 3:00 pm at the RDN Committee Room.

ADJOURNMENT Chairman Holme adjourned the meeting at 1:20 pm.

G. Holme, Chairman

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, FEBRUARY 4, 2010 IN THE RDN BOARD CHAMBERS

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Teunis Westbroek	Director, RDN
Bob Weir	Town of Qualicum Beach
Al Metcalf	City of Parksville
Fred Spears	District of Lantzville
John Elliott	City of Nanaimo
Bryce Watson	Ministry of Environment
Blake Medlar	Ministry of Environment
Christianne Wilhelmson	Environment Representative
Blair Nicholson	Business Representative (South)
Frank Van Eynde	Public Representative (North)
Gary Tuyls	Public Representative (North)

Also in attendance:

John Finnie	General Manager, Water and Wastewater Services, RDN
Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Ellen Hausman	Wastewater Coordinator, RDN
Sara Ellis	Special Projects Assistant, RDN
Bev Farkas	Recording Secretary, RDN

Absent:

Bill Holdom	Director, RDN
Srenal Lakshmi	Environment Canada
Gary Anderson	Vancouver Island Health Authority
Michelle Jones	Business Representative (North)
James Wesley	Snuneymuxw First Nation
Douglas Anderson	Public Representative (South)

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:30 p.m.

MINUTES

MOVED T. Westbroek, SECONDED F. Van Eynde, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of November 5, 2009 be approved. CARRIED

REPORTS

LWMP Review

L. Dalton reviewed the Liquid Waste Management Plan (LWMP) review process and encouraged the committee members to continue providing feedback and input.

T. Westbroek asked how the goals of the 2010-2012 Board Strategic Plan were incorporated into the Liquid Waste Management Plan. L. Dalton advised the committee that the LWMP reflects RDN Board goals and strategies; a copy of the RDN's "Integrated Solutions for a Sustainable Future" will be available on the RDN's website, anyone requiring a hard copy was encouraged to contact L. Dalton.

Source Control Program (L. Dalton)

L. Dalton reviewed the chapter on Source Control. The objective of the Source Control Program is to "improve the quality of influent by reducing, or eliminating contaminants at their source". Comments on the Source Control chapter were as follows:

- Sewer Use Bylaw 1225 may undergo updating and review in 2011.
- It was proposed that Staff engage municipalities in discussions to develop municipal bylaws that are the same as Sewer Use Bylaw 1225.
- Bylaw enforcement using enforcement officers may only be applicable to cases that fall under the provisions described in Sewer Use Bylaw 1225.
- Initial steps will focus on outreach and education.
- Wastewater Services proposes developing an education program promoting proper pharmaceutical disposal.
- Influent testing is done at plant to ensure samples do not exceed limits; biosolids also a good check for contaminants.

Odour Control Program (L. Dalton)

L. Dalton reviewed the chapter on Odour Control and it was noted that in the past several years the number of odour complaints has been reduced to very few complaints each year. The objective of the Odour Control Program is to "control nuisance odours from RDN wastewater infrastructure". Staff will continue to advance odour control strategies, techniques, and technologies into the future, as required.

Biosolids Program (L. Dalton)

L. Dalton reviewed the chapter on Biosolids. The objective of the Biosolids Program is to "continue to produce and beneficially use high quality biosolids". The following points were discussed:

- The Biosolids program is a new component of the LWMP.
- 100% of the biosolids produced at RDN facilities are beneficially used.
- Biosolids testing meets OMRR – there is no requirement for testing of endocrine disrupting chemicals.
- 6,000 wet tonnes of biosolids are produced at GNPCC and FCPCC per year.
- Have received \$10,000 for study grant to look at options for biosolids.
- Nanoose Bay Pollution Control Centre sludge goes to FCPCC and Duke Point sludge goes to GNPCC.
- Biosolids have not been landfilled – but have been stockpiled and used as cover material.
- Need contingency plan if VIU program disrupted.

B. Nicholson stated he could provide details about biosolids testing if requested.

Application for Funding – Major Projects (S. DePol)

S. DePol explained that major projects will be forthcoming at GNPCC, FCPCC and NPCC and are estimated to cost \$124 million. Funds will be derived from a combination of DCC reserve funds, borrowing and operational reserve funds. Borrowing may have a significant impact on tax requisitions and the RDN will be applying for Federal and Provincial funding. Staff will prepare a preliminary request for funding that will be submitted to the Federal and Provincial governments.

NEW BUSINESS

MOVED Teunis Westbroek, SECONDED Frank Van Eynde that staff prepare a strategy for an educational awareness program for the disposal of residential chemicals in the wastewater stream.

CARRIED

NEXT MEETING

L. Dalton thanked the committee for their comments and presented an upcoming meeting schedule noting that upcoming meetings will focus on reviewing chapters and the August meeting could be a final review. The next meeting will be held Thursday, April 1, 2010 from 12:30 to 2:30 pm at the RDN Board Room.

ADJOURNMENT

Chairman Holme adjourned the meeting at 1:40 pm.

G. Holme, Chairman

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, APRIL 1, 2010 IN THE RDN BOARD CHAMBERS

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Teunis Westbroek	Director, RDN
Bill Holdom	Director, RDN
Bob Weir	Town of Qualicum Beach
Mike Squire	City of Parksville
Fred Spears	District of Lantzville
John Elliott	City of Nanaimo
Bryce Watson	Ministry of Environment
Christianne Wilhelmson	Environment Representative
Frank Van Eynde	Public Representative (North)

Also in attendance:

Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Ellen Hausman	Wastewater Coordinator, RDN
Sara Ellis	Special Projects Assistant, RDN
Dale Lindsay	Manager of Current Planning, RDN
Christina Metherall	DWWP Coordinator, RDN
Mike Donnelly	Manager of Water Services, RDN
Wayne Moorman	Manager of Engineering Services, RDN
Rebecca Graves	Recording Secretary, RDN

Absent:

John Finnie	General Manager, Regional & Community Utilities, RDN
Srenal Lakshmi	Environment Canada
Gary Anderson	Vancouver Island Health Authority
Michelle Jones	Business Representative (North)
James Wesley	Snuneymuxw First Nation
Douglas Anderson	Public Representative (South)
Blake Medlar	Ministry of Environment
Blair Nicholson	Business Representative (South)
Gary Tuyls	Public Representative (North)

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:30 p.m.

MINUTES

MOVED F. Van Eynde, SECONDED J. Burnett, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of February 4, 2010 be approved. CARRIED

REPORTS

Annual Reports (E. Hausman)

E. Hausman provided a summary of annual reports for all RDN wastewater facilities for 2009. Reports summarising sampling results, trends and compliance with discharge permits are prepared and submitted to the Ministry of Environment yearly. It was demonstrated that a high level of compliance was achieved in 2009.

Rainwater Management (L. Dalton)

L. Dalton reviewed the Rainwater Management Report and it was noted that the Liquid Waste Management Plan (LWMP) chapters sent out as reports to the LWAC members are to be considered draft copies and are subject to change. L. Dalton stated that the goal of the meeting was to engage members in discussion about the content of the rainwater management and inflow and infiltration chapters. L. Dalton reminded the LWAC that any suggestions or changes will be duly recorded and reflected in the final draft, which will be presented to the LWAC prior to public consultation. Further, all chapter content will be subject to a yearly review, once the plan has been approved.

S. De Pol advised the committee that the principle role of the Wastewater Services department is to treat domestic wastewater that is conveyed mostly from the Municipalities. The Ministry of Environment requires that rainwater management be included in the LWMP. Wastewater Services role with respect to rainwater management will be to coordinate and share information amongst the Municipalities, Water Services, and Development Services.

S. De Pol asked representatives from the Municipalities, Water Services, and Development Services to speak about their current rainwater management strategies. The following points were discussed:

- The City of Nanaimo (CON) has installed 10 new storm flow monitors and rain gauges and monitor throughout the city.
- CON encourages homeowners to leave open ditches.
- CON is also working with Developers to install systems to handle and reduce corrosion and run offs from newly developed properties.
- City of Parksville (COP) has a sustainability checklist and work with developers to maintain existing creeks. Objective is to reduce quantity and then look at the quality.
- COP has installed 2 rain gauges to monitor what type of storms flow through.
- COP pursues and adopts innovative rainwater management practices and will continue to do so into the future.
- Town of Qualicum Beach (TQB) is not rewriting any standards because of the amount of technology that is already available.
- TQB discourages the infilling of ditches and work has been done to restore two urban streams
- TQB investigates and adopts innovative rainwater management practices and will continue to do so into the future.
- District of Lantzville (DL) has established guidelines for surface rainwater management in their subdivision and development bylaw.
- Water Services adopted a Drinking Water and Watershed Protection function to protect ground water quality and quantity.
- Development Services plays a role in the subdivision process and can advise the approving authority where rainwater management is an issue.
- Director Westbroek inquired about a region-wide policy for water diversion. It was determined that this could be best addressed through the subdivision servicing bylaw.

Inflow and Infiltration Program (L. Dalton)

L. Dalton reviewed the presentation on inflow and infiltration (I&I).

S. De Pol pointed out that the RDN owns the interceptor along the foreshore but upstream from this is municipally owned infrastructure. However, Wastewater Services has a comprehensive flow monitoring program and shares with the Municipalities flow and rainfall monitoring which helps determine how the collection system reacts to storm events. In addition, the RDN provides regular maintenance on the interceptors to minimize I&I. Again, Wastewater Services will serve a coordinating role and will engage in information sharing with the Municipalities.

S. De Pol asked the Municipalities to speak about their current I&I initiatives. The following points were discussed:

- The CON, COP, and TQB all work with Wastewater Services to share I&I and flow monitoring information.
- CON has 10 new flow monitoring stations which indicates where flows are at and rain in heavy storm events.
- CON has a manhole inspection program if not in good shape a work order is generated improvements are done where required.
- The CON develops annual operations and maintenance plans with an I&I component.
- COP had a study done in 1996 and followed up 2 years later. Smoke testing was done and most problems were in the manholes. Installed a flow monitor to check in-flow and sanitary flow. COP has a 5 year plan specifically targeting older areas and expects to see an I&I reduction.
- The TQB has purchased a CCTV system to inspect the collection system and identify problems. The TQB also performs regular smoke and dye testing to identify problems.
- C. Willhelmsen suggested that despite all the good work being done by the municipalities that perhaps there was also a need to engage the public as most I&I problems occur on private property.

NEXT MEETING

L. Dalton thanked the committee for their comments and announced that the next meeting will be held Thursday, June 3, 2010 from 12:30 to 2:30 pm at the RDN Board Room.

ADJOURNMENT

Chairman Holme adjourned the meeting at 1:45 pm.

G. Holme, Chairman

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE LIQUID WASTE ADVISORY COMMITTEE LIQUID WASTE MANAGEMENT PLAN REVIEW HELD ON THURSDAY, JUNE 3, 2010 IN THE RDN BOARD CHAMBERS

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Teunis Westbroek	Director, RDN
Bill Holdom	Director, RDN
Bob Weir	Town of Qualicum Beach
Rick Morgan	City of Nanaimo
Bryce Watson	Ministry of Environment
Christianne Wilhelmson	Environment Representative
Frank Van Eynde	Public Representative (North)
Blair Nicholson	Business Representative (South)
Gary Tuyls	Public Representative (North)

Also in attendance:

John Finnie	General Manager, Regional & Community Utilities, RDN
Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Ellen Hausman	Wastewater Coordinator, RDN
Sara Ellis	Special Projects Assistant, RDN
Cavan Gates	Special Projects Assistant, RDN
Bev Farkas	Recording Secretary, RDN

Absent:

Mike Squire	City of Parksville
Fred Spears	District of Lantzville
Srenal Lakshmi	Environment Canada
Gary Anderson	Vancouver Island Health Authority
Michelle Jones	Business Representative (North)
James Wesley	Snuneymuxw First Nation
Douglas Anderson	Public Representative (South)
Blake Medlar	Ministry of Environment

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:50 p.m.

MINUTES

MOVED F. Van Eynde, SECONDED J. Burnett, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of April 1, 2010 be approved. CARRIED

Bryce Watson advised the committee that *the Ministry will provide written response to the draft Inflow and Infiltration chapter presented at the April 1st, 2010 LWAC meeting.*

REPORTS

Overview (S.DePol)

S.DePol gave a brief description of the history of the four pollution control centres and will arrange to have *photographs of the construction of the Greater Nanaimo Pollution Control Centre available* at a future Liquid Waste Advisory Committee meeting.

Greater Nanaimo Pollution Control Centre Draft LWMP Chapter (L. Dalton)

L. Dalton presented the Draft LWMP Chapter for the Greater Nanaimo Pollution Control Centre.

French Creek Pollution Control Centre Draft LWMP Chapter (L. Dalton)

L. Dalton presented the Draft LWMP Chapter for the French Creek Pollution Control Centre. *Biosolids information should be identified* in both the GNPCC and FCPCCC Chapters of the LWMP. *Footnotes 10 and 12 of the FCPCCC Chapter will be clarified.*

Nanoose Bay Pollution Control Centre Draft LWMP Chapter (L. Dalton)

L. Dalton presented the Draft LWM Chapter for the Nanoose Bay Pollution Control Centre. Plant upgrading is tied to population growth; Fairwinds have reserved allocation in the plant and will be able to handle their development expansion. It would be helpful to note additional recovery options for the plant.

Duke Point Pollution Control Centre Draft LWMP Chapter (L. Dalton)

L. Dalton presented the Draft LWMP Chapter for the Duke Point Pollution Control Centre. It was noted that the plant capacity is fully committed and will not be underutilized once Cedar and BC Ferries use the plant. There are no foreseeable plans to update or upgrade the facility. It may not be possible to expand the plant in future as the site is constrained; future developers may have to pay for a new cell. B. Watson asked that the history section be included in the LWMP. L. Dalton advised the committee that while an application has been submitted for an infrastructure planning grant, servicing for Area A was not included but may be applied for in September.

Financial Plan Draft LWMP Chapter (L. Dalton)

L. Dalton presented the Financial Plan Draft LWMP Chapter and the following was discussed:

- Communicate to public that financing is without cost sharing and alert public that there may be a need for borrowing; 20 year amortization period used for large infrastructure projects
- Expansion will be financed by DCC's and reserve funds; a shortfall is anticipated
- Provincial and Federal governments have received letter from RDN re: notice of upcoming projects
- Grants will likely not be available once projects begin
- If public consultation and costs are well documented can go directly to Ministry without going to referendum, however even if project did go to referendum it could be turned down

OTHER

- Report on expired medications still outstanding.
- Chapters reviewed by Liquid Waste Advisory Committee are available on-line.
- Updated chapters will be presented to committee for review and further amendments before the draft is presented to the RDN Board and back to the committee before formal approval to the Ministry of Environment.. It is anticipated that the next LWAC meeting will be in mid-September 2010, where a completed draft of the LWMP will be reviewed by the committee.
- B. Nicholson provided a sample of biosolid compost for the committee to view.
- C. Wilhelmson invited committee members to attend a 20th Anniversary celebration for the Georgia Strait Alliance Saturday June 5th at the Nanaimo Observation Deck from 6-9 p.m.

NEXT MEETING

TBA

ADJOURNMENT

Chairman Holme adjourned the meeting at 2:20 pm.

G. Holme, Chairman

REGIONAL DISTRICT OF NANAIMO
MINUTES OF THE
LIQUID WASTE ADVISORY COMMITTEE
LIQUID WASTE MANAGEMENT PLAN REVIEW
HELD ON THURSDAY, OCTOBER 7, 2010
IN THE RDN BOARD CHAMBERS

Present:

George Holme	Meeting Chair, Director Electoral Area 'E'
Joe Burnett	Director Electoral Area 'A'
Teunis Westbroek	Director, RDN
Bill Holdom	Director, RDN
Bob Weir	Town of Qualicum Beach
Mike Squire	City of Parksville
Fred Spears	District of Lantzville
John Elliott	City of Nanaimo
Blake Medlar	Ministry of Environment
Kirsten White	Ministry of Environment
Christianne Wilhelmson	Environment Representative
Michelle Jones	Business Representative (North)
Frank Van Eynde	Public Representative (North)
Douglas Anderson	Public Representative (South)
Blair Nicholson	Business Representative (South)

Also in attendance:

John Finnie	General Manager, Regional & Community Utilities, RDN
Sean De Pol	Manager of Wastewater Services, RDN
Lindsay Dalton	Wastewater Coordinator, RDN
Ellen Hausman	Wastewater Coordinator, RDN
Lorena Mueller	Engineering Technician, RDN
Bev Farkas	Recording Secretary, RDN
Stephen Henderson	Observer

Absent:

Snenal Lakshmi	Environment Canada
Gary Anderson	Vancouver Island Health Authority
James Wesley	Snuneymuxw First Nation

Note: Action items in minutes are *italicized*.

CALL TO ORDER

Chairman Holme called the meeting to order at 12:35 p.m.

MINUTES

MOVED F. Van Eynde, SECONDED B. Holdom, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of June 3, 2010 be approved. **CARRIED**

REPORTS

Draft Liquid Waste Management Plan (L. Dalton)

L. Dalton outlined the format of the updated Liquid Waste Management Plan (LWMP) and invited discussion on the content of the LWMP. The following comments were made about the document:

Director Westbroek suggested that the updated LWMP needed to better define long-range goals and major milestones, and should identify opportunities for pollution prevention.

Director Holdom requested clarification on financing options upgrade and expansion plans at the Greater Nanaimo Pollution Control Centre (GNPCC). Director Holdom then suggested that there are few ways to truly resolve the issue of pharmaceuticals in influent. Potential solutions include a levy applied to producers or consumers of pharmaceutical products. However, the best solution may be to upgrade and expand treatment infrastructure at the GNPCC.

C. Wilhelmson provided comment on the content of the updated LWMP saying that the vision for wastewater management in the region needs to be strengthened. In particular, measurables and benchmarks should be identified. C. Wilhelmson then encouraged the RDN to look at implementing codes of practice as part of the Source Control Program.

D. Anderson said that the LWMP should be easily understood by the general public. To create a document that is immediately readable to the general public, the programs should be preceded by an explanation of current conditions and past commitments relative to the specific program. D. Anderson also suggested that if the document is to go forward to the Ministry of Environment, it should be endorsed by the Municipalities. D. Anderson also suggested that the budget for particular programs be better explained to distinguish between annualized costs and capital costs.

K. White from the Ministry of Environment (MOE) stated that additional clarification was required to ensure that the updated LWMP is aligned with commitments of the 1997 LWMP, the Environmental Management Act, and will comply with regulations governing the management of municipal liquid waste. Included among those are point source discharges, inflow and infiltration, and opportunities for resource recovery. The MOE also felt that the amendment should reflect a stronger leadership role in addressing private on-site systems, source control and rainwater programs.

Director Holdom made the point that there is limited money available for expansion and upgrade projects at the GNPCC. The City of Nanaimo was recently instructed to construct, operate, and maintain a water filtration plant. The costs associated with this plant and the upgrades required at the GNPCC will require borrowing and will cause increased costs for residents of the City of Nanaimo.

S. Henderson suggested that in section 2.0 of the updated LWMP, a sub-section on priority issues should be added.

D. Anderson re-stated that the LWMP will require the support of municipalities and should go to the MOE prior to public consultation to ensure that the updated LWMP is on the right track.

Director Westbroek added that the updated LWMP should have a clear objective and should be focused on long range goals that improve the region for future generations.

Director Holdom suggested that the City of Nanaimo was undertaking several inflow and infiltration mitigation strategies but suggested that perhaps metering might prove to be a viable option.

J. Elliott provided an overview of efforts to improve inflow and infiltration in the City of Nanaimo.

F. Spears suggested that the Sewer Use Bylaw should be better used in the Source Control Program chapter.

J. Finnie made a comment about First Nation consultation, stating that Wastewater Services was pursuing strategies to enhance dialogue with resident First Nations.

The MOE has met with RDN and indicated the need for additional clarification. MOE is preparing further comments to forward to RDN. *MOE will provide the RDN with written comment on the draft LWMP update.*

NEXT MEETING

TBA

ADJOURNMENT

Chairman Holme adjourned the meeting at 2:10 pm.

G. Holme, Chairman

REGIONAL DISTRICT OF NANAIMO

**MINUTES OF THE
REGIONAL LIQUID WASTE ADVISORY COMMITTEE
HELD ON WEDNESDAY, FEBRUARY 29, 2012
IN THE RDN BOARD CHAMBERS**

Present:

Bill Bestwick	Meeting Chair, Director, City of Nanaimo
George Holme	Director Electoral Area 'E'
George Anderson	Director, City of Nanaimo
Brian Dempsey	Director, District of Lantzville
Vaughn Figueira	City of Parksville
Fred Spears	District of Lantzville
John Elliott	City of Nanaimo
Baljeet Mann	Ministry of Environment
Christianne Wilhelmson	Environment Representative
Michelle Jones	Business Representative (North)
Frank Van Eynde	Public Representative (North)
Douglas Anderson	Public Representative (South)
Blair Nicholson	Business Representative (South)

Also in attendance:

John Finnie	General Manager, Regional & Community Utilities, RDN
Sean De Pol	Manager of Wastewater Services, RDN
Wayne Moorman	Manager of Engineering Services, RDN
Shelley Norum	Wastewater Coordinator, RDN
Christina Metherall	Drinking Water and Watershed Protection Coordinator, RDN
Maury Scott	Special Projects Assistant, RDN
Bev Farkas	Recording Secretary, RDN

Regrets:

Bob Weir	Town of Qualicum Beach
Snehal Lakhani	Environment Canada
James Wesley	Snuneymuxw First Nation
James Arnott	Environment Canada
Blake Medlar	Ministry of Environment
Gary Anderson	Vancouver Island Health Authority

CALL TO ORDER

The Chair opened the meeting at 12:20 pm and introductions were made around the table.

OPENING REMARKS

S. De Pol informed the committee that the Liquid Waste Management Plan was submitted in 1997 as required by the Ministry of Environment (MOE). The plan was approved by MOE in 1999 and a review of the plan was required to be completed every 5-10 years. The current review began in 2008 and there have been 16 advisory committee meetings and several meetings with MOE to date. This is the second version of the draft to come before this advisory committee and it incorporates feedback provided by the committee and MOE.

MINUTES

MOVED Director Holmes, SECONDED Director Dempsey, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of October 7, 2010 be approved.

CARRIED

BUSINESS ARISING FROM THE MINUTES

COMMUNICATIONS / CORRESPONDENCE

UNFINISHED BUSINESS

REPORTS

Liquid Waste Management Plan Update (verbal) S. Norum

S. Norum outlined the next steps in the LWMP review process which include forwarding the draft LWMP to the RDN Board for approval to take the document to public consultation, incorporating feedback from public consultation and then meeting with the LWAC to discuss the updates. The plan will then be presented to the RDN Board for approval prior to submitting the final plan to MOE.

D. Anderson noted that the committee has not heard what the Ministry's concerns are about the document and stated the importance of bringing that information to the committee for discussion prior to forwarding to Public Consultation. J. Finnie replied that some of the input from the MOE discussions has been included in the plan and the intent is to balance not only the goals and objectives as they relate to Ministry requirements, but also the financial capacity of the RDN.

D. Anderson stated his concern that the costs of the programs are not clearly identified in the plan. S. De Pol indicated that on Page 30 the Table shows cost per connection and Table 14 shows upcoming capital projects and costs associated with them. Additional financial information is available in the appendix.

D. Anderson stated that there is nothing in the document to engage First Nations in the consultation process. S. De Pol replied that MOE has guidelines for First Nations consultation which will be adhered to. There are 22 groups to consult with at a variety of different levels, however focus will be on Snuneymuxw and Nanoose First Nations (resident First Nations in RDN). J. Finnie added that Snuneymuxw First Nation has representation on this committee and they have been informed of every meeting; minutes and reports have been provided to them. There will be an undertaking to meet directly with Snuneymuxw and Nanoose First Nations. J. Finnie stated that the plan is not changing much as it relates to our wastewater collection and disposal; but the real significant change is moving toward increased levels of treatment and advancement of wastewater programs.

D. Anderson voiced concern that the topic of Rainwater Management only references various issues within municipalities. S. De Pol responded that Rainwater Management is different for municipalities and regional districts. The infrastructure, and the responsibility for it, is within the municipalities and the RDN's authority is to work with the municipalities. J. Finnie added that through the DWWP the RDN will undertake to address rainwater in terms of rainwater harvesting and reuse; the RDN does not have an established stormwater function (other than one small retention pond). The goal to minimize stormwater runoff and creation is being addressed to some degree through the Development Services department by way of development and land use requirements.

C. Wilhelmson asked for confirmation that the committee's comments will be addressed in the draft plan and S. De Pol replied that changes will continue to happen through the Public Consultation process.

C. Wilhelmson added that there is a need to make Resource Recovery a priority in the document, possibly by integrating with climate change language.

C. Wilhelmson noted that Inflow and Infiltration is acknowledged in the document but there is no direction on how it will be addressed. S. De Pol responded that the collection system and private systems are within municipalities; in order for us to make commitments the RDN will work closely with municipalities.

Public Consultation Plan (verbal) S. Norum

S. Norum provided a PowerPoint presentation.

C. Wilhelmson expressed the need to raise the literacy of residents on the subject of wastewater to increase public consultation involvement. There is a need to engage the public by educating them on how this subject affects their day to day lives.

C. Wilhelmson stated that it is important to show people all the funding alternatives and encourage them to advocate for shared funding. J. Finnie responded that the RDN always presents financial information to the public with the assumption that if a project is going forward it will be without grant funding; for that reason it is difficult to secure public support and move anything forward with full costs.

M. Jones asked if the second Table on page 30 includes all costs of operation and maintenance of treatment facility or just the secondary expansion. S. De Pol replied that it includes both.

B. Mann stated that MOE has provided comments in writing to the RDN, most recently about one year ago. The Ministry has not yet provided their comments on the current draft but it is very important for their input at this point; consultation will take place before the final draft. B. Mann added that comments from MOE would be from perspective of their regulations and policies and procedures. J. Finnie replied that the goal is for the Ministry to have a level of comfort with the plan before it goes to public consultation.

D. Anderson requested that if further discussion is needed after staff meet with MOE, it would be beneficial to have that discussion at the committee level prior to advancing the plan to public consultation.

CHAIR Bestwick questioned timing of next steps. S. Norum responded that if an additional committee meeting were to take place, processing the draft plan may be delayed by two to three months.

S. De Pol reiterated that LWMP programs are constrained by a very limited budget and staff take into account expansion requirements if deemed necessary by the committee and public.

D. Anderson noted that everything is not being included in the plan; need to identify what is realistic and eliminate some items through the public consultation process.

B. Dempsey made an observation that the Nanoose First Nation's sewage treatment plant was not mentioned in the plan. There is an ocean outfall and nearby shellfish industry, and their sludge goes to the RDN's Chase River Pumping Station.

Nanoose Bay Pollution Control Centre Upgrade and Expansion (verbal) S. De Pol

S. De Pol provided a PowerPoint presentation on the background of the Nanoose Bay Pollution Control Centre and the projects that are planned.

S. De Pol discussed the main issue to be resolved with MOE who understood the 1997 LWMP as a commitment to go to secondary treatment in 2010. J. Finnie stated that the RDN's intention in the 1997 plan was to move to secondary treatment and expansion when triggered by a population of 3000, anticipated at that time to occur by about 2010. The population has not increased as anticipated and therefore the associated revenues have not been realized.

D. Anderson asked that the chart in the presentation be updated to include a red line showing costs without a grant with construction in 2028 and S. De Pol replied that this number will be determined.

F. Van Eynde questioned how much longer development can occur in Nanoose without going to secondary treatment. S. De Pol replied that with current growth rates there is enough capacity as a primary facility to the year 2042.

M. Jones asked if there are DCCs for the Nanoose Bay Pollution Control Centre and S. De Pol replied that DCCs are currently under review and as there are very few capital projects related to expansion only a small percentage of the DCCs would be applicable. S. De Pol confirmed that only Fairwinds residents will pay towards the costs unless other areas are brought into the Nanoose Bay Peninsula sewer service area.

B. Mann asked if the reserve funds collected under the prior LWMP for the anticipated 2010 expansion were accounted for in these figures and S. De Pol responded by reiterating that the reserve funds were accounted for but that the expansion was not geared for 2010, but for a population trigger of 3000.

Schedule (verbal) S. De Pol

S. De Pol discussed the schedule for upcoming major large capital projects.

V. Figueira asked if there was a schedule for the list of capital projects and S. De Pol replied that most of the projects are in the five year financial plan and that the projects are on the website and there will listed in an appendix.

B. Mann questioned if the costs per household reflect wastewater facilities only and wondered about costs associated with other programs such as source control, reduction, etc. S. De Pol replied that other programs will be funded through Bylaw 1543 and septage receiving fees and that this information is included in the plan.

CHAIR Bestwick noted that all of information provided was extremely informative and complex. He added that staff are capable in providing insights and information, direction and guidance. Equally important is the committee and agencies they represent to bring expertise and knowledge, comments, thoughts and presentations.

ADDENDUM

BUSINESS ARISING FROM COMMUNICATIONS / CORRESPONDENCE

NEW BUSINESS

MOVED Director Dempsey, SECONDED Director Anderson, that the Ministry of Environment comments on the Draft Liquid Waste Management Plan be brought back to the Liquid Waste Advisory Committee for review and discussion, and that subject to the discussion, that the Liquid Waste Advisory Committee recommend that staff present the Draft Liquid Waste Management Plan to the RDN Board for information and request Board approval to advance the Draft Liquid Waste Management Plan to Public Consultation.

CARRIED

IN CAMERA

NEXT MEETING

ADJOURNMENT

Chairman Bestwick adjourned the meeting at 1:45 pm.

Director Bestwick, CHAIR

REGIONAL DISTRICT OF NANAIMO

**MINUTES OF THE
REGIONAL LIQUID WASTE ADVISORY COMMITTEE
REGULAR MEETING
HELD ON MONDAY, JULY 8, 2013
IN THE RDN BOARD CHAMBERS**

Present: George Anderson Meeting Chair, City of Nanaimo
Bob Weir Town of Qualicum Beach
John Elliott City of Nanaimo
Fred Spears District of Lantzville
Kirsten White Ministry of Environment
Frank Van Eynde Public Representative (North)
Michelle Jones Business Representative (North)

Also in attendance:

Randy Alexander General Manager, Regional & Community Utilities, RDN
Sean De Pol Manager of Wastewater Services, RDN
Shelley Norum Wastewater Coordinator, RDN
Rebecca Graves Recording Secretary, RDN

Absent:

George Holme Director Electoral Area 'E'
Bill Bestwick Director (Nanaimo)
Brian Dempsey Director (Lantzville)
Vaughn Figueira City of Parksville
James Arnott Environment Canada
Baljeet Mann Ministry of Environment
Glenn Gibson Vancouver Island Health Authority
James Wesley Snuneymuxw First Nation
Douglas Anderson Public Representative (South)
Blair Nicholson Business Representative (South)
Christianne Wilhelmson Environment Representative

CALL TO ORDER

Chairman Anderson called the meeting to order at 12:14 pm.

MINUTES

MOVED F. Van Eynde, SECONDED F. Spears, that the minutes of Regional Liquid Waste Advisory Committee regular meeting of February 29, 2012 be approved.

CARRIED

REPORTS

Update of the Liquid Waste Management Plan Amendment (S. Norum)

S. Norum updated the committee on the current status of the LWMP Amendment (information is in the attached presentation). Many activities have occurred since the last committee meeting including LWMP implementation and meetings with MOE to discuss drafts of the LWMP Amendment. RDN staff proposes to take the plan to consultation in the upcoming months and complete the amendment process by year end of 2013, subject to the outcome of consultation and Board consideration. Submission of the LWMP Amendment is critical to establishing achievable timelines for capital projects.

S. Norum also summarized the main points of discussion between the MOE and RDN regarding the Draft LWMP Amendment. The main topics include the timing and costing of NBPCC & GNPCC secondary upgrade projects and Rainwater Management Planning. Letters between the MOE and RDN detailing this information were distributed at the meeting (letters attached).

Greater Nanaimo Pollution Control Centre Outfall Replacement (S. De Pol)

S. De Pol presented the history of failures on the outfall line and the cost of the replacement (information is in the attached presentation). In 2009 and 2011, failures occurred to the intertidal section at Morningside Park. Failures in the inter-tidal section of the outfall are a result of deterioration of the internal coating, and subsequent corrosion, and will likely continue to occur if the outfall is not replaced. These failures are expected to increase in complexity, environmental risk, and cost. Failures in the marine section of the outfall are also occurring, and with increasing in frequency. Two failures were identified each year from 2009 to 2011 and five failures were identified in 2012. Failures in the marine section are attributed to exterior corrosion. Currently, there are three failures in the deep water section of the outfall (200+ feet/60 m deep) that have not been repaired; repair is difficult and expensive. This issue must be addressed as it contravenes our discharge permit.

S. De Pol stated that in 2012, the RDN Board approved allocation of funds for replacement of the land section (including intertidal) of the outfall, with the marine section to be addressed after 2020. Preliminary engineering for this project has now identified significant risks associated with staged replacement of the land and marine outfall sections. The capital cost of replacing the outfall in a two-staged approach is estimated to be \$19 million; \$1 million more than the single stage approach which is estimated at \$18 million. S. De Pol commented that we can expect to see more of these leaks and need to consider advancing replacement of the marine section.

R. Alexander commented that, since the Board approved a two-staged approach, staff are proposing to go back to the Board to recommend replacing the outfall in a single-stage project. The single-stage outfall replacement has the best long term engineering and operational solution for the outfall and has lower overall capital costs.

Asset Management (S. De Pol)

S. De Pol updated the Committee on the GNPCC and that over half of the assets are about 40 years old.

J. Elliot asked if the leaks could be considered to diffuse the sewage at the outfall. S. De Pol pointed out that our discharge permit defines where the outfall, and its diffusers, may be. K. White commented that there is limited flow modeling information and therefore it is hard to make an assessment.

F. Spears inquired if the RDN has looked at routing the outfall north, through Neck Point Park, instead of its current alignment. S. De Pol replied that they have not. The scope of the design work will include routing.

Nanose Bay Pollution Control Centre Upgrade (S. Norum)

S. Norum provided details on the NBPCC and how it provides chemically enhanced primary treatment to a population of approximately 1,350 people. For comparison, the flow produced represents less than 1% of the flow discharged by GNPCC.

The approved 1997 LWMP contemplated an upgrade from primary to secondary treatment by 2010. Funding for the upgrade was based on projected growth and service area expansion, specifically, with a NBPCC population base of 6000 by 2010. The services are based on a user pay principle, through the existing service area bylaw. The capital and operating costs associated with a service cannot be charged to RDN ratepayers living outside of the established service area. For that reason, the cost of upgrading and operating the NBPCC must be born entirely by Nanose residents living within the service area. Without the population base, the project cannot proceed as planned in 1997. S. Norum commented that the LWMP Amendment will seek to revise the commitment schedule for upgrading to secondary treatment and that funding and timing options will be clearly outlined during the consultation process.

Public Consultation Plan Revision (S. Norum)

S. Norum reviewed the consultation plan (attached) and the intent to engage the public, First Nations, municipal offices and municipal council. S. Norum mentioned that we will present the public with highlights of the LWMP amendment and timing and funding options. Feedback will be addressed in the final LWMP Amendment.

F. Van Eynde questioned if there was going to be any particular consultation with the Fairwinds Association. S. Norum responded that the RDN will approach community associations during consultation.

K. White commented that, prior to presenting the plan information to the public, it is important that each of the options (i.e. with respect to upgrading of the GNPCC and NBPCC facilities) be fully evaluated in terms of economic, environmental, social and technical aspects, and should reflect MOE regulatory standards. All of this information must be clearly presented to the public. MOE would be more than happy to review the material in advance of distribution to help ensure that all of these details are adequately captured.

Schedule (S. Norum)

S. Norum informed the committee that the final LWMP Amendment will be brought to the committee and MOE, before it goes to the Board for approval and submission to the Minister. The LWMP Amendment process has been underway for over 5 years, and it is time to complete the amendment so that we can seek the Minister's approval, and continue with secondary treatment planning.

S. Norum mentioned that, subject to the outcome of the consultation process and Board consideration, the target date for completion of the amendment process, including consultation, is December 31, 2013.

NEXT MEETING

TBA

ADJOURNMENT

Chairman Anderson adjourned the meeting at 1:10 pm.

G. Anderson, Chairman

Appendix F:

Drinking Water and Watershed Protection Action Plan



Drinking Water and Watershed Protection Action Plan



Report to the Board of the
Regional District of Nanaimo

by the Drinking Water-Watershed
Protection Stewardship Committee



October 2007



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Acknowledgements

The Drinking Water-Watershed Protection Stewardship Committee wishes to thank the Board of the Nanaimo Regional District for this opportunity to help shape the future protection of watersheds and surface and groundwater drinking water sources in the RDN. The Committee also thanks RDN staff – particularly John Finnie and Mike Donnelly – for their support, guidance and active participation in the Committee’s deliberations. We also thank David Reid and Harriet Rueggeberg of Lanarc Consultants Ltd. for the skills that they brought to the task of helping us define the issues, priorities and actions that are important to protecting the Region’s water resources. Gilles Wendling and Allan Dakin provided valuable insight into the scientific and technical sides of surface and groundwater management, and our various presenters (Doug Backhouse, Lori Henderson, Adrian Irwin, Ed Hoepfner, Berni Sperling, and Howard Stiff) enriched our understanding of important aspects of water use and conservation.

Drinking Water-Watershed Protection Stewardship Committee members:

Gary Anderson	Vancouver Island Health Authority
Dave Bartram	RDN Board Member
Gordon Buckingham	Electoral Area Resident
Brian Epps	Ministry of Environment
Jim Fyfe	Well Drilling Industry Representative
Grace Gunderson	Electoral Area Resident
Jennifer Ann MacLeod	Electoral Area Resident
Stuart MacPherson	Private Forest Lands Council
Sheila Malcolmson	Islands Trust
Pearl Myres/Joyce Bartram	Coastal Water Suppliers Association
Faye Smith	Mid Vancouver Island Habitat Enhancement Society
J. Stanhope (Chair)	RDN Board Chair
David Vincent	Electoral Area Resident
Trevor Wicks	Arrowsmith Watershed Coalition Society
Maureen Young	RDN Board Member

RDN staff:

Mike Donnelly	Manager of Utilities, RDN
John Finnie	General Manager, Environmental Services, RDN

Consultants:

Allan Dakin	Principal Engineer, Elanco Enterprises Ltd.
David Reid	Principal, Lanarc Consultants Ltd.
Harriet Rueggeberg	Planner, Lanarc Consultants Ltd.
Gilles Wendling	Hydrogeologist, GW Solutions Inc.

Acronyms

DW-WP Committee or 'the Committee' – Drinking Water-Watershed Protection Stewardship Committee

DFO – Fisheries and Oceans Canada

MVIHES – Mid Vancouver Island Habitat Enhancement Society

MOE – BC Ministry of Environment

NRC – Natural Resources Canada

OCP – official community plan

'the Region' - geographical area of the Regional District of Nanaimo. Unless otherwise stated, this includes the 4 member municipalities (Nanaimo, Lantzville, Parksville and Qualicum Beach) and the 7 electoral areas.

RDN – Regional District of Nanaimo, the local government entity consisting of a Board of Directors (representing the the 4 member municipalities and 7 electoral area) support staff.

VIHA – Vancouver Island Health Authority

Drinking Water-Watershed Protection Stewardship Committee
REPORT TO THE BOARD OF THE
REGIONAL DISTRICT OF NANAIMO

October 2007

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1. Introduction

“Every resident in the region requires a safe and sufficient supply of drinking water, a very sensitive, precious, finite natural resource.” (RDN Drinking Water Action Plan, 2004: 3)

“A sustainable region has a safe, sufficient supply of water ...{and} the ecosystems and ecological features are protected, healthy and productive in a sustainable region.” (RDN State of Sustainability Report, 2006: iii)

1.1 Background

Here on the “wet coast” of British Columbia, one might take a safe, sufficient supply of water for granted. That is a precarious assumption. The quantity and quality of surface and groundwater are affected directly by human activity, whether that is land development, resource extraction, water consumption or discharge of pollutants. All of these activities are on the rise in the Nanaimo Regional District (the Region). The resulting changes to quantity and quality of water can impact the health of the Region’s ecosystems as well as the social and economic stability of the Region.

The Regional District of Nanaimo (RDN) presently provides services in four key areas that affect water:

- **Regional growth management** – the Regional Growth Strategy establishes broad land use policies for the Region¹, including policy directives relating to environmental protection and drinking water sources.
- **Land use planning and regulation** - the RDN’s Community Planning Department is responsible for preparing official community plans (OCPs) and developing and implementing land use regulations for electoral areas A, C, E, F, G and H. OCPs contain objectives related to drinking water, such as designating development permit areas to limit the impacts of development near water bodies and to protect groundwater. Land use regulation includes zoning and land use bylaws that deal with applications for rezoning, subdivision, development permits, development variance permits and OCP amendments. With respect to drinking water protection, land use regulations can aim to limit the impacts of development on drinking water sources; establish standards for proof of potable water for community water systems and subdivisions; and establish development cost charges for works and improvements related to water infrastructure.
- **Drinking water utility services** – the RDN currently manages the water supply in seven Local Service Areas (Box 1), representing some 7000 residents or about 5.5% of the Region’s population. There are many other drinking water providers in the Region, including five local government entities, four private water utilities, two water user communities, some 34 unorganized other water systems, and an unknown number of private wells.
- **Arrowsmith Water Service** – the RDN participates with the City of Parksville and the Town of Qualicum Beach in the Arrowsmith Water Service, which is intended to provide a long-term, supplemental surface water supply from Englishman River for these participants.

Box 1: RDN Water Local Service Areas

- Nanoose Bay Peninsula
- Melrose Terrace
- Englishman River
- French Creek
- Surfside
- San Pareil
- Decourcey

¹ Electoral Area B Gabriola Island is excluded, as land use planning for Gabriola is a function of the Islands Trust.

There are many other factors that affect watersheds and water supplies over which the RDN has little or no jurisdiction, including surface water allocation (licensing), pollution control, farming, forestry, roads and highways, and wilderness recreation. Responsibilities for managing these activities are dispersed among many agencies (Table 1), resulting in a patchwork of overlapping roles – but one in which no one agency has the overall authority for ensuring watersheds and drinking water supplies are protected.

Table 1: Responsibilities for activities affecting watersheds and drinking water

Jurisdiction	Who
Land use planning and regulation	RDN, 4 municipalities, Islands Trust
Water service provision	RDN, 4 municipalities, private purveyors, individual well owners
Surface water allocation/licensing	Ministry of Environment (MOE)
Pollutant discharge	Ministry of Environment
Drinking water (quality) protection	Ministry of Health and Vancouver Island Health Authority
Fisheries	Dept. of Fisheries and Oceans, MOE
Forestry	Ministry of Forests and Range
Transportation (highways, roads)	Ministry of Transportation, municipal governments
Agriculture	Ministry of Agriculture and Lands
Mining	Ministry of Energy, Mines and Petroleum Resources
Wilderness recreation	Ministry of Tourism, Sports and Arts
Watershed/aquifer protection	<i>No specific responsibility assigned under provincial or federal legislation</i>

Some action has been taken recently to address this issue. Under the Province's Drinking Water Action Plan and *Drinking Water Act*, the Regional Drinking Water Coordinator, with the support of the Vancouver Island Health Authority (VIHA), has established a Vancouver Island-wide Watershed Steering Committee.

Made up of staff from the six Regional Districts, the Islands Trust, VIHA, MOE and other provincial ministries, this Steering Committee is intended to facilitate coordinated regional and provincial actions related to watershed and drinking water protection. Six regional Technical Committees are also being formed to advise the Steering Committee on local drinking water and watershed issues. This initiative is setting a model for the rest of the Province.

The RDN has a long-standing interest in drinking water protection throughout the Region. The Board identified Watershed/Drinking Water Protection as a priority in its *Strategic Plan for 2003-2005*. That initiative resulted in the Drinking Water Protection Action Plan in October 2004 that focused on actions that the RDN could take regarding drinking water protection in its seven water local service areas.

Facing the realities of a growing population, competing land uses and shrinking provincial resources, the Board has since recognized the need to take a broader perspective – to look at ways the RDN can address the protection of watersheds and drinking water in cooperation with the many other stakeholders in the Region.

It is important to emphasize that in taking a regional perspective on watersheds, there is no intent by the RDN to take over municipal or private purveyor water functions. Indeed, the RDN will need the cooperation of these entities, along with other agencies, stewardship organizations and the residents

of the Region, to identify and resolve potential problems before they happen, so that we all can enjoy safe, sustainable water supplies and healthy watersheds.

1.2 The DW-WP Stewardship Committee

The Board established the Drinking Water-Watershed Protection Stewardship Committee (DW-WPS Committee) in March 2006 to:

- a) Identify priority action items and initiatives for the long term, sustainable provision of water and the protection of surface and groundwater drinking water sources for RDN Electoral Area residents; and
- b) Provide recommendations to the Board regarding key drinking water and watershed protection activities to be considered for the 2007 budget.

Participation on the Committee was sought from a broad representation of key interests in water in the Region (Box 2). To fulfill its mandate, the Committee was expected to:

- Review, discuss and define key issues related to the long-term provision and protection of water as it relates to future development and land use decisions.
- Liaise with the Vancouver Island Health Authority Watershed Protection Steering Committee.
- Liaise with Electoral Area residents and the constituencies that they represent.
- Provide advice and feedback on consultation activities with the general public.

The focus of the Committee's work was on the Electoral Areas in the Region – but with the hope of interesting the Region's member municipalities in participating in some or all of the action items that pertain to them. The Terms of Reference and membership on the DW-WP Stewardship Committee are provided in Appendix 1.

1.3 Purpose of this Report

This report represents the culmination of over a year of work on the part of the DW-WP Stewardship Committee. It contains a recommended Action Plan for drinking water and watershed protection in the Region that includes:

- ▶ Prioritized Programs and Projects;
- ▶ Timeframe and budget; and
- ▶ Methods for funding the Action Plan.

This Action Plan is presented to the RDN Board for consideration in terms of both a long-term commitment and for immediate action under the 2008 budget.

1.4 The DW-WP Stewardship Committee Process

Facilitated by Lanarc Consultants Ltd., the DW-WP Stewardship Committee followed a five-step process:

1. **Issues** – Identify, group and categorize issues related to drinking water/watersheds in the Region.
2. **Objectives** – formulate Regional objectives for each of the issue categories.
3. **Actions** – identify potential actions to address each of the issues and objectives.

Box 2: Representation on the DW-WP Stewardship Committee

BC Ministry of Environment
Electoral Area residents
Islands Trust
Private Forest Lands Council
Private water purveyors
Stewardship community
Vancouver Island Health Authority
Water improvement districts
Well drilling industry
RDN Board and staff

4. **Rating** – assign a numerical rating to each of the actions, to provide an initial ‘prioritization’ that the Committee could then work with to produce the next step.
5. **Programs and Actions** – create a series of water/watershed-related programs each with specific actions or projects.

The Committee’s deliberations were also informed by presentations on topics that related directly to the programs and actions that it was creating. These topics included: water systems and administration in the RDN; basics of groundwater and aquifers; BC’s WaterBucket website; climate change in the Georgia Basin; and MOE’s Vancouver Island Water Quality Network.

Finally, a DW-WP Committee-specific website was created for internal use by the Committee. This housed a range of resources relating to drinking water and watershed protection. The Committee’s agendas, meeting minutes and draft materials were also posted here for general reference, in addition to being distributed directly to Committee members. As a new communication tool, the website saw limited use during the life of the Committee. However, it may provide the starting point for future web-based information on the Drinking Water-Watershed Protection Action Plan.



Xeriscaping workshop (Regional District of Nanaimo)

2. A Drinking Water–Watershed Protection Action Plan for the Region

Based on the Committee’s deliberations on issues, objectives and actions for drinking water and watershed protection, the following Action Plan is organized around seven programs:

1. Public awareness and involvement.
2. Water resources inventory and monitoring.
3. Management of land use and development.
4. Watershed management planning.
5. Management of water use.
6. Management of water quality.
7. Adapting to climate change.

For each program, there is a goal statement, one or more objectives, and a suite of “actions” or projects to be initiated over the next 10 years. Section 4 presents the timing of these programs and actions.

This Action Plan presents about 60 actions or projects across the seven programs, which may seem daunting to accomplish. In reviewing this Plan, it is important to keep in mind:

- The Action Plan is proposed to have a 10-year time horizon, with regular updates as actions are completed or revamped to better meet the Region’s objectives respecting drinking water and watershed protection.
- The actions range from promoting change in provincial legislation, to supporting volunteers in a range of activities, to developing Watershed Management Plans. In other words, there are many levels of financial and staff commitment.
- Furthermore, the RDN is not the sole participant for implementing the Action Plan. Many – if not most – of the actions are proposed to occur in partnership with other government agencies, the private sector and volunteers. As the previous section pointed out, responsibilities for watersheds and safe drinking water are shared among many players, and many of the proposed actions cannot move forward effectively without their cooperation. In the final chapter, the Committee directs its final recommendations to both the RDN Board and the VI Watershed Protection Steering Committee.

Program 1: Public Awareness and Involvement

A focus of this program is to promote public awareness ‘close to home’ through neighbourhood projects and readily accessible information. For example, a water conservation group has been formed in the Fairwinds neighborhood that has proposed setting up a weather station on a private property that is linked to the irrigation system. Information from the station would assist in determining when and for how long a lawn/garden would need to be watered. These types of local projects can provide the greatest ‘bang for buck’ in achieving change in public understanding.



Regional District of Nanaimo

Goal:

To promote awareness and stewardship of the watersheds and drinking water resources in the Region.

Objectives:

- To improve public awareness of where their water comes from – both surface and groundwater sources – and why it is important to protect watersheds.
- To change public water consumption patterns in the Region to reduce/stop wasting water.
- To influence land use practices to prevent wasting and contaminating water resources.
- To improve coordination among stakeholders in providing information on drinking water and watersheds in the Region.

Actions:

1A: The “WaterSmart” Program

- 1) Upgrade and expand the WaterSmart website to:
 - a) Incorporate user-friendly, graphical presentations of the water data and maps for the Region that are generated under Program 2, as they become available. One intent of this action is to allow residents and prospective buyers to look up information about water quality and quantity on an area-specific basis.
 - b) Merge water-related information from other parts of the RDN website (e.g., information about drinking water protection currently under the Growth Management link) and from the DW-WP internal website. The latter has background reports and links to other sites that may be of interest to website users.
 - c) Create a page for each information topic listed in Box 3.
- 2) Establish a WaterSmart Award and/or Certification program. This would be paired with an expanded WaterSmart Team program, in which summer students act as outreach coordinators of water conservation actions. The Award could take the form of a “stamp of approval”, a plaque or sign for homes and buildings that meet specified water stewardship criteria.
- 3) Incorporate stories into regular RDN publications, press releases and other publicity media. This could take the form of a 1-page release or flyer, produced quarterly, that provides updates on watershed management and conservation initiatives – to be provided to the media, published on the WaterSmart website and/or inserted in RDN newsletters, service bills or property tax notices. The RDN will encourage other water service suppliers in the Region to use and distribute this

information (see Program 5, action item 5B for further details on working cooperatively with water purveyors).

- 4) Support data collection and reporting on the status of water resources in the Region as part of the “State of Sustainability” report, and make that portion of that report available on the WaterSmart website.
- 5) Launch a WaterSmart “mobile unit” that would deliver WaterSmart services to local communities, neighbourhoods and residents. The RDN could seek private sponsorship for a ‘green’, fuel-efficient vehicle that could be used by the WaterSmart Team and volunteers to provide information and outreach at community events and in local neighborhoods, as well as to assist with stream stewardship activities.

1B: Coordinated Information and Education Resources

- 6) Keep building a collaborative relationship with MOE, VIHA, and DFO by:
 - a) establishing a coordinating committee or task force with the responsibility to compile, review and coordinate information resources (brochures, reports, websites, etc.) and determine who, where and how a central source of information could be established.
 - b) developing school modules and teacher assistance packages on watershed protection coordinated with Intended Learning Outcomes in the BC teaching curriculum. Could be coordinated with development of curriculum designed to educate contractors and professionals in the water and groundwater industry.
 - c) organizing an information program on water quality impacts of common sources of contamination (e.g. agriculture, auto industry, pesticide use, etc.)
 - d) developing an information program on water quality needs and testing for private well owners.

Box 3: WaterSmart Information Topics

Efficient water use – in the house and garden, commercial and institutional applications

Water efficient irrigation systems and xeriscaping

WaterSmart Team activities and WaterSmart Awards

Water sources of the Region - maps, status

Water quality – common sources of contamination, what to do about it

Low impact development measures – why, what, where, how

Rainwater collection – methods, uses, treatment

Water pricing – the obvious as well as hidden costs of water

Private wells –water quantity and quality testing; roles and responsibilities of well owners

Graywater use – methods, uses, treatment

Dual plumbing systems – for graywater and rainwater

Effects of climate change on water supply and water quality – RDN actions, what individuals can do about it.

1C: Demonstration Projects

- 7) Encourage developers to provide demonstrations on their development sites of any of the following alternative technologies that can reduce water demand, protect water resources AND reduce development costs:
 - a) graywater and/or rainwater collection and treatment;
 - b) graywater reuse and/or rainwater use for garden watering or within the residence for toilet flushing, laundry (including related dual plumbing);
 - c) rainwater use for domestic/drinking water;
 - d) pervious surfaces for driveways, walkways, etc.;

- e) other methods for promoting rainwater infiltration (rain leader disconnects, rain gardens, swales, etc.).
 - f) xeriscaping or low-impact landscaping.
- 8) Capitalize on existing residences, commercial or institutional developments that are using any of these alternative technologies to showcase their application. These establishments could be recognized through the WaterSmart Award program recommended above. Learning from Salt Spring Island's successful "water conservation" tour, they could be invited to participate in a RDN "alternative technologies" tour to allow participants to learn about the installation and operation of these technologies.
 - 9) Down the road, the RDN could also initiate a demonstration project in a mainstream location that incorporates a range of alternative technologies. Measures for monitoring the long-term net benefit of the technologies being demonstrated should be incorporated in the design of the project. Seek partnerships and contributions from local businesses, stewardship groups and granting agencies in planning and constructing the project.

1D: Support for Volunteers and Non-profit Organizations

Stewardship groups and volunteers play a pivotal role in developing materials and 'getting the message out' in a cost-effective and people-friendly way. They also contribute substantially to the collection of water quality and quantity data in the field, and liaising between government and residents on water-related concerns.

- 10) Support stewardship group-based 'outreach' programs that provide advice to businesses and landowners on how to minimize the potential for contaminating watersheds and water supplies, use water efficiently, and protect watersheds. For example, the Mid Vancouver Island Habitat Enhancement Society organized business outreach programs (Automotive Stewardship, Auto/Marine Stewardship and Clean Water Initiative) aimed at encouraging water stewardship in the Parksville/ Englishman River watershed area. Similarly, the Community Animation Project of the Arrowsmith Watersheds Stewardship Team undertook several public programs to encourage watershed stewardship. Support for these types of activities could be in the form of equipment or office support; additionally, a percentage of the annual Water Action Plan budget could be allocated to a grant program to which volunteers could apply for financial assistance.
- 11) Facilitate communication among nongovernmental organizations to promote better coordination of their watershed protection activities, monitoring programs and public outreach. This could take the form of annual/semi-annual networking meetings hosted by the RDN with invitations to stewardship groups, community associations, etc. to present their projects for information and discussion.
- 12) Request that the RDN Board review its policies regarding support to volunteer members for basic expenses (mostly travel and/or printing of electronically sent documents) to participate in RDN committees.

Program 2: Water Resources Inventory and Monitoring

Goal:

To improve information about the Region's water resources in terms of both quality and quantity, in support of better land use decisions and public understanding.

Objectives:

- To compile and map existing information on water resources in the Region in collaboration with BC Environment (MOE), the Vancouver Island Health Authority (VIHA), Natural Resources Canada (NRC) and other organizations involved in data gathering and mapping.
- To improve the stream monitoring systems for measurement of water flows, levels and temperatures.
- To improve the groundwater monitoring system for determining the extent of aquifers and measuring water levels and quality.
- To make information about the Region's water resources readily available and understandable to decision-makers (for use in Programs 3-7) and the public (Program 1).



DGV Engineering Services Ltd.

Actions:

2A: Compilation and Mapping of EXISTING Data

The RDN is participating in the Vancouver Island Water Resource Vulnerability Mapping Project with MOE, NRC, Malaspina University-College, the Cowichan Valley Regional District and Islands Trust. This project is "an interdisciplinary, collaborative initiative aimed at developing a geographically based information system to characterize intrinsic water resource vulnerability (to contamination), as well as to identify sources of such contamination". The focus for now is on aquifers, with a timeline of two years to complete data gathering and mapping for the RDN. Results of the project should assist achieving action 1 below, as well as identify who will be the long-term manager of these data.

- 1) Based on data and maps available from the provincial (MOE) and federal government (Environment Canada), compile and map in the RDN's mapping system the locations in the Region of the following*:
 - a) stream/surface water monitoring systems, weather stations and snowpack monitoring stations.
 - b) surface water intakes and sewer outfalls.
 - c) groundwater monitoring wells.
 - d) watershed/ basin and sub-basin boundaries, where possible.
 - e) known aquifer boundaries and aquifer classification.
 - f) known well locations; include well depth and groundwater level in accompanying GIS database (metadata) where reasonably accurate information is available.

*Several local stewardship groups have been monitoring water flows, levels and/or temperatures in certain watersheds. Their data could also be incorporated into this Regional mapping exercise, and these groups provided ready access to the compiled information.

- 2) Overlay the above maps on a community/population base map to begin to interpret geographical relationships between water sources and water demand.
- 3) Map known and potential aquifer recharge areas, discharge areas (including locations of springs) and overlay on the above maps to begin to interpret relationships of surface water basins to aquifer recharge areas.

2B: Additional or NEW Data Collection

- 4) Surface water sources:
 - a) Prepare tables/graphs from existing data to show trends. Identify data gaps and set priorities for adding new stream monitoring sites and/or snowpack monitoring sites, and for upgrading existing sites. To effectively assess changes in stream flow and the effects of water use may require continuous monitoring. Relatively inexpensive stream data loggers that record water level and temperature at every 10 minutes (or less) are available for this purpose. Some streams may require multiple monitoring sites to identify the impact of water demands in various stream sections.
 - b) Coordinate and support volunteers to operate and maintain stream monitoring sites throughout the year. Volunteers can assist staff by measuring stream flows, downloading data loggers and most importantly, visually monitor stream changes (erosion, sediment deposition, channel changes) on a monthly basis and after major events. Local hiking clubs could assist in monitoring snow pack conditions and related monitoring sites.
- 5) Groundwater sources:
 - a) Identify gaps and priorities in the monitoring coverage of aquifers.
 - b) From the map of existing wells, identify public or private wells that could be monitored on a volunteer basis to fill data gaps. Install water level loggers in identified wells; hire summer students who can teach well owners how to monitor well levels. Assess if the network of water level loggers could be remotely monitored through the SCADA system. Ask MOE if monitoring data from these water level loggers could be added to the provincial network.
 - c) Alternatively, because 'working' wells may introduce too much variability to be useful in monitoring ambient groundwater conditions, it may be necessary to install dedicated monitoring wells in critical areas where groundwater data are poor and/or conduct geophysical surveys from the surface to obtain hydrogeological information. These new monitoring wells could be installed in advance by the RDN, or made a requirement of new development when proposed in these critical areas.
- 6) In critical areas, identify all rural homeowners that are not on a communal water system and send them a questionnaire asking for information on their water source. Tabulate the responses and follow up with telephone calls, second mail outs and/or selected site visits if needed.

2C: Water Quality Monitoring

Defining the state of water quality in the Region can be expensive, so it is important to first understand trends in water quality issues, identify potential sources of water quality risks, and select indicators carefully to make best use of monitoring resources. There are two existing programs that can provide cooperative opportunities:

- *With respect to surface water, the MOE has an ongoing program for establishing water quality objectives for important waterways province-wide. More locally, MOE and Environment Canada are working on a joint project to monitor trends in water quality for a number of sources on Vancouver*

Island, including the Englishman River. The sources of interest are being sampled for general water chemistry, metals and bacteriological analysis.

- For groundwater, the RDN's participation in the Vancouver Island Water Resource Vulnerability Mapping Project may play an important role in identifying trends in groundwater quality and what needs to be monitored in the long term.
- 7) In collaboration with the MOE, identify priority waterways and applicable water quality indicators (based on the Province's water quality criteria) for the RDN. Similarly, in coordination with the Vancouver Island Water Resource Vulnerability Mapping Project, identify groundwater quality problem areas and key indicators to be monitored to address these problems. In partnership with these agencies, establish a monitoring program in the priority waterways and groundwater areas and develop water quality objectives, where applicable.

2D: Data Response Systems

- 8) Through the Vancouver Island Watershed Steering Committee and the future Regional Watershed Technical Committee, identify:
- a) the critical or problem areas in the Region from a water management perspective;
 - b) key water-related indicators (e.g., stream base flows or temperatures, groundwater levels, water quality in indicator wells, etc.) and their "threshold" levels in these problem areas;
 - c) which agency can and should take action when these thresholds are exceeded, and the nature of the action to be taken. These actions may range from advising well owners to boil water to restricting water withdrawal by water licensees.



Flow monitoring (Michele Deakin)

Program 3: Land Planning and Development

This program is guided by the general principle of “no net loss” of pre-development watershed features and functions (such as surface water flows, groundwater levels, etc.) at the watershed level. This means that through land use planning, areas of high development would try to be balanced with retention of natural areas in an effort to maintain the biophysical balance within any given watershed. The Actions are directed to the RDN, but apply equally to the Islands Trust in its land use planning and regulatory role on Gabriola Island.

Goal:

To use the information gathered through Program 2 to protect the Region's watersheds and water resources in land use planning and development decisions.

Objectives:

- To protect drinking water through the Regional Growth Strategy, OCP policies and designations, and zoning bylaws.
- To ensure that new development provides proof of adequate and sustainable, good quality drinking water.
- To ensure that new development minimizes impacts on surface and groundwater resources.
- To prioritize and develop long-term management plans for watersheds.

Actions:

3A: Land Development (Engineering) Standards

Many local governments are adopting “low impact development” (LID) standards to reduce the impacts of urban development on watersheds by managing storm/rainwater in ways that mimic nature - infiltrate, filter, store, evaporate, and retain rainfall runoff close to its source. These innovative approaches to rainwater management have obvious benefits to both surface and underground sources of drinking water as well as for the well-being of streams and water bodies. LID standards are appropriate alternatives to traditional engineering approaches to managing rainwater where site conditions (soil types, slope conditions, etc.) support their use.

- 1) Prepare and adopt “low impact development” (LID) standards for:
 - Rain gardens
 - Pervious paving for driveways and parking
 - Infiltration swales
 - Absorbent soils and landscapes
 - Rainwater leader exfiltration trenches or soakaways
 - Reduced road widths (from typical urban standards) for local streets
 - Green roof.

These standards may be prescriptive or performance based. Adopting such standards will support the use of these measures as environmentally-friendly alternatives to traditional methods of managing rainwater.

- 2) After a reasonable period of time of voluntary implementation, move to make the use of these alternate engineering standards mandatory.



Infiltration swale (Lanarc Consultants Ltd.)

3B: Development Application Review

- 3) Within the RDN's range of authority, review and revise the application requirements for rezoning, subdivision, development permits and building permits for large developments to:
 - a) Require an aquifer impact assessment for all proposed wells or well clusters; and
 - b) Require all development applications over a specified size to provide an analysis of impacts on surface and groundwater sources, such as impacts on infiltration flows, effects of proposed wells on downstream surface flows, etc.
- 4) Provide the authority in the appropriate bylaws to refuse building or development if the impacts are unacceptable. Examples of criteria for determining "unacceptable" impacts might include: exceeding a maximum total impervious surface area for a watershed or sub-basin; no effort to incorporate water efficiency technologies; reductions in stream flows below a standard level required for fish habitat; etc.
- 5) Within the RDN's range of authority, review and strengthen regulatory requirements regarding proof of adequate and sustainable, good quality drinking water supplies in applications to rezone or subdivide. Include measures to assign responsibility to the developer or landowner(s) for monitoring the adequacy of water supplies over time (e.g., 10 years), and for providing alternate water sources and/or impose additional water conserving measures should water supplies prove to be inadequate.
- 6) Provide information and training for RDN staff and subdivision approving officers in watershed management, rainwater management (LID methods) and efficient water use.

3C: Development Charges

- 7) Examine options for establishing fees or charges for water management for new development. These fees would represent a developer's contribution to managing the watershed or aquifer supplying the proposed development and could become part of funding sources for an RDN water function.
- 8) Explore incentives for developers who apply LID and/or water conserving methods in their developments.

3D: Planning Tools

- 9) Review existing zoning for rural subdivisions, and refine the requirements in these zones with respect to drinking water protection (e.g. include special land use requirements for parcels in aquifer recharge areas).
- 10) Examine the drinking water implications of any proposed changes to Urban Containment Boundaries in reviews of the Growth Management Strategy.
- 11) Undertake aquifer impact assessments when considering changes in Urban Containment Boundaries or significant density changes in Electoral Area OCPs, or in municipalities in the Region that would affect aquifers in Electoral Areas.

Program 4: Watershed Management Planning

Watershed planning can be considered a sub-set of land use planning, but given its significance to drinking water and watershed protection, the Committee felt that it warranted its own program.

There are more than 50 watersheds in the Region, as well as 30 known aquifers in coastal areas and many more unmapped aquifers in the uplands (Figure 1). It is therefore not practical to complete watershed management plans for all of these watershed and aquifers at once.



Watershed model of Parksville (Faye Smith)

Goal:

To prioritize and protect watersheds in the Region according to their ecological and drinking water values.

Objectives:

- To make efficient use of limited staff and funding resources by setting up a system for prioritizing watersheds for planning purposes.
- To undertake watershed management planning on a priority basis over the next 10 years.
- To involve all stakeholders with an interest in any particular watershed in the planning of that watershed.
- To incorporate the results of watershed plans into land and resource use decisions.

Actions:

4A: Watershed Prioritization

1) Identify and prioritize watersheds (and/or aquifers) that are candidates for Watershed Management Plans. It is recommended that the prioritization take an approach that combines watershed significance with 'at risk' factors, whereby watersheds would be assessed against criteria such as:

- Size, rate and type of land use change / development pressure.
- Existing or future hazardous land uses – high risk of surface or groundwater contamination.
- Natural hazard risk: e.g., flooding, bank erosion, land slippage, etc.
- Drinking water source.
- Source of water for local food production.
- Overlaps or contains significant aquifer recharge areas.
- Significant fisheries and or wildlife value; e.g., major source of base flow for fish-bearing streams.
- Area or land use is under jurisdiction authority or significant influence of the RDN.
- Funding availability to support development of the watershed management plan.

The prioritization process should consider both the 'relative importance' of the resource being impacted, and the 'severity and consequences' of the impact. Those areas with both high importance and existing or potential high impact would become first priorities for Watershed Management Plans.

The prioritization should be a “knowledge-based” process that would engage experts and officials with local knowledge to work together in identifying and prioritizing watersheds or parts of watersheds. For example, workshop sessions might be held with specialists with local knowledge in biology/ecology, engineering/hydrology, agriculture, forestry, wilderness recreation and land use planning. These interdisciplinary roundtable sessions would identify the watersheds with high value natural resources, potential changes in land use or development that may affect these natural resources, and the relative scope or degree of the potential risks. Areas at high risk can be identified at the workshops by mapping and comparing proposed land use or development changes to existing high-value resources. These high-risk areas may be all of a watershed, a small drainage basin within a watershed, or may cross watershed boundaries.

4B: Watershed Management Planning

- 2) A two-tiered approach to watershed management planning is recommended:
 - a) **Basic** watershed protection requirements should be applied to all areas under the jurisdiction or influence of the RDN; e.g., sediment and erosion control during construction, or measures to avoid or mitigate hydrocarbon spills, etc. Such actions would not require an area-specific Watershed Management Plan.
 - b) For identified ‘At-Risk’ areas within the region, **customized** watershed management actions would be identified through detailed Watershed Management Plans; e.g. measures to protect or restore high value fish habitat during development, or identification of key aquifer recharge, drinking water or base flow source areas and measures to protect these resources, etc.

The scope and focus of a Watershed Management Plan should be considered carefully at the time that the terms of reference are developed for each Watershed Management Plan. There are many different models of Watershed Plans to consider - for example:

- Integrated watershed management plans – typically focused on urban storm/rainwater and aquatic habitat (e.g., Wexford Creek IWMP in Nanaimo; Hyde Creek IWMP in Coquitlam)
- Water use/supply management plans - e.g., Nanaimo River Water Management Plan (1980s), Cowichan Basin Water Management Plan (2007), Okanagan Basin (in progress).
- Fisheries/habitat restoration plans - e.g., Englishman River Watershed Recovery Plan.
- Groundwater management plans - e.g., the Hoppington Aquifer Plan in Langley.
- Water-centric planning – this concept of planning is discussed at www.waterbucket.ca/wcp/.

As a starting point, Watershed Management Plans should use the information compiled under Program 2 to address the following (the emphasis on these plan components may vary from watershed to watershed):

- c) Ecosystem and habitat needs – e.g., base flow for fish and endangered wildlife; critical habitats, buffers and leave areas (e.g. riparian areas, nest tree buffers), and recommended habitat restoration or enhancement.
- d) Water quality maintenance of both surface and groundwater.
- e) Hydrological quantity and flow changes to both surface and groundwater.
- f) Potential drinking water sources, and the effects of existing or future development on their water quality and quantity, and their protection from these effects.
- g) Water use levels, the need for water conserving measures and the nature of those measures for that watershed.

- h) Maintenance of pre-development stream hydrology, addressing peak flows, flow volume, instream erosion and sedimentation risks.
- i) Terrain constraints, risks of landslide or erosion.
- j) Pollutant source control and non-point sources, including nutrient management, erosion and sediment control.
- k) Quantifiable targets for various key indicators - e.g. benthic index of biological integrity, riparian forest integrity, fish counts, species presence, rainfall capture, water quality, etc.
- l) The relationship and location of various land uses (taking cumulative effects into account) to mitigate impacts on the watershed(s).
- m) Storm/rainwater management, including recommended best management practices or low impact development measures to achieve recommended targets.
- n) Monitoring and compliance programs, processes for reporting and adaptive management to changing conditions.

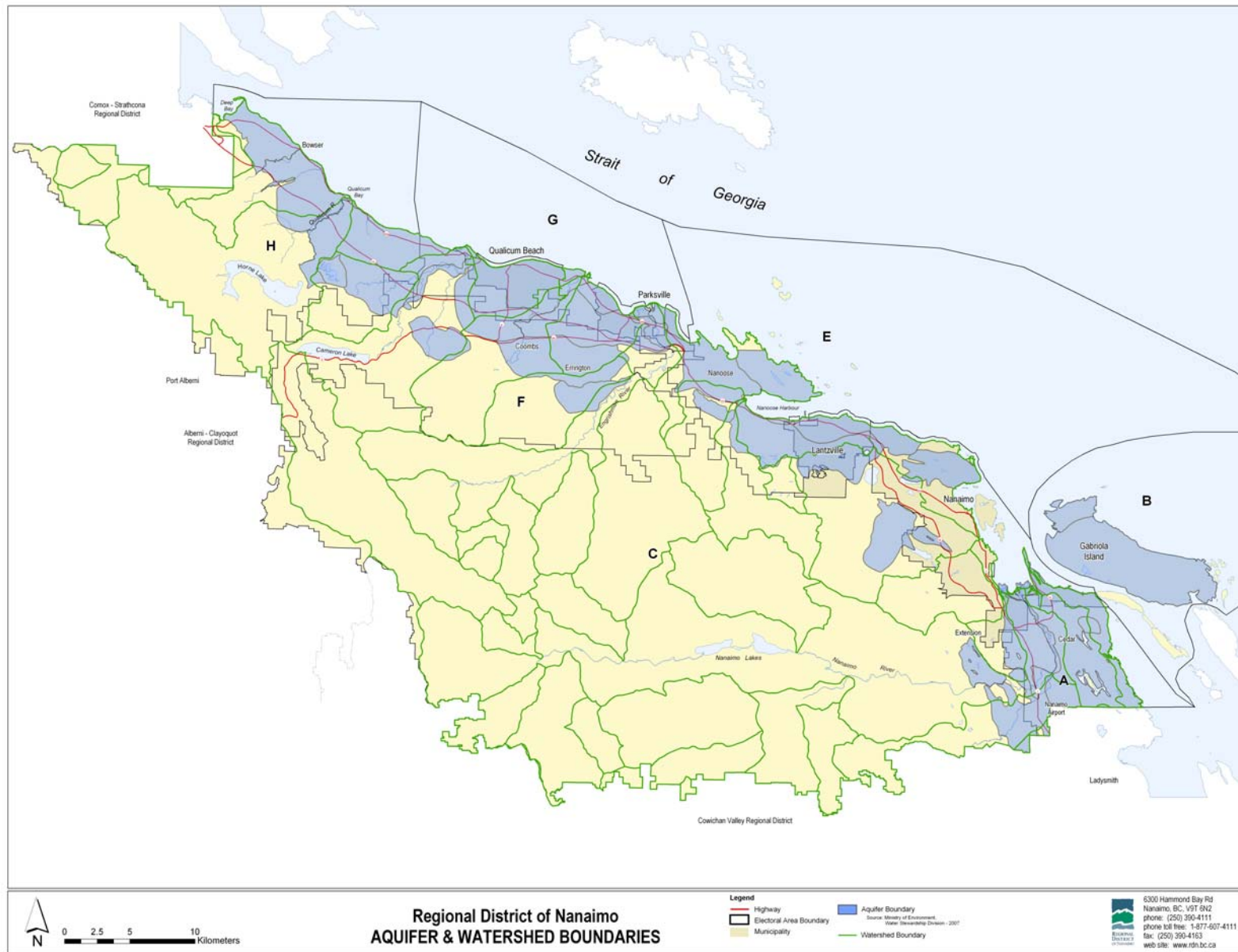
All Watershed Plans should recommend changes to applicable bylaws and standards that would guide future development in response to objectives and policies of the Plan.

4C: Support Local Food Production

Local food production has many benefits. With respect to climate change, it reduces the need for long-distance transportation and the associated greenhouse gas emission. Farmland within and around urban areas can contribute to better urban air quality and increased local evapotranspiration, reducing the urban heating effect. Local food production can provide local employment as well as a better understanding of food production, nutrition and hence, a healthier population. With appropriate technology, wastewater from urban centers can be used to irrigate hayfields, and rainwater catchment can supply food crops – proximity to urban areas can help to make the infrastructure economically feasible.

- 3) Ensure that water for local food production is a consideration in watershed management planning.

Figure 1: Watershed boundaries and known aquifers in the Region



Program 5: Water Use Management

The RDN operates seven “water local service areas” for which it manages water supplies, but there are also numerous improvement districts, volunteer water boards and private water purveyors in the Region with responsibility for providing water services. There are also several large single commercial and industrial water users with their own water systems. The RDN has no administrative or regulatory authority over these other water service providers, but wants to work cooperatively with them in achieving the Region-wide goals of efficient water use and highest standards in drinking water quality.



Graywater planter (Aquarian Systems Inc.)

Goal:

To promote efficient water use in all sectors of the Region.

Objectives:

- To encourage the efficient and sustainable operation of water service systems in the Region.
- To promote water pricing that reflects the value of water management and promotes efficient water use.
- To support the use of alternative water sources such as graywater and rainwater harvesting, where feasible, and to reduce regulatory barriers to their appropriate use.

Actions:

5A: Water Conservation Plans

Unlike watershed management plans, water conservation plans are targeted at water supply systems and their operators, with the intention of bringing conservation into the mainstream of water utility planning and operation. The U.S. Environmental Protection Agency has established guidelines for generating water conservation plans² that are gaining interest in BC. The RDN wishes to apply a similar framework to its water local service areas, and eventually, throughout the Region.

- 1) Develop a Water Conservation Plan for the RDN water local service areas based on the EPA Water Conservation Plan Guidelines or similar water conservation plan models. It is envisioned that the Plan would provide a common set of goals and strategies, but would also address characteristics that are unique to individual service areas as required. A Water Conservation Plan should also examine not only more efficient use of conventional water supplies but also the potential use of rainwater and graywater as replacement water sources (see action 5C).
- 2) Based on the experience in generating a Plan for the water local service areas, generate a template for Water Conservation Plans that could be used in other parts of the Region, and work with water purveyors to apply the template to their water supply systems (see action 5B).

5B. Cooperation among Community Water Supply Systems

- 3) Work with operators of water supply systems to achieve long-term sustainability of all water systems in the Region. The recommended approach is to establish a Water Purveyor Working Group, sponsored by the RDN. The intent of this Group would be to provide a forum for

² U.S. EPA, *Water Conservation Plan Guidelines*, August 1998 - <http://www.epa.gov/watersense/pubs/guide.htm>

discussion and the exchange of ideas to assist water purveyors in the Region. The committee would be open to anyone providing potable water for human consumption or users that consume large amounts of water (golf courses, commercial/industrial users, etc.), and would be comprised of members interested in providing safe and sustainable water and in working with others to achieve those goals. It would likely meet 2-3 times per year. Issues that could be addressed include:

- a) Water pricing structures to promote efficient water use by reflecting the 'full value' of water and avoiding the need to 'sell more water' in order to cover operational and administrative costs. Measures to promote include: installation of water meters where they do not exist; implementing "tiered" pricing systems with seasonal or daytime/night-time rates; etc.
- b) Measures to catch excessive water usage and significant water leaks at the individual connection level in a timely fashion.
- c) Conducting regular "water audits" that compare water production with water consumption; where significant differences occur, look for leaks in the system through pressure testing. A 10-15% loss is typical. (Note that under VIHA permitting of water service systems, pressure testing is a standard requirement of all newly installed systems.)
- d) Ensure that all operators are certified under the provincial Environmental Operator Certification Program.
- e) Identify contamination risks to community wellheads, and complete a wellhead protection program on a priority basis.
- f) Instigate a Cross Connection Control and monitoring strategy in the Region, providing information to residents on the importance of this strategy.
- g) Collaborate on water conservation incentive programs (see 4D).

5C: Rainwater and Graywater Use

Rainwater and graywater (domestic wastewater from tubs, showers, sinks or washing machines, but not water from toilets that contains human waste) can be viable water sources, but depending on the use, may require appropriate collection and treatment measures. Graywater can carry high levels of human contaminants, and therefore requires some form of treatment (e.g., filtration through sand or soil, biodegradation, etc.) prior to its use, even if that use is only for toilet flushing or garden watering. For that reason, graywater use is regulated in much the same way as on-site sewage disposal under the Health Act. Cisterns for rainwater collection are in wide use in many drier rural areas in BC, but regulation of their installation and maintenance is inconsistent. Like well water, without proper collection and management practices, water from cisterns can pose health hazards.

Nonetheless, with the applicable measures taken to ensure its safe use, rainwater and graywater can be significant sources of water – as is apparent in many dry parts of the world that have exploited these sources for many years on an individual and community scale.

- 4) Investigate water supply and distribution systems in other jurisdictions (e.g., Europe, Australia, USA) that separate drinking water from non-potable water at the utility level, for examples that might be considered in building new systems or system extensions in the Region.
- 5) Work with the RDN's bylaws and with building inspectors to identify barriers to the application of dual plumbing and graywater/rainwater reuse where appropriate, and work towards removing those barriers by providing applicable standards.
- 6) After a reasonable learning and assessment period, move to require use of rainwater and/or graywater reuse in key water shortage areas.

- 7) In collaboration with MOE, VIHA and Malaspina University-College, develop training for local contractors and builders on dual plumbing installation.
- 8) Lobby the senior government to include dual plumbing in their Building Codes, and to offer related training.

5D: Incentive Programs

- 9) Research and prioritize efficient water use incentive programs based on their effectiveness ('bang for buck') in reducing water demand – e.g., subsidies for small technologies (e.g., \$25 rain barrels), "challenge grants" (i.e., fund 10-50% of cost up to a maximum amount), reductions in water rates for users that reduce their demand on water mains.
- 10) In areas of existing or potential water shortage, consider "challenge grants" for:
 - a) Xeriscape planting schemes (institutional, commercial, residential).
 - b) Conversion to waterless urinals (institutional, commercial).
 - c) Conversion to low flush/dual flush toilets, low flow showerheads and other low water-use appliances (institutional, commercial, residential).
 - d) Installation of water-efficient irrigation systems (institutional, commercial, residential).

5E: Water Use Regulation

The use of surface water is licensed under the provincial Water Act. Water licences specify the type of use and set limits on water volumes that can be withdrawn from the water source. However, several waterways in the RDN are suspected to be over-allocated or subject to unlicensed water withdrawal.

Unlike surface water, the Province does not require a licence for groundwater use or extraction.³ In the absence of provincial licensing, some local governments have attempted to protect groundwater supplies through land use regulation. For example, Gabriola Island requires commercial water suppliers to obtain temporary use permits as a form of land use.

- 11) Request the Province to analyze existing water licences on waterways in the Region that are subject to critically low flows, and to: a) require metering and reporting of withdrawals; and b) consider reducing or terminating high-volume licenses unless proof of need can be validated.
- 12) Urge the Province to complete their groundwater protection review and bring forward the necessary legislative changes for regulating the extraction and use of groundwater from all types of wells.
- 13) In the absence of applicable Provincial legislation, develop methods for regulating commercial use of private wells through zoning regulations and/or business licensing.



Rainwater collection cisterns (Aquarian Systems Inc.)

³ The Province does require an Environmental Assessment Certificate under the *Environmental Assessment Act* for projects proposing one or more wells with a combined extraction rate of 75 litres or more per second (about 990 imperial gallons per minute). These are very high production wells, and not the typical wells for private or community use that individually and cumulatively have impacts on aquifers.

Program 6: Water Quality Management

There are many aspects of water quality management – from protecting the source to keeping the distribution system and water ‘at the tap’ clean. This program is concerned with source control, as this is where watershed management plays an important role. Other RDN operational policies and practices address distribution and end-of-pipe matters. Note that inventory and monitoring of water quality are covered in Program 2.



Regional District of Nanaimo

Goal

To protect the quality of water at source – whether surface or groundwater.

Objectives:

- To gain a better understanding of the status of drinking water quality in the Region.
- To identify and help to manage the risks of contamination to drinking water sources.
- To influence human activities – residential, commercial and industrial activities, agriculture, forestry, recreation and tourism - to protect watersheds and prevent contamination of water sources.
- To improve the management of water quality in private wells in the Region.

Actions:

6A: Contaminant Management

- 1) In collaboration with the Vancouver Island Water Resource Vulnerability Mapping Project, create a list of land uses that occur in the Region that have a high probability of introducing contaminants to groundwater or surface water sources, and map their location. Identify information resources on how these land uses can avoid contamination and distribute to these landowners.
- 2) Over time, and in collaboration with MOE’s contaminant management division, develop methods for requiring high-risk land users to manage contaminants in a prescribed manner.

6B: Agriculture and Forestry

Forestry and agriculture are significant sectors in the Region; however, the RDN has no jurisdiction over these land uses. Poor agricultural and forestry practices can threaten watersheds and drinking water supplies in greater volumes and over larger areas. To date, the RDN has had little interaction with provincial authorities in these two realms, but drinking water and watershed health issues are triggering greater collaboration.

- 3) Through the Vancouver Island Watershed Steering Committee and a future Regional Watershed Technical Committee, meet with regional staff from the Ministry of Forests and Ministry of Agriculture and Lands to find ways of effectively influencing farming and forestry operations to protect water sources from contamination and to steward watersheds in the Region. This may involve tailoring information programs that these Ministries already have in place on a province-wide basis to the particular circumstances in the RDN, and collaborating on education and incentive programs for local farmers and forest managers.

6C: Private Water Well Safety

Currently, the provincial Ground Water Protection Regulation sets requirements regarding well construction, protection and deactivation to protect aquifers and groundwater quality. Phase 2 in development of the Regulation will apparently require water quality sampling of all new wells at the time of construction; phase 3 is aimed at creating Ground Water Management Zones in which drilling will be further regulated where aquifers are shown to be under threat. The DW-WP Committee would like to see some action taken with respect to water quality testing in existing private wells. The Committee sees this an opportunity to allow monitoring of groundwater quality using private wells, while at the same time, helping private well owners test the quality of their water.

- 4) Support the creation of Ground Water Management Zones (GWMZ) in areas with groundwater problems. As part of that initiative, encourage the Province to establish requirements for water quality testing of private wells in GWMZ's in the short term, and province-wide in the long term. Any program that requires water quality testing should include incentives and possibly subsidies for more advanced testing where this may be necessary.
- 5) Initiate a pilot well monitoring project that would test water from a limited number of private wells. The pilot could be based on annual sampling of basic water quality parameters (e.g., total dissolved solids, electrical conductivity, pH, alkalinity, hardness, chloride, fluoride, nitrate, sulphate, arsenic, boron, iron, etc.) for 100-200 wells over a 5-6 year period, after which water quality trends and project criteria would be assessed to determine if the monitoring program should continue and if so, what changes are needed to the sampling regime. To be eligible, wells should have a well log (construction record), a sampling tap close to the water source (in the wellhead area) or the ability to have one installed, and be readily accessible to sampling staff or contractors. Sampling costs are estimated at \$100-300/well/year; setting up the project and follow-up analysis could potentially be cost-shared with MOE and/or VIHA.

6D: On Site Sewage Disposal

Failing on-site sewage systems are perceived as a threat to environmental and human health on a localized basis, especially to private or public wells that may be located in the same area. There are various types of on-site sewage disposal, from traditional septic tanks and fields to package treatment plants. The Ministry of Health is responsible for regulating the installation, repair and alteration of on-site sewage systems up to 22,700 litres (daily flows) under the Health Act and the Sewerage System Regulation. Under the Regulation, new systems are required to have maintenance programs. Regional Health Officers may investigate an on-site system that is suspected of posing a health hazard, but these inspections are largely complaint driven.

In June 2007, the RDN Board approved the development of a public information and education program for onsite sewage disposal systems with a 2008 budget of \$25,000, to be funded by an increase in septage tipping fees.

- 6) In collaboration with VIHA, the Vancouver Island Watershed Steering Committee and local stewardship organizations, identify areas of concern with respect to failing on-site sewage systems, and develop an information program on "best management practices" for operating and maintaining these systems that can be delivered to residents in these areas. This could take the

form of information bulletins and local information sessions - e.g., the “septic socials”⁴ that were offered in the Baynes Sound area in the Comox-Strathcona Regional District. Other aspects of an information program could include:

- a) Surveys of local residents in suspected problem areas to gain a sense of the nature and extent of on-site sewage issues.
- b) A coordinated complaint/referral process wherein the identity of complainants may remain anonymous if desired.
- c) Improved follow-up to installation of new systems to assure quality control.
- d) An incentive program for annual monitoring and maintenance of older on-site systems; or alternatively, consider adopting regulations for mandatory maintenance and reporting.



DGV Engineering Services Ltd.

⁴ Septic Socials were part of a septic system education program between 1996-1999, conducted by the Comox Valley Citizen Action on Recycling and the Environment and Project Watershed. In addition to public education, 87 septic systems were inspected and/or pumped. The idea of septic socials was later copied in other parts of the CSRD.

Program 7: Climate Change

Climate change is permeating almost every aspect of government decision-making. The potential impacts on watersheds could be profound – from bigger floods in winter to deeper droughts in summer.

The RDN has released a “Corporate Climate Change Plan 2007” in which it sets out ways and means by which it, as a corporate entity, can reduce its greenhouse gas emissions by 4% over 2004 levels by 2012. The report details the measures that the RDN can take to reduce energy consumption, and thereby greenhouse gas emissions, in buildings, lighting, water and wastewater operations, the vehicle fleet and corporate waste management.

Objectives:

- To assess and adapt to the potential impacts of climate change on water sources and supplies in the Region.
- To promote actions that will reduce the Region’s contribution to climate change.

Actions:

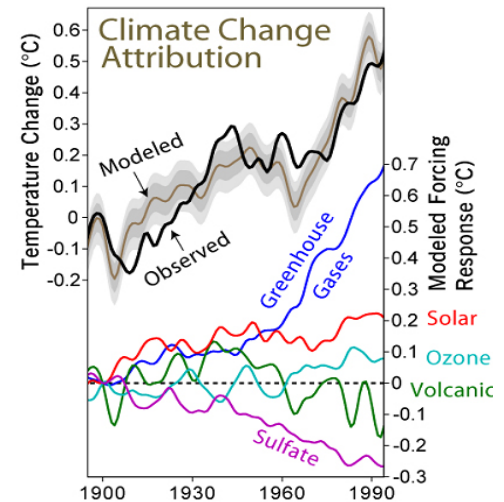
7A: Follow the Science

- 1) Monitor the evolving science on the relationship of climate change to water quantity and quality, and the health of watersheds.

7B: Land and Water Use Adaptation

Taking action to reduce greenhouse gas emissions is one way of tackling climate change. This will help to slow the process, but it won’t stop it. It is equally important to anticipate what the effects of climate change will be – in this case, on the Region’s watersheds and water sources - and develop the means of dealing with them.

- 2) Develop a strategy that identifies the potential impacts of climate change on aquifers and watersheds and/or water service areas in the Region and measures for reducing the RDN’s contribution to greenhouse gases, but also to adapting to anticipated changes. The study should involve local residents in identifying risks and developing adaptation tools. Some of the adaptations to be considered include:
 - Vulnerabilities – to flooding, runoff, erosion and other geotechnical hazards, drought.
 - Adapting to less water – e.g., protecting water quality will be even more important as the relative impact of pollutants rises.
 - Adapting to increased storminess - increased vulnerability to contamination from flooding and runoff events.
 - Drought resistance – ways of putting more water into the ground as a preventative strategy; e.g., infiltrating rainwater into the ground to recharge aquifers, thereby improving water supply during prolonged dry periods.
 - Identifying potential development areas least vulnerable to climate change based on availability of water, low potential for flooding and landslip, etc.



(Howard Stiff)

- Protection of riparian vegetation and wetlands – beyond preserving fish habitat, to protecting water supplies and managing rainwater runoff.
- Climate change-adaptive building requirements – increased setbacks, shading and sun orientation, window strength and size, shutters and overhangs, graywater separation, rainwater collection.
- Potential long term shifts in population from highly vulnerable areas (low-lying coastal areas, drought-prone areas) to less vulnerable areas.

7C: Assessing Local Hydro-climatic Balance

In addition to greenhouse gas emissions, many of the land use practices that are taken for granted - draining surface water into pipes, extracting ground water from aquifers, creating large impervious surfaces, eliminating wetlands and reducing the amount of forest land - can affect regional as well as global climates. These land use activities disrupt and even eliminate evapotranspiration from the earth's surface, which in turn alters the thermal balance in the atmosphere, and the hydro-climatic recycling of water. The loss of water/moisture stored in soil, plants and trees can reach a critical level. At that point, there becomes less and less water/moisture available to maintain the hydro-climatic recycling process. The compounding effect can cause local droughts and in turn increased temperatures, reduced groundwater levels, lower river and lake levels, die-off of trees and vegetation, increased wildfires, and extreme weather events.

Maintaining a more sustainable hydro-climatic balance relies on incorporating these considerations into the Programs described in this Action Plan.

- 3) Incorporate consideration of local and regional hydro-climatic balance in the following:
- Improved data collection and evaluation of changes to groundwater, surface water, and available evapotranspiration moisture levels (Program 2).
 - Public awareness and education for government officials, planners, engineers, developers, forestry and agricultural professionals (Program 1).
 - Best management practices to maintain the balance between land use and hydro-climatic changes (Programs 3-6), including: improved storm-water management and utilization techniques; creating more water infiltration capacity to maintain groundwater levels (LID measures); balancing water usage with the recharge or recovery rate; encourage water conservation, and re-vegetation and planting trees.

3. Implementing the DW-WP Action Plan

“Water is and will remain the great equalizer. Money cannot buy survival in a world without water.” (J. MacLeod, DW-WP Stewardship Committee member)

3.1 Draft Ten Year Timeline and Budget

The seven programs described in section 2 have been organized into a draft ten-year timeline and budget in the attached spreadsheet ‘DW-WP Budget Timeline’. Supporting details for these figures are included in Appendix 2.

The intent is to instigate all seven programs between 2008 and 2017. The programs would be phased in a logical process, with an attitude of:

Look for early successes – actions that have maximum benefit for minimum cost.

3.2 First Five Years

The first five years would start all programs, but emphasize:

- Public awareness:
 - WaterSmart website, awards and outreach.
 - Coordinating public information programs with senior agencies.
 - Supporting volunteer organizations.
- Water resources inventory & data:
 - Compiling and mapping existing data.
 - Starting programs for new data collection.
- Land development management:
 - Better practices for land use and engineering design.
 - Updating development review processes and planning tools.
- Watershed management planning:
 - Complete a process to identify Watershed Management Plan priorities.
 - Complete ‘basic’ watershed protection guidelines.
- Water use management:
 - Establish a Water Conservation Plan for the water local service areas.
 - Promote cooperation with operators of community water supply systems.
 - Promote rainwater and graywater technologies.
- Water quality management:
 - Start a private well monitoring pilot project.
 - Identify and address land uses with high contaminant risk.
 - Advocate better water quality practices in agriculture / forestry.
- Initiate a climate change adaptation program concerning drinking water and aquatic ecosystems.

3.3 Second Five Years

The second five years would continue all programs, but with emphasis on:

- Continue public awareness and demonstration projects.
- Formalize a monitoring and response system to address threats to drinking water and watershed protection issues.
- Develop customized Watershed Management Plans for priority watersheds/aquifers.
- Strengthen incentive programs to encourage more efficient water use by the general public, in the commercial sector, agriculture, etc.
- Analyze the results of the private well monitoring pilot and refine the program.



Water retention structure at River's Edge subdivision (T. Wicks)

4. Funding the DW-WP Action Plan

4.1 Summary of Ten Year Budget

The DW-WP Budget Timeline represents a total recommended investment of \$4.93M in 2007 dollars over 10 years, or \$5.56M with inflation included at 2.5%/annum. The general breakdown of the budget is as follows:

Program costs (w/o staffing)	\$4.46 M	
Staffing costs	\$1.10 M	
Total budget	\$5.56 M	
Grants/other income	- \$985,000	
RDN funds required (over 10 years)	\$4.57 M	(\$3.94 M in 2007 dollars)
Average annual RDN budget	\$457,000	

4.2 Potential Staffing

A program of this size cannot be managed by existing RDN staff, who are allocated to other duties. At the same time, it is more time and cost efficient to have certain aspects of the programs delivered by staff as opposed to outside consultants or contractors.

Recommended staffing for the program is in two phases:

- First Five Years: A Program Manager for Drinking Water Stewardship
- Second Five Years: Program Manager plus Assistant(s)

The budgets allow for 1 full time equivalent (FTE) in the first 5 years, supplemented by a second FTE in the second 5-year period.

4.3 Short term/Transition Funding

A full start of the program is not envisioned until early in calendar 2009. However, early action should begin as soon as possible to address immediate needs and to support fund-raising for the program launch.

Financing this transition period lasting until January 2009 could be provided by:

- “New Deal” funding through the Gas Tax Agreement – continuing to support existing staff and initiate programs.
- Other grants – infrastructure grants, green city grants, etc.
- An allowance of \$100,000 for this short term funding is provided for 2008. This amount is included as a part of the Ten Year Budget in Section 4.1 above.

4.4 Mid to Long-term Funding

To provide long term and stable funding for this important program, it will be necessary to create a new ‘service’ in the Regional District in accordance with the Local Government Act. Two questions need to be addressed:

1. What is the level of funding effort that is required and affordable?

2. Do municipalities wish to participate in all or part of these programs, in addition to Electoral Areas?

A key recommendation of this report is to approach the Municipal governments to invite them to participate in all or part of the program. Doing so provides economy of scale in program delivery, and would reduce the per capita costs.

If, in the end, only the Electoral Areas decide to participate in the service, we suggest an approach that reflects 'A Dollar for Water'.

"A Dollar for Water"

Conceptually, we suggest the Electoral Areas support a funding program that raises approximately \$1/month per electoral area resident, based on:

- 36,045 residents in Electoral Areas = \$432,540/year (generally, \$400K - \$500K/year); and
- 2.5 persons / residence = \$30 / residence /year.

The cost would be less per residence if there were some participation by the municipalities in programs in which they could benefit; e.g., public awareness programs, new development standards, etc.

The proposed local funding method would be a flat rate parcel tax. This would establish a charge of, e.g. \$30 / electoral area parcel / year; the charge would be the same for small or large parcels and regardless of assessed value. The parcel tax approach reflects the concept that all landowners benefit equally from drinking water and watershed protection. This varies from a property tax approach, where properties with a high assessment value pay a higher portion of the total cost.

Utility fees and charges were also considered, but these would not work in areas of the Region that are serviced by private wells.

Getting There

To put the 'Service' and Parcel Tax in place requires a successful referendum under the Local Government Act and Community Charter.

To minimize the costs of the referendum, it is proposed that the new RDN Drinking Water/Watershed Protection "service" go to referendum concurrent with the 2008 municipal election.

4.5 Other Funding Sources

In addition to local taxation, there are over 70 funding programs from senior governments and non-government organizations. Many of these programs might support a program like this one. A key function of existing and new staff will be to make application to funding programs. The proposed budget allows for an average of \$100K per year in such outside funding.

Member municipalities in the RDN might also take a 'granting' approach, with grants directed at project-specific funding.

Therefore, other funding sources might include:

- Senior Government Grants – project basis
- RDN Municipalities Cost Sharing Partnerships - program or project basis
- Water utility partnerships – project basis

The Budget Timeline and related detail budgets in Appendix 2 are provided to staff in Excel format, allowing a regular review and adjustment of the budgets in response to changing outside funding or changing priorities. It is understood that the RDN Board will decide final budget allocations as a part of each year's budget deliberation process.

5. Getting the Action Plan Underway

There is a need to continue work on the Drinking Water / Watershed Protection Program during the RDN Board deliberations and on an interim basis until full funding and program launch, scheduled for early 2009.

5.1 Initial Tasks

Priority actions for 2007-2008 include:

- Continuation and ramping up of Public Awareness programs such as the WaterSmart website. For example, it may be helpful to update, summarize and adapt the internal DW-WP website for public information purposes, as a backgrounder to the upcoming referendum.
- Fund raising and referendum support, in particular regarding the November 2008 referendum question.
- Completion of a prioritization process to identify at-risk watershed areas that warrant early Watershed Management Plans.
- Consideration of incentives to encourage early action; e.g., in efficient water use.

There also will be a need for an initial level of regional funding to support dedicated staff and required consulting services in the interim period.

5.2 Stakeholder Involvement in Initial Tasks

To provide stakeholder input in the transition period, it is recommended that a new implementation committee be struck, as an advisory body to the RDN Board. It is possible that this implementation committee would become the Regional Watershed Technical Committee that is to be established under the Vancouver Island Watershed Steering Committee.

The Implementation/Technical Committee would complete:

- A review and determination of an appropriate program name.
- Oversight of public information materials and public process in support of the 2008 referendum to establish the 'service'.
- Input to program and action refinements, and refinement of budgets.
- Support in discussions with staff and politicians considering involvement of member municipalities in all or parts of the program.
- Liaison with the public and interested organizations.

5.3 Transition Funding

Subject to confirmation by staff and the RDN Board, it is proposed that continued "New Deal" funding be used to support the transition phase.

5.4 Referendum

Full-scale launch of the Drinking Water / Watershed Protection Program would occur after a successful referendum, scheduled for November 2008.

6. Summary of Recommendations

6.1 Recommendations to the RDN Board

- Approve the Action Plan.
- Receive the draft budget and forward it for consideration to the annual budgeting process.
- Approach member municipalities about participating in the program, in whole or in part.
- Prepare for a referendum concurrent with the 2008 local government election to create a regional district 'service' for drinking water / watershed protection.
- Direct staff to prepare a report to the Board on interim funding and interim stakeholder involvement processes to carry the program through the referendum process.

6.2 Recommendations to the Vancouver Island Watershed Steering Committee

- Pursue legislative / regulatory measures to more effectively protect surface and groundwater resources.
- Prepare proposals and advocate for strengthening local governments' ability to influence all types of land and water use activities within watersheds and water supply areas. This would include activities that are currently under the sole purview of the Province, such as forest tenures and licences, water licences, Crown leases, foreshore development, gravel pits, etc.
- Provide funding to map, monitor and model the quantity and quality of at-risk surface and groundwater resources, and provide the results in a form that is accessible for regional, local and neighbourhood-scale land use and growth planning.



Regional District of Nanaimo

Attachment: Drinking Water-Watershed Protection Program Budget Timeline

DWWP Budget Timeline

Base Year 2008

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Inflation Allowance (%) 2.50%

Project or Program

Totals from Detail Budgets
 2008 Pre-Program Budget from Gas Tax Funds
 DWWP Budget Remaining After 2008

Program Start Period
 Program End Period
 Program Duration (Yrs)

Project or Program	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total Budget w/ Inflation	\$ Allowance for Grants / Other Sources	\$ Total Budget Minus Grants/ Other Sources						
														Year	Year	Year	Year	Year	Year
Period	1	2	3	4	5	6	7	8	9	10									
Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation	Annual Program Budget including inflation									
PROGRAM 1: PUBLIC AWARENESS & INVOLVEMENT																			
1A: WaterSmart Website	\$75,000	\$20,000	\$55,000	1	10	10	5638	5775	5913	6050	6188	6325	6463	6600	6738	6875	62563	\$15,000	\$47,563
1A: WaterSmart Publications & Awards	\$103,000	\$25,000	\$78,000	1	10	10	7995	8190	8385	8580	8775	8970	9165	9360	9555	9750	88725	\$0	\$88,725
1B: Coordinated Information & Education Resources	\$115,250	\$10,000	\$105,250	1	3	3	35960	36838	37715	0	0	0	0	0	0	0	110513	\$66,730	\$43,783
1C: Demonstration Projects	\$270,000	\$10,000	\$260,000	1	10	10	26650	27300	27950	28600	29250	29900	30550	31200	31850	32500	295750	\$150,000	\$145,750
1D: Support for Volunteers and Non-Profit Organizations	\$300,000	\$10,000	\$290,000	1	10	10	29725	30450	31175	31900	32625	33350	34075	34800	35525	36250	329875	\$92,500	\$237,375
PROGRAM 2: WATER RESOURCES INVENTORY & MONITORING																			
2A: Compilation and mapping of existing data	\$153,800		\$153,800	1	1	1	157645	0	0	0	0	0	0	0	0	0	157645	\$18,600	\$139,045
2B: Additional or new data collection	\$475,125		\$475,125	2	4	3	0	166294	170253	174213	0	0	0	0	0	0	510759	\$112,500	\$398,259
2C Water Quality Monitoring	\$24,000		\$24,000	2	10	9	0	2800	2867	2933	3000	3067	3133	3200	3267	3333	27600	\$6,000	\$21,600
2D: Response System	\$62,500		\$62,500	6	10	5	0	0	0	0	0	14375	14688	15000	15313	15625	75000	\$0	\$75,000
PROGRAM 3: LAND PLANNING AND DEVELOPMENT																			
3A: Land Development (Engineering) Standards	\$101,250		\$101,250	1	4	4	25945	26578	27211	27844	0	0	0	0	0	0	107578	\$31,250	\$76,328
3B: Development Application Review	\$90,000		\$90,000	3	10	8	0	0	12094	12375	12656	12938	13219	13500	13781	14063	104625	\$31,500	\$73,125
3C: Development Charges	\$22,500		\$22,500	4	4	1	0	0	0	24750	0	0	0	0	0	0	24750	\$2,500	\$22,250
3D: Planning Tools	\$108,000		\$108,000	1	10	10	11070	11340	11610	11880	12150	12420	12690	12960	13230	13500	122850	\$0	\$122,850
PROGRAM 4: WATERSHED MANAGEMENT PLANNING																			
4A: Watershed Prioritization	\$27,000	\$25,000	\$2,000	1	1	1	2050	0	0	0	0	0	0	0	0	0	2050	\$0	\$2,050
4B: Watershed Management Planning - basic watershed prote	\$135,000		\$135,000	2	3	2	0	70875	72563	0	0	0	0	0	0	0	143438	\$37,500	\$105,938
4B: Watershed Management Planning - custom watershed ma	\$900,000		\$900,000	4	10	7	0	0	0	141429	144643	147857	151071	154286	157500	160714	1057500	\$250,000	\$807,500
PROGRAM 5: WATER USE MANAGEMENT																			
5A Water Conservation Plans	\$99,000		\$99,000	1	3	3	33825	34650	35475	0	0	0	0	0	0	0	103950	\$27,500	\$76,450
5B: Cooperation among Community Water Supply Systems	\$187,500		\$187,500	1	10	10	19219	19688	20156	20625	21094	21563	22031	22500	22969	23438	213281	\$62,500	\$150,781
5C: Rainwater and Greywater Use	\$86,250		\$86,250	1	3	3	29469	30188	30906	0	0	0	0	0	0	0	90563	\$18,750	\$71,813
5D: Incentive Programs	\$249,750		\$249,750	1	10	10	25599	26224	26848	27473	28097	28721	29346	29970	30594	31219	284091	\$0	\$284,091
5E: Water Use Regulation	\$17,500		\$17,500	1	1	1	17938	0	0	0	0	0	0	0	0	0	17938	\$5,000	\$12,938
PROGRAM 6: WATER QUALITY MANAGEMENT																			
6A Contaminant Management	\$27,500		\$27,500	3	3	1	0	0	29563	0	0	0	0	0	0	0	29563	\$0	\$29,563
6B Agriculture and Forestry	\$7,500		\$7,500	2	2	1	0	7875	0	0	0	0	0	0	0	0	7875	\$0	\$7,875
6C Private Water Well Safety	\$102,500		\$102,500	1	10	10	10506	10763	11019	11275	11531	11788	12044	12300	12556	12813	116594	\$10,000	\$106,594
6D: On Site Sewage Disposal	\$108,000		\$108,000	5	5	1	0	0	0	0	121500	0	0	0	0	0	121500	\$30,000	\$91,500
PROGRAM 7: CLIMATE CHANGE																			
7 Climate Change	\$78,000		\$78,000	2	5	4	0	20475	20963	21450	21938	0	0	0	0	0	84825	\$17,500	\$67,325
STAFFING PROGRAM																			
Staff Position A: Water Program Manager	\$800,000		\$800,000	1	10	10	82000	84000	86000	88000	90000	92000	94000	96000	98000	100000	910000	\$0	\$910,000
Staff Position B: Water Program Assistant(s)	\$300,000		\$300,000	6	10	5	0	0	0	0	0	69000	70500	72000	73500	75000	360000	\$0	\$360,000
Subtotals, Base Budgets	\$5,025,925	\$100,000	\$4,925,925																
Total RDN Staffing Costs	\$1,100,000																		
Total Program Operation (w/o staffing)	\$4,461,398																		
Total Budget Including Inflation	\$5,561,398						\$521,234	\$620,301	\$668,663	\$639,376	\$543,446	\$492,273	\$502,974	\$513,676	\$524,377	\$535,079	\$5,561,398	\$985,330	\$4,576,068
Total Allowance for Grants / Other Income	\$985,330																		
Total Budget Less Grants	\$4,576,068																		
Total Allowance for Inflation	\$635,473																		
Total Budget Less Inflation	\$4,925,925																		
Total Budget Less Grants & Inflation	\$3,940,595																		

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Appendix 1: Terms of Reference of the DW-WP Stewardship Committee

Purpose

To identify action items and initiatives that support the protection of surface and groundwater drinking water sources for RDN Electoral Area residents and to provide recommendations to the Board regarding key drinking water and watershed protection activities to be considered for the 2007 budget.

The Stewardship Committee will bring together and focus the considerable work already carried out by the RDN with respect to drinking water and watershed protection. It will provide the forum by which broad representation from the region will assist in shaping the direction of DW/WP.

Committee Roles and Responsibilities

The Drinking Water / Watershed Protection Stewardship Committee will be an advisory committee and will provide for a technical sub-committee as required.

The committee will:

- Determine priority actions and initiatives for the protection of surface and groundwater drinking water sources.
- Provide recommendations to the Board regarding key strategies and initiatives relating to drinking water and watershed protection to be included in the 2007 annual budget;
- Liaise with Electoral Area residents;
- Liaise with the Vancouver Island Health Authority Watershed Protection Steering Committee;
- Participate on smaller ad-hoc committees dealing with specific issues or tasks;
- Provide advice and feedback on consultation activities with the general public;
- Provide input and feedback on technical reports and other documents prepared for the committee's information;

Membership Criteria/Selection

The committee will consist of up to 15 members. Members will be selected by the Board through an application process or by agency appointment. Membership representation will be as follows:

Electoral Area resident	Stewardship Group Representative
Electoral Area resident	Stewardship Group Representative
Electoral Area resident	VIHA
Electoral Area resident	Ministry of Environment
Well Drilling Industry Representative	Islands Trust
Private Water Purveyors Representative	RDN (Staff)
Water Improvement Dist. Representative	RDN (Chair)
First Nations Representative	

Membership may be adjusted as needs or issues arise. The application for non-appointed members for committee membership will be promoted through advertisements in local media. Applications must demonstrate the applicant's:

- representation of one of the sectors listed above;
- willingness and ability to commit to volunteering the necessary time to the committee;
- interest in drinking water and watershed protection issues in the RDN;
- willingness and ability to consider issues from all sectors and geographical perspectives within the community;
- experience related to drinking water and watershed protection issues;
- willingness and ability to work towards consensus on issues being addressed by the committee.

Selection of members will attempt to create a committee with a balance of representation:

- geographically;
- demographically; and
- with a variety of interests and perspectives.

Term

Initial members will be appointed by the RDN Board to an 18 month term. Alternate member appointments will be approved by the committee as required. If a member must resign from the committee, their position will be filled through the application process.

In general there may be up to 12 meetings per year of the committee with the provision for workshops or other presentations at the committee's discretion.

Members are expected to attend all committee meetings.

Participation Costs

Out of pocket expenses incurred as result of attending meetings will be reimbursed subject to RDN policy.

Decision Making

Committee recommendations to the RDN Board will be made by consensus whenever possible. If necessary, votes may be taken and minority reports may be submitted to the Board in addition to the majority opinion.

DW/WP committee meetings will be open to the public; however non-committee members will not have speaking or voting privileges. Delegations that wish to address the committee must seek approval from the committee through a written request. Acceptance of a delegate's request to speak to the committee will be at the discretion of the committee.

Chairperson

The chair will be one of the RDN Board members appointed to the committee in order to provide a direct link between the advisory committee and the Board.

Appendix 2: Detailed Budget for the DW-WP Action Plan

1A: WaterSmart Website

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
1) Upgrade and expand the WaterSmart website to:	each	1	\$0	\$0		0	100%	\$0		\$0	0	\$0
a) Incorporate user-friendly, graphical presentations of water data and maps (see Program 2) as they become available.		10	\$1,000	\$10,000	100	10000	0%	\$0		\$0	10	\$1,000
b) Merge water-related information from other parts of the RDN website into the Water Smart location.		1	\$2,500	\$2,500	100	2500	0%	\$0		\$0	0	\$0
c) Create a page for each information topic listed below.			\$0	\$0		0	100%	\$0		\$0	0	\$0
o Efficient water use – in the house and garden		1	\$5,000	\$5,000	25	1250	75%	\$3,750	20	\$1,000	10	\$500
o Efficient water use – commercial, institutional		1	\$5,000	\$5,000	25	1250	75%	\$3,750	20	\$1,000	10	\$500
o Water efficient irrigation systems and xeriscaping		1	\$5,000	\$5,000	10	500	90%	\$4,500	20	\$1,000	5	\$250
o WaterSmart Team activities and WaterSmart Awards		1	\$5,000	\$5,000	10	500	90%	\$4,500	20	\$1,000	5	\$250
o Water sources of the RDN - maps, status		7	\$1,500	\$10,500	50	5250	50%	\$5,250		\$0	10	\$1,050
o Water quality – common sources of contamination, what to do about it		1	\$5,000	\$5,000	25	1250	75%	\$3,750	20	\$1,000	10	\$500
o Low impact development measures – why, what, where, how		1	\$15,000	\$15,000	10	1500	90%	\$13,500	20	\$3,000	5	\$750
o Rainwater collection – methods, uses, treatment		1	\$15,000	\$15,000	10	1500	90%	\$13,500	20	\$3,000	5	\$750
o Water pricing – explain		1	\$5,000	\$5,000	50	2500	50%	\$2,500		\$0	10	\$500
o Water quality needs and testing for private well owners		1	\$2,500	\$2,500		0	100%	\$2,500	20	\$500	5	\$125
o Greywater use		1	\$2,500	\$2,500		0	100%	\$2,500	20	\$500	5	\$125
o Dual plumbing systems – greywater, rainwater		1	\$5,000	\$5,000		0	100%	\$5,000	20	\$1,000	5	\$250
o Effects of climate change on water supply and water quality		1	\$10,000	\$10,000		0	100%	\$10,000	20	\$2,000	5	\$500
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$103,000		\$28,000		\$75,000		\$15,000		\$7,050

1A: WaterSmart Publications & Awards

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
2) Establish an annual WaterSmart Awards program		10	\$5,000	\$50,000	100	50000	0%	\$0		\$0	10	\$5,000
3) Incorporate stories into regular RDN publications, press releases and other publicity media. Encourage other water service suppliers in the Region to use and distribute this information.	each	10	\$5,000	\$50,000	50	25000	50%	\$25,000		\$0	10	\$5,000
4) Support data collection and reporting on status of water resources as part of the annual "State of Sustainability" report, and make available on the WaterSmart website.	each	10	\$2,500	\$25,000	50	12500	50%	\$12,500	0	\$0	10	\$2,500
5) Launch a WaterSmart "mobile unit" to deliver WaterSmart services to neighbourhoods, residents and community events.	year	10	\$5,000	\$50,000	100	50000	0%	\$0		\$0	10	\$5,000
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$175,000		\$137,500	100%	\$37,500		\$0		\$17,500

1B: Coordinated Information & Education Resources

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
6) Collaborate with MOE and VIHA to:			\$0	\$0		0	100%	\$0		\$0	0	\$0
d) establish a coordinating committee or task force to compile, review and coordinate information resources and determine who, where and how a central source of information could be established.	each	1	\$100,000	\$100,000	50	50000	50%	\$50,000	40	\$40,000	10	\$10,000
a) develop school modules and teacher assistance packages coordinated with Intended Learning Outcomes in the BC teaching curriculum.	each	1	\$30,000	\$30,000	10	3000	90%	\$27,000	33	\$9,900	5	\$1,500
b) organize an information program on water quality impacts of common sources of contamination (e.g. agriculture, auto industry, pesticide use, etc.)	each	1	\$26,000	\$26,000	25	6500	75%	\$19,500	33	\$8,580	10	\$2,600
c) develop an information program on water quality needs and testing for private well owners.		1	\$25,000	\$25,000	25	6250	75%	\$18,750	33	\$8,250	10	\$2,500
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$181,000		\$65,750		\$115,250		\$66,730		\$16,600

1C: Demonstration Projects

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
7) Encourage developers to provide demonstrations of efficient and alternative water use on their development sites	each	1	\$100,000	\$100,000	10	10000	90%	\$90,000	50	\$50,000	1	\$1,000
8) Showcase existing developments with alternate technologies	each	1	\$100,000	\$100,000	10	10000	90%	\$90,000	50	\$50,000	1	\$1,000
9) Initiate and monitor an RDN demo project in a mainstream housing location in the RDN that incorporates sustainable technologies	each	1	\$100,000	\$100,000	10	10000	90%	\$90,000	50	\$50,000	1	\$1,000
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$300,000		\$30,000		\$270,000		\$150,000		\$3,000

1D: Support for Volunteers and Non-Profit Organizations

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
							100%					
10) Support stewardship group-based 'outreach' programs that provide advice to businesses and landowners on how to avoid contaminating watersheds and water supplies, conserve water and protect watersheds.	annual	10	\$25,000	\$250,000	10	25000	90%	\$225,000	33	\$82,500	1	\$2,500
11) Facilitate communication among nongovernmental organizations to promote better coordination of their watershed protection activities, monitoring programs and public outreach.	annual	10	\$5,000	\$50,000	50	25000	50%	\$25,000	20	\$10,000	5	\$2,500
12) Request that the RDN Board review its policies regarding support to volunteer members for basic expenses (mostly travel and/or printing of electronically sent documents) to participate in RDN committees.	annual	10	\$5,000	\$50,000	0	0	100%	\$50,000		\$0	0	\$0
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$350,000		\$50,000		\$300,000		\$92,500		\$5,000

2A: Compilation and mapping of existing data

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
							100%					
1) Compile and map the following from Fed/Prov data and maps:	yrs	2	\$15,000	\$30,000	0	0	100%	\$30,000		\$0	0	\$0
a) stream (surface water) monitoring systems, weather stations and snowpack monitoring stations.	hrs	2	\$100	\$200		0	100%	\$200		\$0	0	\$0
b) surface water intakes and sewer outfalls.	hrs	8	\$100	\$800		0	100%	\$800		\$0	0	\$0
c) groundwater monitoring wells.	hrs	16	\$100	\$1,600		0	100%	\$1,600		\$0	0	\$0
d) watershed/ basin and sub-basin boundaries, where possible.	hrs	16	\$100	\$1,600		0	100%	\$1,600		\$0	0	\$0
e) known aquifer boundaries and aquifer classification.	hrs	16	\$100	\$1,600		0	100%	\$1,600		\$0	0	\$0
f) known well locations; include well depth and groundwater level in accompanying GIS database (metadata) where reasonably accurate information is available.	hrs	500	\$100	\$50,000		0	100%	\$50,000	10	\$5,000	0	\$0
2) Overlay the above maps on a community/ population and land use base map and interpret geographical relationships between water sources, water demand and aquifer vulnerability.	hrs	120	\$150	\$18,000		0	100%	\$18,000	20	\$3,600	5	\$900
3) Map known and potential aquifer recharge areas; overlay on the above maps to begin to interpret relationships of surface water basins to aquifer recharge areas	hrs	500	\$100	\$50,000		0	100%	\$50,000	20	\$10,000	2	\$1,000
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$153,800		\$0		\$153,800		\$18,600		\$1,900

2B: Additional or new data collection

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Volunteers / Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost+Admin
4) For Surface water sources:												
a) Prepare tables/graphs from existing data to show trends. Identify data gaps and set priorities for adding new stream monitoring sites and/or snowpack monitoring sites, and for upgrading existing sites.	study	1	\$25,000	\$25,000	5	1250	95%	\$23,750		\$0	1	\$250
a) To effectively assess changes in stream flows and the effects of water use may require continuous monitoring using stream data loggers that record water level and temperature. Some streams may require multiple monitoring sites to identify the impact of water demands in stream sections.	each logger	100	\$500	\$50,000	5	2500	95%	\$47,500		\$0	1	\$500
b) Coordinate and support volunteers to operate and maintain stream monitoring sites throughout the year; downloading data loggers, monitoring stream changes on a monthly basis and after major events, etc.	year	10	\$25,000	\$250,000	30	75000	70%	\$175,000	25	\$62,500	3	\$7,500
5) For Groundwater sources:												
a) Identify gaps and priorities in monitoring coverage of aquifers.	study	1	\$25,000	\$25,000	10	2500	90%	\$22,500		\$0	1	\$250
b) From the map of existing wells, identify public or private wells that could be monitored on a volunteer basis to fill data gaps. Install water level loggers in identified wells; hire summer students who can teach well owners how to monitor well levels.	study	1	\$12,500	\$12,500	25	3125	75%	\$9,375		\$0	3	\$375
c) Install dedicated monitoring wells in critical areas where groundwater data are poor and/or conduct geophysical surveys from the surface to obtain hydrogeologic information.	allowance / well	20	\$10,000	\$200,000	10	20000	90%	\$180,000	25	\$50,000	1	\$2,000
6) In critical areas, identify all rural homeowners that are not on a communal water system and do not have a water well on record or a licensed spring or surface water source, and send them a questionnaire asking for information on their water source. Tabulate the responses and follow up with telephone calls, second mail outs and/or selected site visits if needed.	hour	200	\$100	\$20,000	15	3000	85%	\$17,000		\$0	15	\$3,000
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$582,500		\$107,375	100%	\$475,125		\$112,500		\$13,875

2C Water Quality Monitoring

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
7) In collaboration with MOE, identify priority waterways and applicable water quality indicators. In collaboration with VIWRVMP, identify groundwater quality problem areas and key indicators.	(See 2A)		\$0	\$0		0	100%	\$0		\$0	0	\$0
7) Establish a monitoring program in priority waterways and groundwater areas, and develop water quality objectives where needed.	sample	200	120	\$24,000		0	100%	\$24,000	25	\$6,000	5	\$1,200
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$24,000		\$0		\$24,000		\$6,000		\$1,200

2D: Response System

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
8) Through the Vancouver Island Watershed Steering Committee and the Regional Watershed Technical Committee, identify:	year	5	\$25,000	\$125,000	50	62500	50%	\$62,500	20	\$25,000	5	\$6,250
a) the critical or problem areas in the Region from a water management perspective;							100%					
b) key water-related indicators (e.g., stream base flows or temperatures, groundwater levels, water quality in indicator wells, etc.) and their "threshold" levels in these problem areas;							100%					
c) which agency can and should take action when these thresholds are exceeded, and the nature of the action to be taken.			\$0	\$0		0	100%	\$0		\$0	0	\$0
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$125,000		\$62,500		\$62,500		\$25,000		\$6,250

3A: Land Development (Engineering) Standards

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30% (Class D estimate)

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
1) Prepare and adopt 'low impact' development standards for:	each	1	\$125,000	\$125,000	25	31250	75%	\$93,750	25	\$31,250	2.5	\$3,125
- Rain gardens			\$0	\$0		0	100%	\$0		\$0	0	\$0
- Pervious paving for driveways and parking			\$0	\$0		0	100%	\$0		\$0	0	\$0
- Infiltration swales			\$0	\$0		0	100%	\$0		\$0	0	\$0
- Absorbent soils and landscapes			\$0	\$0		0	100%	\$0		\$0	0	\$0
- Rainwater leader exfiltration trenches or soakaways			\$0	\$0		0	100%	\$0		\$0	0	\$0
- Reduced (from typical urban standards) road widths for local streets			\$0	\$0		0	100%	\$0		\$0	0	\$0
- Green roof			\$0	\$0		0	100%	\$0		\$0	0	\$0
2) After a reasonable period of time of voluntary implementation, move to make the use of these alternate engineering standards mandatory.	each	1	\$10,000	\$10,000	25	2500	75%	\$7,500		\$0	2.5	\$250
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$135,000		\$33,750		\$101,250		\$31,250		\$3,375

3B: Development Application Review

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30% (Class D estimate)

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
3) Within RDN authority, review and revise the application requirements for rezoning, subdivision, development permits and building permits for large developments to:	each	10	\$25,000	\$250,000	80	200000	20%	\$50,000	10	\$25,000	8	\$20,000
a) Require an aquifer impact assessment for all proposed wells or well clusters			\$0	\$0		0	100%	\$0		\$0	0	\$0
b) Require all development applications over a specified size to provide an analysis of impacts on surface and groundwater sources, such as impacts on infiltration flows, effects of proposed wells on downstream surface flows, etc.			\$0	\$0		0	100%	\$0		\$0	0	\$0
4) Provide the authority in the appropriate bylaws to refuse building or development if the impacts are unacceptable.	each	1	\$15,000	\$15,000		0	100%	\$15,000	10	\$1,500	5	\$750
5) Within RDN authority, review and strengthen regulatory requirements regarding proof of adequate drinking water supplies in applications to rezone or subdivide.			\$0	\$0		0	100%	\$0		\$0	0	\$0
6) Provide info / training to RDN staff and approving officers in water management, rainwater management (LID methods) and efficient water use.	annual	10	\$5,000	\$50,000	50	25000	50%	\$25,000	10	\$5,000	5	\$2,500
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$315,000		\$225,000	100%	\$90,000		\$31,500		\$23,250

3C: Development Charges

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
7) Examine options for establishing fees or charges for new developments for water management.	study	1	\$25,000	\$25,000	10	2500	90%	\$22,500	10	\$2,500	1	\$250
8) Explore incentives for developers who apply LID and/or water conserving methods in their developments.			\$0	\$0		0	100%	\$0		\$0	0	\$0
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$25,000		\$2,500		\$22,500		\$2,500		\$250

3D: Planning Tools

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
9) Review existing zoning for rural subdivisions, and refine the requirements in these zones in respect drinking water protection (e.g. special land use requirements for parcels in aquifer recharge areas).	hours	400	\$100	\$40,000	50	20000	50%	\$20,000		\$0	5	\$2,000
9) Examine the drinking water implications of any proposed changes to Urban Containment Boundaries in reviews of the Growth Management Strategy.	each review	2	\$25,000	\$50,000	50	25000	50%	\$25,000		\$0	5	\$2,500
10) Undertake aquifer impact assessments when considering changes in Urban Containment Boundaries or significant density changes in RDN Electoral Area OCPs, or in municipalities in the RDN that would affect aquifers in Electoral Areas.	each review	2	\$35,000	\$70,000	10	7000	90%	\$63,000		\$0	1	\$700
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$160,000		\$52,000		\$108,000		\$0		\$5,200

4A: Watershed Prioritization

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
1) Identify and prioritize watersheds (and/or aquifers) that are candidates for Integrated Watershed Management Plans that address drinking water and food production needs, habitat needs, management of stormwater and flood protection and existing and potential drinking water resources.	each	1	\$30,000	\$30,000	10	3000	90%	\$27,000	0	\$0	1	\$300
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$30,000		\$3,000		\$27,000		\$0		\$300

4B: Watershed Management Planning - basic watershed protection requirements

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30% (Class D estimate)

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
2a) For Basic watershed protection requirements, identify and document basic BMPs (best management practices) that should apply to all development across the Region, and that do not require a customized watershed management plan prior to implementation. Create public awareness and regulatory bylaws to implement the BMPs.	study	1	\$150,000	\$150,000	10	15000	90%	\$135,000	25	\$37,500	1	\$1,500
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$150,000		\$15,000		\$135,000		\$37,500		\$1,500

4B: Watershed Management Planning - custom watershed management plans

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30% (Class D estimate)

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
2b) Undertake custom watershed management plans for identified priority 'at-risk' areas. Create public awareness and regulatory materials to implement the recommendations.	each IWMP	5	\$200,000	\$1,000,000	10	100000	90%	\$900,000	25	\$250,000	1	\$10,000
3) Ensure that water for local food production is a consideration in watershed management planning.							100%					
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$1,000,000		\$100,000		\$900,000		\$250,000		\$10,000

5A Water Conservation Plans

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
1) Develop a Water Conservation Plan for the RDN water local service areas based on the EPA Water Conservation Plan Guidelines or similar water conservation plan models. The Plan would provide a common set of goals and strategies, but would also address characteristics that are unique to individual service areas as required.	study	1	\$75,000	\$75,000	10	7500	90%	\$67,500	25	\$18,750	1	\$750
2) Based on the experience in generating a Plan for the water local service areas, generate a template for Water Conservation Plans that could be used in other parts of the Region, and work with water purveyors to apply the template to their water supply systems (see action 5B).	annual	7	\$5,000	\$35,000	10	3500	90%	\$31,500	25	\$8,750	1	\$350
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$110,000		\$11,000		\$99,000		\$27,500		\$1,100

5B: Cooperation among Community Water Supply Systems

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
3) Work with operators of water supply systems to achieve long-term sustainability of all water systems in the Region. The recommended approach is to establish a Water Purveyor Working Group, sponsored by the RDN. The intent of this Group would be to provide a forum for discussion and the exchange of ideas to assist water purveyors in the Region.	annual	10	\$25,000	\$250,000	25	62500	75%	\$187,500	25	\$62,500	2.5	\$6,250
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$250,000		\$62,500		\$187,500		\$62,500		\$6,250

5C: Rainwater and Greywater Use

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
4) Investigate water supply and distribution systems in other jurisdictions (e.g., Europe) that separate drinking water from non-potable water at the utility level, for examples that might be considered in building new systems or system extensions in the Region. (funded in 2007)	unded in 2007		\$50,000	\$0	10	0		\$0	25	\$0	1	\$0
5) Work with the RDN bylaws and with building inspectors to identify barriers to the application of dual plumbing and graywater or rainwater reuse where appropriate, and work towards removing those barriers by providing applicable standards.	year	3	\$5,000	\$15,000	50	7500	90%	\$7,500		\$0	5	\$750
6) After a reasonable learning and assessment period, move to require use of rainwater and/or greywater reuse in key water shortage areas.	each	1	\$15,000	\$15,000	25	3750	50%	\$11,250		\$0	2.5	\$375
7) In collaboration with MOE, MOH and Malaspina University-College, develop training for local contractors and builders on dual plumbing installation.	per session	10	\$7,500	\$75,000	10	7500	75%	\$67,500	25	\$18,750	1	\$750
8) Lobby the senior governments to include dual plumbing in their Building Codes, and to offer related training.	year	3	\$2,500	\$7,500	100	7500	90%	\$0		\$0	10	\$750
0%												
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$112,500		\$26,250		\$86,250		\$18,750		\$2,625

5D: Incentive Programs

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30% (Class D estimate)

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
9) Research and prioritize water conservation incentive programs based on their effectiveness ('bang for buck') in reducing water demand.	study	1	\$30,000	\$30,000	10	3000	90%	\$27,000		\$0	1	\$300
10) In areas of existing or potential water shortage, provide "challenge grants" for:			\$0	\$0		0	100%	\$0		\$0	0	\$0
a) Xeriscape planting schemes (institutional, commercial, residential).	per install	50	\$1,100	\$55,000	10	5500	90%	\$49,500		\$0	1	\$550
b) Conversion to waterless urinals (institutional, commercial).	per install	50	\$550	\$27,500	10	2750	90%	\$24,750		\$0	1	\$275
c) Conversion to low flush toilets and low flow showerheads (institutional, commercial, residential).	per install	200	\$550	\$110,000	10	11000	90%	\$99,000		\$0	1	\$1,100
d) Installation of water-conserving irrigation systems (institutional, commercial, residential).	per install	50	\$1,100	\$55,000	10	5500	90%	\$49,500		\$0	1	\$550
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$277,500		\$27,750		\$249,750		\$0		\$2,775

5E: Water Use Regulation

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
11) Request the Province to analyze existing water licences on waterways in the Region that are subject to critically low flows, and to: a) require metering and reporting of withdrawals; and b) consider reducing or terminating high-volume licences unless proof of need can be validated.	each	1	\$5,000	\$5,000	50	2500	50%	\$2,500		\$0	5	\$250
11) Urge the Province to complete their groundwater protection review and bring forward the necessary legislative changes for regulating the extraction and use of groundwater from all types of wells.	each	1	\$5,000	\$5,000	50	2500	50%	\$2,500		\$0	5	\$250
12) In the absence of applicable Provincial regulation, develop methods for regulating commercial use of private wells through zoning or business licensing.	each	1	\$20,000	\$20,000	25	5000	75%	\$15,000	25	\$5,000	2.5	\$500
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$25,000		\$10,000		\$17,500		\$5,000		\$750

6A Contaminant Management

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
1) In collaboration with the Vancouver Island Water Resource Vulnerability Mapping Project, create a list of land uses that occur in the Region that have a high probability of introducing contaminants to groundwater or surface water sources, and map their location. Identify information resources on how these land uses can avoid contamination and distribute to identified landowners.	(See 2A), plus info distribution]	1	\$25,000	\$25,000	20	5000	80%	\$20,000	0	\$0	2	\$500
2) Over time, and in collaboration with MOE's contaminant management division, develop methods for requiring high-risk land users to manage contaminants in a prescribed manner.	program	1	\$15,000	\$15,000	50	7500	50%	\$7,500	0	\$0	5	\$750
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$40,000		\$12,500		\$27,500		\$0		\$1,250

6B Agriculture and Forestry

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
3) Through the Vancouver Island Watershed Steering Committee and a future Regional Watershed Technical Committee, meet with regional staff from the Ministry of Forests and Ministry of Agriculture and Lands to determine ways of effectively influencing farming and forestry operations to protect drinking water sources from contamination and steward watersheds in the Region. This may involve tailoring information and incentive programs that these Ministries already have in place on a province-wide basis to the particular circumstances in the RDN, and collaborating on education and incentive programs for local farmers and forest managers.	contact	3	\$5,000	\$15,000	50	7500	50%	\$7,500		\$0	5	\$750
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$15,000		\$7,500		\$7,500		\$0		\$750

6C Private Water Well Safety

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
4) Support the Province's proposal to establish Ground Water Management Zones (GWMZs) in areas with groundwater problems. As part of that initiative, encourage the Province to establish requirements for water quality testing of private wells in GWMZs in the short term, and province-wide in the long term. Any program that requires water quality testing should include incentives and possibly subsidies for more advanced testing where this may be necessary.	each	1	\$5,000	\$5,000	50	2500	50%	\$2,500		\$0	5	\$250
5) Initiate a pilot well monitoring project that would test water from a limited number of private wells. The pilot could be based on annual sampling of basic water quality parameters (e.g., total dissolved solids, electrical conductivity, pH, alkalinity, hardness, chloride, fluoride, nitrate, sulphate, arsenic, boron, iron, etc.) for 100-200 wells over a 5-6 year period. Sampling costs are estimated roughly at \$100/well/year; setting up the project and follow-up analysis could potentially be cost-shared with MOE and/or VIHA.	year	10	\$10,000	\$100,000		0	100%	\$100,000	10	\$10,000	0	\$0
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$105,000		\$2,500		\$102,500		\$10,000		\$250

7 Climate Change

General Note: Unit Costs indicated are suitable for general budgeting only, and are accurate only to +/- 30%

Cost Estimate	Unit	Quantity	Budget / Unit	Calculated Budget	% Labour By Ex or New Staff (max 100%)	\$ Value of Staff Work	Net % New Regional Budget (w/o staff)	\$\$ Regional New Budget w/o staff	% Grants / Other Sources (max 100%)	\$ Value of Grants / Other Sources	Added Annual New Staff Cost (% of Calculated Budget)	\$\$ Annual Added New Staff Cost
1) Monitor evolving science on the relationship of climate change to water quantity and quality.	each	1	\$20,000	\$20,000	25	5000	75%	\$15,000		\$0	2.5	\$500
2) Develop a strategy that identifies the potential impacts of climate change on aquifers and watersheds and/or water service areas in the Region and measures for reducing the RDN's contribution to greenhouse gases, but also to adapting to anticipated changes. The study should involve local residents in identifying risks and developing adaptation tools.	study	1	\$70,000	\$70,000	10	7000	90%	\$63,000	25	\$17,500	1	\$700
3) Incorporate consideration of local and regional hydro-climatic balance in improved data collection and evaluation of changes to groundwater, surface water, and available evapotranspiration moisture levels (Program 2); public awareness and education for government officials, planners, engineers, developers, forestry and agricultural professionals (Program 1); and best management practices to maintain the balance between land use and hydro-climatic changes (Programs 3-6).			\$0	\$0		0	100%	\$0		\$0	0	\$0
Other (specify)	each			\$0		0	100%	\$0		\$0	0	\$0
Subtotals for Project				\$90,000		\$12,000		\$78,000		\$17,500		\$1,200

Appendix G:

Technical, Environmental, Social, and Economic Considerations for Three Timing Options for Secondary Treatment at GNPCC and NBPCC

GREATER NANAIMO POLLUTION CONTROL CENTRE

Figure 1. Technical, Environmental, Social and Economic aspects of Secondary Treatment Timing Options for Greater Nanaimo Pollution Control Centre

Technical Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Feasibility of engineering/construction schedule	Feasibility of target date when compared to established average project timelines for design, procurement and construction of similar projects	Fast track, timelines present significant challenges that limit feasibility and likely result in cost premiums and reduced functionality	Adequate timeframe for project completion	Adequate timeframe for project completion
Opportunities for innovation, optimization	Innovation in the areas of process optimization, resource recovery, reduced energy consumption, flexibility, better performance require time and consideration at the design phase	Fast track timelines limit opportunities for design consideration of potential opportunities	Adequate timeline for consideration of innovation opportunities	Adequate timeline for consideration of innovation opportunities
Mitigate potential climate change impacts on facility	Consideration of potential climate change impacts to infrastructure	Adequate timeline to consider infrastructure impacts	Adequate timeline to consider infrastructure impacts	Adequate timeline to consider infrastructure impacts
Opportunities for future expandability	Analysis of opportunities for future population increases and climate change related capacity impacts required at design phase	Fast track timelines limit opportunities for consideration of expandability	Adequate timeline for consideration of expansion opportunities	Adequate timeline for consideration of expansion opportunities

Environmental Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Meet Provincial MWR Standards	All options meet these criteria	Achieved earliest	Achieved 2 years after Option 1	Achieved 3 years after Option 1
Meet Federal WSER standards	All options meet these criteria within WSER deadlines	Achieved earliest	Achieved 2 years after Option 1	Achieved 3 years after Option 1
Protect the environment	Implementation of secondary treatment will reduce the potential for impacts to human health and the receiving environment	Achieved earliest	Achieved 2 years after Option 1	Achieved 3 years after Option 1
Improved effluent quality	Secondary treatment will reduce TSS and BOD discharge concentrations	Achieved earliest	Extends primary discharge by 2 years relative to Option 1	Extends primary discharge by 3 years relative to Option 1
Minimize carbon footprint	Related in large part to resource recovery opportunities	Fast track schedule limits opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria

Environmental Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Identify resource recovery opportunities	Possible opportunities include: heat recovery; bio-solids management; biogas generation	Fast track schedule limits opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria
Flexibility for future resource recovery opportunities	Design in flexibility for potential future opportunities	Fast track schedule limits opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria
Reduce treatment plant site impacts	Potential impacts include habitat disruption, site ecological sensitivity	Existing developed site, minimal impact anticipated	Existing developed site, minimal impact anticipated	Existing developed site, minimal impact anticipated
Minimize geotechnical concerns	Includes site suitability, stability	Existing developed site	Existing developed site	Existing developed site

Social Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Construction disruption	Construction activities will create potential disruption and inconvenience for local residents. Appropriate mitigation measures are required for noise, odours, dust, and traffic	Earliest completion of construction activities. Fast track schedule may impact ability to effectively mitigate impacts	Schedule may allow design for better mitigation	Schedule may allow design for better mitigation
Disruption from ongoing operations (noise, odours, dust, traffic)	Require design for proper mitigation of potential impacts during ongoing operations	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design
Facility/site Aesthetics	Aesthetics include proper screening and integration with neighbourhood	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design
Archaeological/cultural Resources	Construction activities will require proper consideration and procedures to mitigate potential impacts to cultural artifacts	Adequate timeframe for mitigation of risks	Adequate timeframe for mitigation of risks	Adequate timeframe for mitigation of risks
Property values	Facility expansion could affect local property values. Design and construction needs to minimize potential impacts	Similar impact potential for all options	Similar impact potential for all options	Similar impact potential for all options

Social Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Public perception	Extending timeframe for achieving secondary treatment may negatively impact public perceptions. Potential tourism, recreation and related economic impacts	Minimizes potential	Extends potential impacts by 2 years relative to Option 1	Extends potential impacts by 3 years relative to Option 1
Loss of beneficial site uses	Existing facility is located adjacent to Neck Point Park. Integration with the park has provided reciprocal benefits	Minimal impacts anticipated	Minimal impacts anticipated	Minimal impacts anticipated
Compatibility with land use zoning	Existing facility is located in an area surrounded by park, school and residential	Established compatibility with existing facility	Established compatibility with existing facility	Established compatibility with existing facility

Economic Considerations

Criteria	General Comments	< Options >		
		1. 2016	2. 2018	3. 2019
Capital Cost Optimization	Minimizing capital cost is most effectively carried out during the design phase	Fast track project reduces ability to consider capital cost optimization opportunities	Adequate timeline for capital cost optimization	Adequate timeline for capital cost optimization
Operating cost Optimization	Minimizing operating cost is most effectively carried out during the design phase. Fast tracking may result in increased capital costs	Fast track project reduces ability to consider operating cost optimization opportunities	Adequate timeline for operating cost optimization	Adequate timeline for operating cost optimization
Tax rate impacts	Timing of project expenditure has a significant impact on tax burden resulting from the project	Highest tax burden imposed on taxpayers	Tax burden significantly lower than Option 1	Tax burden significantly lower than Option 1
Revenue Opportunities	Revenue opportunities flow primarily from resource recovery opportunities	Fast track schedule limits opportunities	Adequate timeline to consider revenue generating opportunities	Adequate timeline to consider revenue generating opportunities
Opportunities to secure grants and funding	Currently no funding opportunities have been identified from provincial or federal sources	Shortest timeline to secure funding opportunities	Better timeline to explore funding opportunities	Best timeline to explore funding opportunities
Synergies with other large treatment projects	Metro Van and CRD are undertaking large secondary treatment projects as well. There may be opportunities to reduce costs for all parties through effective coordination	Fast track timeline limits opportunities	Adequate timeline to explore opportunities	Adequate timeline to explore opportunities

NANOOSE BAY POLLUTION CONTROL CENTRE

Figure 2. Technical, Environmental, Social and Economic aspects of Secondary Treatment Timing Options for Nanoose Bay Pollution Control Centre

Technical Considerations

Criteria	General Comments	Options		
		1. 2020	2. 2025	3. 2030
Feasibility of engineering/ construction schedule	Feasibility of target date when compared to established average project timelines for design, procurement and construction of similar projects	Adequate timeframe for project completion	Adequate timeframe for project completion	Adequate timeframe for project completion
Opportunities for innovation, optimization	Innovation in the areas of process optimization, resource recovery, reduced energy consumption, flexibility, better performance require time and consideration at the design phase	Adequate timeline for consideration of innovation opportunities	Adequate timeline for consideration of innovation opportunities	Adequate timeline for consideration of innovation opportunities
Mitigate potential climate change impacts on facility	Consideration of potential climate change impacts to infrastructure	Adequate timeline to consider infrastructure impacts	Adequate timeline to consider infrastructure impacts	Adequate timeline to consider infrastructure impacts
Opportunities for future expandability	Design needs to consider potential provision of sewage treatment for new developments (i.e. Fairwinds, and expanding service area to existing neighbourhoods.	Adequate timeline for consideration of expansion opportunities	Adequate timeline for consideration of expansion opportunities	Adequate timeline for consideration of expansion opportunities

Environmental Considerations

Criteria	General Comments	Options		
		1. 2020	2. 2025	3. 2030
Meet Provincial MWR Standards	All options meet these criteria, although with significant timing differences	Achieved earliest	Achieved 5 years after Option 1	Achieved 10 years after Option 1
Meet Federal WSER standards	All options meet these criteria within WSER deadlines	Achieved earliest	Achieved 5 years after Option 1	Achieved 10 years after Option 1
Protect the environment	Implementation of secondary treatment will reduce potential for impacts to organisms in the receiving environment	Achieved in shortest time	Extends potential impacts by 5 years relative to Option 1	Extends potential impacts by 10 years relative to Option 1
Improved effluent quality	Secondary treatment will reduce TSS and BOD discharge concentrations. Significant timing differences between options	Achieved in shortest time	Extends primary discharge by 5 years relative to Option 1	Extends primary discharge by 10 years relative to Option 1
Minimize Carbon footprint	Related in large part to resource recovery opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria

Environmental Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Identify resource recovery opportunities	Possible opportunities include: heat recovery; bio-solids management; biogas generation	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria
Flexibility for future Resource Recovery opportunities	Design and construct with consideration of possible future resource recovery opportunities	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria	Adequate timeframe to achieve criteria
Reduce treatment plant site impacts	Potential impacts include habitat disruption, site ecological sensitivity	Existing developed site, minimal impact anticipated	Existing developed site, minimal impact anticipated	Existing developed site, minimal impact anticipated
Minimize geotechnical concerns	Includes site suitability, stability	Existing developed site	Existing developed site	Existing developed site

Social Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Construction disruption	Construction activities will create potential disruption and inconvenience for local residents. Appropriate mitigation measures are required for noise, odours, dust, and traffic	Schedule will allow design for minimal disruption. Need to consider potential impacts on future Fairwinds	Schedule will allow design for minimal disruption. Need to consider potential impacts on future Fairwinds	Schedule will allow design for minimal disruption. Need to consider potential impacts on future Fairwinds
Disruption from ongoing operations (noise, odours, dust, traffic)	Require design for proper mitigation of potential impacts during ongoing operations	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design
Facility/site Aesthetics	Aesthetics include proper screening and integration with neighbourhood	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design	Adequate timeframe for mitigation by design
Archaeological/cultural Resources	Construction activities will require proper consideration and procedures for potential impacts to cultural artifacts	Adequate timeframe to mitigate risks	Adequate timeframe to mitigate risks	Adequate timeframe to mitigate risks
Property values	Facility expansion could affect local property values. Design and construction needs to minimize potential impacts	Similar impact potential for all options	Similar impact potential for all options	Similar impact potential for all options

Social Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Public perception	Extending timeframe for achieving secondary treatment may negatively impact public perceptions. Potential tourism, recreation and related economic impacts	Minimizes potential	Extends potential impacts by 5 years relative to Option 1	Extends potential impacts by 10 years relative to Option 1
Loss of beneficial site uses	Existing facility is located adjacent to land designated as park	Minimal impacts anticipated	Minimal impacts anticipated	Minimal impacts anticipated
Compatibility with land use zoning	Existing facility is located in an area surrounded by park and residential	Established compatibility with existing facility	Established compatibility with existing facility	Established compatibility with existing facility

Economic Considerations

Criteria	General Comments	< Options >		
		1. 2020	2. 2025	3. 2030
Capital Cost Optimization	Minimizing capital cost is most effectively carried out during the design phase	Adequate timeline for capital cost optimization	Adequate timeline for capital cost optimization	Adequate timeline for capital cost optimization
Operating cost Optimization	Minimizing operating cost is most effectively carried out during the design phase. Fast tracking may result in increased capital costs	Adequate timeline for operating cost optimization	Adequate timeline for operating cost optimization	Adequate timeline for operating cost optimization
Tax rate impacts	Timing of project expenditure has a significant impact on tax burden resulting from the project	Highest tax burden imposed on taxpayers	Tax burden significantly lower than Option 1, but higher than Option 3	Tax burden significantly lower than Options 1 + 2
Revenue Opportunities	Revenue opportunities flow primarily from resource recovery opportunities	Adequate timeline to consider revenue generating opportunities	Adequate timeline to consider revenue generating opportunities	Adequate timeline to consider revenue generating opportunities
Opportunities to secure grants and funding	Currently no funding opportunities have been identified from provincial or federal sources	Option with shortest timeline to secure funding opportunities	Adequate timeline to explore funding opportunities	Best timeline to explore funding opportunities

Appendix H:

Wastewater Services Ten Year Capital Plan

	2013	2014	2015	2016	2017	Total	2018	2019	2020	2021	2022	TOTAL
SOUTHERN COMMUNITY WASTEWATER												
Other Equipment						0						0
1 of 12" check valve and 1 of 12" gate valve for DBPS- defer from 2013 to 2014		7,500				7,500						7,500
Mechanical seal for CRPS	3,000					3,000						3,000
Basement truck bay roll-up door replacement	20,000					20,000						20,000
Arena Syphon Chamber remove existing enclosure and replace with low	10,000					10,000						10,000
Purchase 2 C-cans for storage	9,000					9,000						9,000
Chemical feed pumps for CEPT polymer	6,000					6,000						6,000
Sutorbilt gas blower	12,000					12,000						12,000
Borger Grinder (wet end)	10,000					10,000						10,000
Spare Actuator unit for CRPS influent gate system	7,000					7,000						7,000
Replace screen plates on FSM screen #1	15,000					15,000						15,000
Chemical feed pumps for CEPT poly			6,000		6,000	12,000		6,000		6,000	6,000	30,000
Mechanical seal for CRPS	5,000					5,000						5,000
Impeller for DBPS	10,500					10,500						10,500
Skimmer Drive Unit			10,000			10,000						10,000
Hi pressure gas storage tank replacement/relocation		100,000				100,000						100,000
WPS water actuated valve replacement				5,000		5,000	5,000		5,000			15,000
CRPS influent gate replacement	45,000					45,000						45,000
Grit pump replacement			7,500			7,500						7,500
Biomedica filter replacement		15,000				15,000		15,000				30,000
Gas blower replacement			30,000		30,000	60,000						60,000
Gas blower high/low pressure valves		3,000		3,000	10,000	16,000						16,000
Moyno sludge heat circulation pump			40,000	40,000		80,000						80,000
General allowance	0	57,000	156,500	252,000	269,000	734,500	271,500	226,500	276,500	194,000	194,000	1,897,000
	152,500	182,500	250,000	300,000	315,000	1,200,000	276,500	268,000	334,000	285,500	285,500	2,649,500
Engineering Structures												
Chase River Pump Station:												0
Influent Sampler			75,000			75,000			75,000	75,000	75,000	300,000
Nanaimo Treatment Plant												0
Main bldg HVAC replacement		100,000				100,000						100,000
Enclosure and roof for Gas Conditioning Skid(defer 2013 to 2014)	6,000	19,000				25,000						25,000
Bypass line at CRPS from existing overflow to wetwell	79,000					79,000						79,000
Flygt pump to replace #4 at CRPS	0	45,000				45,000						45,000
Weigh scale(initial estimate \$50,000 added another 10K)	60,000					60,000						60,000
	145,000	164,000	75,000	0	0	384,000	0	0	75,000	75,000	75,000	609,000
Vehicles												0
T-23 3/4 ton truck			36,000			36,000			36,000			72,000
T-22 replace (Dump Truck)			54,000			54,000				54,000	54,000	162,000
T-28 Van				25,000		25,000						25,000
4wd Truck (t-21 replacement)	27,000					27,000						27,000
	27,000	0	90,000	25,000	0	142,000	0	0	36,000	92,000	92,000	362,000
Computers												0
Plant computers		12,500	5,000	7,500	5,500	30,500	2,500	12,500	5,000	7,500	7,500	65,500
Shared allocations	8,625	710	1,680	355	1,275	12,645	9,210	710	1,680	355	355	24,955
Installation of UPS units for SCADA at DBPS, WPS, CRPS, GNPCC	30,000					30,000						30,000
UPS for phone system at GNPCC	5,000					5,000						5,000
	43,625	13,210	6,680	7,855	6,775	78,145	11,710	13,210	6,680	7,855	7,855	125,455
Reserve fund contributions						0						0
Operating budget	1,429,985	1,049,985	1,199,985	1,695,835	1,220,835	6,596,625	190,835	300,835	350,835	550,835	500,835	8,490,800
Repayment from Ravensong	695,850	695,850	695,850			2,087,550						2,087,550
	2,125,835	1,745,835	1,895,835	1,695,835	1,220,835	8,684,175	190,835	300,835	350,835	550,835	500,835	10,578,350
General Reserve Fund Use												0
DBPS Pump, Motor and VFD	572,000					572,000						572,000
Secondary Treatment Upgrade - DCC unfunded	0			3,999,642	0	3,999,642						3,999,642
Secondary Treatment Upgrade - existing users	0			8,500,000	10,000,000	18,500,000	10,500,000					29,000,000
Secondary treatment plant expansion prelim design (50% DCC)	0	300,000				300,000						300,000
Secondary treatment detailed design (50% DCC)	0		1,500,000			1,500,000						1,500,000
Main bldg HVAC replacement	175,000					175,000						175,000
Outfall Stage 1 (land section) (50% non DCC)	1,650,000					1,650,000				4,500,000	4,500,000	1,650,000
Outfall Stage 2 (marine section) (50% non DCC)	43,500					43,500						43,500

	2013	2014	2015	2016	2017	Total	2018	2019	2020	2021	2022	TOTAL
amt to borrow for existing users	2,440,500	300,000	1,500,000	12,499,642	10,000,000	26,740,142	10,500,000	0	0	4,500,000	4,500,000	46,240,142
Net from reserves				0	(2,085,367)		(10,309,165)			(3,297,495)	(3,999,165)	
Borrowed Funds				12,499,642	7,914,633		190,835			1,202,505	500,835	
Borrow unfunded balances - DCC unfunded	0	0	0	0	7,945,000	7,945,000	8,445,000			2,143,192	3,745,000	22,278,192
Borrow unfunded balances - existing users	0	0	0	0	2,085,367	2,085,367	10,309,165			3,297,495	3,999,165	19,691,192
	0	0	0	0	10,030,367	10,030,367	18,754,165	0	0	5,440,687	7,744,165	41,969,384
Development Cost Charges Applied												
Third digester - Construction	1,050,000					1,050,000						1,050,000
Secondary treatment plant expansion prelim design (50% DCC)	0	300,000				300,000						300,000
Secondary treatment detailed design (50% DCC funded)	0		1,500,000			1,500,000						1,500,000
Sedimentation tank expansion carryforward	2,440,540					2,440,540						2,440,540
Outfall Stage 1(land section) (50% DCC)	1,650,000					1,650,000						1,650,000
Secondary Treatment Upgrade (50% DCC)		0		8,500,000	10,000,000	18,500,000	10,500,000					29,000,000
Outfall - Stage 2(marine)- (50% DCC)	43,500					43,500				4,500,000	4,500,000	9,043,500
Borrowed Funds/from other reserves	5,184,040	300,000	1,500,000	8,500,000	10,000,000	25,484,040	10,500,000	0	0	4,500,000	4,500,000	44,984,040
Net from DCC's	0	0	2,884,960	(3,999,642)	(7,945,000)	(9,059,682)	(10,309,165)	0	0	(2,143,192)	(3,745,000)	89,968,080
	5,184,040	300,000	4,384,960	4,500,358	2,055,000	16,424,358	190,835	0	0	2,356,808	755,000	134,952,120
SOUTHERN COMMUNITY WASTEWATER CAPITAL SUMMARY												
Total Capital	7,992,665	959,710	6,306,640	17,332,855	20,321,775	52,913,645	19,424,045	281,210	451,680	9,460,355	9,460,355	91,991,290
RESERVE FUNDS USE						0						0
BORROWED FUNDS	7,624,540	600,000	5,884,960	17,000,000	9,969,633	41,079,133	0	0	0	3,559,313	1,255,835	45,894,281
BYLAW FUNDS ON HAND	0	0	0	0	10,030,367	10,030,367	18,754,165	0	0	5,440,687	7,744,165	41,969,384
GRANTS/OTHER						0						0
Net Capital from Operations	368,125	359,710	421,680	332,855	321,775	1,804,145	669,880	281,210	451,680	460,355	460,355	4,127,625

NORTHERN COMMUNITY WASTEWATER

Other Equipment

	2013	2014	2015	2016	2017	Total	2018	2019	2020	2021	2022	TOTAL
Two new gas meters	2,400					2,400						0
DR3900 Spectrophotometer for the lab	4,393					4,393						2,400
Electric hoist	3,500					3,500						4,393
Construction of covered area for vehicle parking	5,000					5,000						3,500
Effluent feed pumps (2) replacement	8,000					8,000						5,000
Two waste pumps, upgrade to mechanical seals	16,000					16,000						8,000
Flow meter for the headworks influent line	10,000					10,000						16,000
Boeger grinder pumps (2)	40,000					40,000						10,000
Grit pump	10,000					10,000						40,000
Spare 20 hp pump for Hall Rd	27,000					27,000						10,000
Solids Contract tank slide gates (2)	10,000					10,000						27,000
TF corner sump pump replacement (2)	16,500					16,500						10,000
ATAD mixer	28,000					28,000						16,500
Carry over spare pump for Bay Ave	45,000					45,000						28,000
Three gate valves for feed pipes to Secondary tanks	15,000					15,000						45,000
Chain and sprockets	10,000					10,000						15,000
Install purchased eyewash station for C12 loading site	5,000					5,000						10,000
2 lobe pump sludge to centrifuge			20,000			20,000						5,000
Replace biofilter media					15,000	15,000						20,000
TF Influent pump	0		30,000		30,000	60,000				30,000	30,000	120,000
Skimming screen	0		45,000			45,000						45,000
TF effluent pumps		30,000		30,000		60,000			30,000			90,000
Kinkade new pump	0			5,000		5,000				5,000		15,000
Lee Rd pump replacement				30,000		30,000	30,000					90,000
Breakwater pump replacement		8,000				8,000			30,000			16,000
Columbia Beach pump replacements		10,000				10,000			8,000			20,000
Barclay Cres pump replacements			15,000			15,000	15,000		10,000			30,000
Hall Rd pump replacement				25,000		25,000				25,000		75,000
Secondary collector drives				65,000		65,000			65,000			130,000
Effluent turbines			175,000		175,000	350,000						350,000
Effluent feed pumps		5,000				5,000		5,000				10,000
Macerators replacement				40,000		40,000				70,000	70,000	180,000
PLC control panel replacement				8,000	35,000	43,000						43,000
Bay Ave main breaker & MCC replacement				25,000		25,000						25,000
Repairs to beach manholes				65,000		65,000			65,000			130,000
Allowance	0	217,000	18,000	2,000		237,000	10,000		57,000	70,000	70,000	444,000
Aeration upgrade at FCPC	40,000					40,000	0		0	0	0	40,000
	295,793	270,000	303,000	295,000	255,000	1,418,793	235,000	245,000	265,000	220,000	200,000	2,583,793

Engineering structures

Shower/Washroom Building; revised cost from \$693,000 to \$500,000 refer from 2013 t		500,000				500,000						500,000
Duct work in the primary tank area - discharge slide	35,000					35,000						35,000
Trickling filter roof repairs(carry forward)	0	290,000				290,000						290,000
Septage metering station completion			250,000			250,000						250,000
New grit hopper with air operated slide gate	25,000					25,000						25,000
	60,000	790,000	250,000	0	0	275,000	0	0	0	0	0	275,000

Vehicles

Unit T-15					36,000	36,000						36,000
Unit T-16		31,500				31,500						31,500
Unit T-11		27,500				27,500						27,500
T27				30,000		30,000						30,000
E11 - forklift					25,000	25,000						25,000
E12 - Bobcat					30,000	30,000						30,000
	0	59,000	0	30,000	91,000	180,000	0	0	36,000	35,000	35,000	286,000

Computers

Plant computers	16,250	6,750	9,000	7,200	4,950	44,150	2,250	6,750	9,000	7,200	7,200	76,550
Historian Server	30,000					30,000						30,000
Shared allocations		525	1,190	265	940	2,920	4,835	525	1,190	265	265	10,000
	46,250	7,275	10,190	7,465	5,890	77,070	7,085	7,275	10,190	7,465	7,465	116,550

Borrowed funds

Plant expansion - DCC unfunded					9,217,822	9,217,822	12,798,025	0	0	0	0	22,015,847
Existing users - unfunded					0	0	1,540,796					1,540,796
	0	0	0	0	9,217,822	9,217,822	14,338,821	0	0	0	0	23,556,643

	2013	2014	2015	2016	2017	Total	2018	2019	2020	2021	2022	TOTAL
Reserve Fund Transactions												0
Contributions	976,675	676,676	1,476,677	1,706,677	1,317,679	6,154,384	717,679	117,679	67,679	67,679	67,679	7,192,779
Reserve Fund Use												
Plant Expansion - DCC Unfunded	0	0	0	455,400	5,080,203	5,535,603	0	0	0	0	0	5,535,603
Outfall repairs	542,500					542,500						542,500
Hall Road Pump Station Upgrade (design 2011, construction 2012)	48,600					48,600		0	0	0	0	48,600
Plant expansion projects - existing users		82,500	525,000	510,000	2,673,181	3,790,681	2,258,475	0	0	0	0	6,049,156
	591,100	82,500	525,000	965,400	7,753,384	9,917,384	2,258,475	0	0	0	0	12,175,859
Development Cost Charges Applied												0
Commission 5th ATAD		170,000				170,000						0
Add effluent pumping capacity (stage 2+3)		297,500				297,500						170,000
Phase 2 expansion solids contact process					850,000	850,000						297,500
Additional secondary clarifier					1,500,000	1,500,000						850,000
Hall Road Pump Station Upgrade (carry over)	275,400					275,400						1,500,000
Interceptor and pumpstation expansion phase 2			2,975,000	569,500		3,544,500						275,400
Treatment plant expansion				1,700,000	12,798,025	14,498,025	12,798,025					3,544,500
	275,400	467,500	2,975,000	2,269,500	15,148,025	21,135,425	12,798,025	0	0	0	0	27,296,050
Borrowed/from Other reserves	0	0	0	(455,400)	(5,080,203)	(5,535,603)	0	0	0	0	0	33,933,450
Net from DCC's	275,400	467,500	2,975,000	1,814,100	10,067,822	15,599,822	12,798,025	0	0	0	0	67,696,900
												101,630,350
NORTHERN WASTEWATER TREATMENT CAPITAL SUMMARY												0
Total Capital	1,268,543	1,676,275	4,063,190	3,111,965	18,173,096	28,293,069	15,298,585	252,275	311,190	262,465	242,465	44,660,049
RESERVE FUNDS USE	866,500	550,000	3,500,000	2,779,500	8,603,384	16,299,384	717,679	0	0	0	0	17,017,063
BORROWED FUNDS	0	0	0	0	9,217,822	9,217,822	14,338,821	0	0	0	0	23,556,643
BYLAW FUNDS ON HAND	0	0	0	0	0	0	0	0	0	0	0	0
GRANTS/OTHER	0	0	0	0	0	0	0	0	0	0	0	0
Net Capital from Operations	402,043	1,126,275	563,190	332,465	351,890	2,775,863	242,085	252,275	311,190	262,465	242,465	4,086,343

	2013	2014	2015	2016	2017	Total	2018	2019	2020	2021	2022	TOTAL
NANOOSE (FAIRWINDS) TREATMENT PLANT												
Other Equipment												
new kiosks for #1, #3, #4, #5 pump stations - proposed budget cut	7,000					7,000						7,000
Multismart Pump station flow meters for #2, #3, #5, #6, #7, #8, #9 pumps	17,169					17,169						17,169
Isolation gates for the primary tanks	15,000					15,000						15,000
Garage addition for the new gen set for #2 pump station	35,000					35,000						35,000
Back up power supply for #8 pumpstation	35,000					35,000						35,000
primary tank dive unit	30,000					30,000						30,000
Carry forward Installation of gen-set from Hall Rd to #6 Pumpstn	10,000					10,000		30,000	15,000			55,000
Gen set for station #7				30,000	17,000	47,000						47,000
Gen set for station #8		17,000				17,000						17,000
Back up pump for station #5		15,000				15,000	15,000					30,000
Back up pump for station #4			18,000			18,000			18,000			36,000
Back up pump for station #9					15,000	15,000						15,000
General allowance	0	58,000	72,000	60,000	58,000	248,000	75,000	60,000	57,000	90,000	90,000	620,000
	149,169	90,000	90,000	90,000	90,000	509,169	90,000	90,000	90,000	90,000	90,000	959,169
Vehicles												
Replace T-17		3,500				3,500						3,500
Replace T-15				4,000		4,000						4,000
	0	3,500	0	4,000	0	7,500	0	0	0	0	0	7,500
Computers												
Plant computers(SHARED 90% TO FCPCC)	250	750	1,000	800	550	3,350	250	750	1,000	800	800	6,950
SCADA PC 1 - Nanoose computer					2,500	2,500						2,500
Internet installation and hardware	400	100	150	50	3,000	3,000						3,000
Shared allocations					175	875						1,765
	650	850	1,150	850	6,225	9,725	790	850	1,150	850	850	14,215
General Reserve Fund Use												
Genset - Pumpstation #7			85,000			85,000						85,000
	0	0	85,000	0	0	85,000	0	0	0	0	0	85,000
General Reserve Fund Contributions												
	53,080	47,080	53,080	47,080	47,080	247,400	68,132	88,132	114,132	134,132	174,132	757,928
FAIRWINDS(NANOOSE) WASTEWATER TREATMENT CAPITAL SUMMARY												
Total Capital	149,819	94,350	176,150	94,850	96,225	611,394	90,790	90,850	91,150	90,850	90,850	1,065,884
RESERVE FUNDS USE	0	0	85,000	0	0	85,000	0	0	0	0	0	85,000
BORROWED FUNDS	0	0	0	0	0	0	0	0	0	0	0	0
BYLAW FUNDS ON HAND						0						0
GRANTS/OTHER						0						0
Net Capital from Operations	149,819	94,350	91,150	94,850	96,225	526,394	90,790	90,850	91,150	90,850	90,850	980,884

	2013	2014	2015	2016	2017	Total	2018	2019	2020	2021	2022	TOTAL
DUKE POINT TREATMENT PLANT												
Other Equipment												
Suction valves on pumps (x4)			7,500		7,500	15,000		7,500		7,500	7,500	37,500
2 New Blowers		40,000	40,000			40,000						40,000
Pump upgrade to DPPS						40,000						40,000
Manhole #3 repair	10,000					10,000						10,000
General allowance				30,000	27,500	57,500	35,000	27,500	35,000	27,500	27,500	210,000
	10,000	40,000	47,500	30,000	35,000	162,500	35,000	35,000	35,000	35,000	35,000	337,500
Vehicles												
T-23 3/4 ton truck			4,000			4,000			4,000			8,000
T-21 cargo van 4wd truck replacement	3,000					3,000	2,500					5,500
T-22 replace (Dump Truck)			6,000			6,000			6,000			12,000
T-28 Van				2,500		2,500				2,500	2,500	7,500
	3,000	0	6,000	2,500	0	11,500	6,300	0	6,000	2,500	2,500	28,800
Computers												
Plant computers split with GNPCC for Lab PC			2,500			2,500			2,500	2,500	2,500	10,000
Shared allocations	450	85	90	45	150	820	560	85	90	45	45	1,645
	450	85	2,590	45	150	3,320	560	85	2,590	2,545	2,545	11,645
DUKE POINT WASTEWATER TREATMENT CAPITAL SUMMARY												
Total Capital	13,450	40,085	56,090	32,545	35,150	177,320	41,860	35,085	43,590	40,045	40,045	377,945
RESERVE FUNDS USE	0	0	0	0	0	0	0	0	0	0	0	0
BORROWED FUNDS	0	0	0	0	0	0	0	0	0	0	0	0
BYLAW FUNDS ON HAND	0	0	0	0	0	0	0	0	0	0	0	0
GRANTS/OTHER	0	0	0	0	0	0	0	0	0	0	0	0
Net Capital from Operations	13,450	40,085	56,090	32,545	35,150	177,320	41,860	35,085	43,590	40,045	40,045	377,945

Appendix I:

Operational Certificates

DUKE POINT OPERATIONAL CERTIFICATE ME-05989



File: ME-05989

Date: **AUG 12 2004**

REGISTERED MAIL

Regional District of Nanaimo
6300 Hammond Bay Rd
Nanaimo BC V9T 6N2

Dear Regional District of Nanaimo:

Enclosed is **Operational Certificate ME-05989** issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the Operational Certificate. An annual fee will be determined according to the Waste Management Permit Fees Regulation.

This Operational Certificate does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the Operational Certificate Holder. It is also the responsibility of the Operational Certificate Holder to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

.../2

**Ministry of Water, Land
and Air Protection**

Regional Operations
Vancouver Island Region

Mailing/Location Address:
2080 Labieux Rd
Nanaimo BC V9T 6J9

Telephone: (250) 751-3100
Facsimile: (250) 751-3103
<http://www.gov.bc.ca/>
<http://www.gov.bc.ca/wlap/>

Administration of this Operational Certificate will be carried out by staff from the Vancouver Island Region office. **Plans, data and reports pertinent to the Operational Certificate are to be submitted to the Regional Environmental Protection Manager at Ministry of Water, Land and Air Protection, Regional Operations, Vancouver Island Region, 2080 Labieux Road, Nanaimo, British Columbia, V9T 6J9.**

Yours truly,



R. Alexander
for Director, *Environmental Management Act*
Vancouver Island Region

cc: Environment Canada
Ministry of Health
Land and Water British Columbia Inc., Victoria

Enclosure

AOR July 29/04
ACL 2004/06/04



MINISTRY OF WATER, LAND AND AIR PROTECTION

Vancouver Island Region
Environmental Protection
2080-A Labieux Road
Nanaimo, British Columbia
V9T 6J9
Telephone: 250 751-3100
Fax: 250 751-3103

ME-05989

Under the Provisions of the Environmental Management Act

Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, British Columbia
V9T 6N2

is authorised to discharge effluent to Northumberland Channel from a municipal sewage treatment facility located at Duke Point, British Columbia, subject to the conditions listed below. Contravention of any of these conditions is a violation of the Environmental Management Act and may result in prosecution.

1. AUTHORIZED DISCHARGES

1.1 This subsection applies to the discharge of effluent from a MUNICIPAL SEWAGE TREATMENT FACILITY. The rate and characteristics of the discharge apply to the last accessible point prior to connection to the outfall. The site reference number for this discharge is E254792.

1.1.1 The maximum authorised rate of discharge is 1,800 m³/d.

1.1.2 The average daily rate of discharge based on an annual averaging period is as follows:

Average daily flow = 250 m³/d + 50 m³/d * (calendar year - 2003) to a maximum of 950 m³/d in the year 2017.

1.1.3 The characteristics of the discharge shall not exceed:

Table with 2 columns: Parameter and Value. Parameters include 5-day Biochemical Oxygen Demand, Total Suspended Solids, Fecal Coliform, and pH.

1.1.4 The authorised works are mechanical screens, secondary treatment plant, ultra violet disinfection, aerated sludge holding tank, a connection line to the outfall, an outfall (with diffuser) extending approximately 282 m from mean low water to a depth of approximately 40 m below mean low water, and related appurtenances approximately located as shown on attached Site Plan A.

Date Issued: AUG 12 2004
Date Amended:
(most recent)
Page: 1 of 5

Signature of R. Alexander
R. Alexander
for Director, Environmental Management Act

OPERATIONAL CERTIFICATE: ME-05989
ACL 2004/08/05

- 1.1.5 The authorised works must be complete and in operation on and from the date of this operational certificate.
- 1.1.6 The location of the facilities from which the discharge originates is Lot 15, Section 3, Range 8, Nanaimo District Plan VIP63717.
- 1.1.7 The location of the point of discharge is Northumberland Channel.

2. **GENERAL REQUIREMENTS**

2.1 **Maintenance of Works and Emergency Procedures**

The Regional District of Nanaimo shall inspect the authorised works regularly and maintain them in good working order. In the event of an emergency or condition beyond the control of the Regional District of Nanaimo which prevents effective operation of the approved method of pollution control, the Regional District of Nanaimo shall notify the Director immediately and take appropriate remedial action. The Director may reduce or suspend the operation of the Regional District of Nanaimo to protect the environment until the approved method of pollution control has been restored.

2.2 **Bypasses**

The Regional District of Nanaimo shall ensure that no waste is discharged without being processed through the authorised works unless prior written approval is received from the Director.

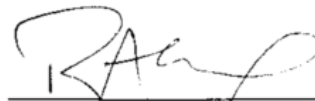
2.3 **Plans - New Works**

Plans and specifications for expanding the works authorised in Subsection 1.1.4 shall be certified by a qualified professional, and submitted to the Regional Manager, Environmental Protection for review prior to the start of construction. A qualified professional must certify that the works have been constructed in accordance with such plans.

2.4 **Posting of Outfall**

The Regional District of Nanaimo shall erect a sign along the alignment of the outfall above high water mark. The sign shall identify the nature of the works. The wording and size of the sign requires the approval of the Director.

Date Issued: **AUG 12 2004**
Date Amended:
(most recent)
Page: 2 of 5



R. Alexander
for Director, *Environmental Management Act*

OPERATIONAL CERTIFICATE: ME-05989

ACL 2004/08/05

2.5 Outfall Inspection

The Regional District of Nanaimo shall conduct an inspection of the outfall line every 5 years, or as may otherwise be required by the Director. An outfall inspection report shall be submitted to the Regional Manager, Environmental Protection within 60 days from the date of the inspection.

2.6 Sludge Management

Sludge generated from the treatment plant shall be managed in a manner approved by the Director.

2.7 Effluent Upgrading

Based on receiving environment monitoring data and/or other information obtained in connection with this discharge, the Regional District of Nanaimo may be required to provide additional treatment facilities.

2.8 Odour Control

Should objectionable odours, attributable to the operation of the sewage treatment plant, occur beyond the property boundary, as determined by the Director, measures or additional works will be required to reduce odour to acceptable levels.

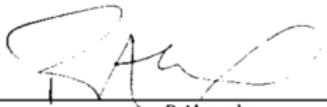
2.9 Operating Plan

The Regional District of Nanaimo shall develop an Operating Plan, as per Section 16 of the Municipal Sewage Regulation. The plan shall be submitted to the Regional Manager, Environmental Protection by December 31, 2004.

2.10 Facility Classification and Operator Certification

The Regional District of Nanaimo shall have the works authorised by this operational certificate classified (and the classification shall be maintained) by the Environmental Operators Certification Program Society (Society). The works shall be operated and maintained by persons certified within and according to the program provided by the Society. Certification must be completed to the satisfaction of the Director. In addition, the Director shall be notified of the classification level of the facility and certification level of the operators, and changes of operators and/or operator certification levels within 30 days of any change.

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Date Amended:
(most recent)
Page: 3 of 5


R. Alexander
for Director, *Environmental Management Act*

OPERATIONAL CERTIFICATE: ME-05989

ACL 2004/08/05

Alternatively, the works authorised by this operational certificate shall be operated and maintained by persons who the Regional District of Nanaimo can demonstrate to the satisfaction of the Director, are qualified in the safe and proper operation of the facility for the protection of the environment.

3. **MONITORING AND REPORTING REQUIREMENTS**

3.1 **Discharge Monitoring**

3.1.1 **Flow Measurement**

Provide and maintain a suitable flow measuring device and record twice per week the effluent volume discharged over a 24-hour period.

3.1.2 **Sampling and Analysis**

The Regional District of Nanaimo shall install a suitable sampling facility and obtain samples of the effluent in accordance with the following schedule:


<u>Parameter</u>	<u>Frequency (type)</u>
5-day Biochemical Oxygen Demand	monthly (grab)
Total Suspended Solids	monthly (grab)
NH ₄ -N	quarterly (grab)
Fecal Coliforms	six times a year (grab)
Toxicity	once a year (grab)
pH	monthly (grab)

3.2 **Receiving Environment Monitoring**

A receiving environment monitoring program shall be established in consultation with the Director who will advise the Regional District of Nanaimo in writing of the program requirements.

The responsibility for carrying out the receiving environment monitoring program is shared jointly by the Regional District of Nanaimo and West Coast Reduction Ltd. The responsibility for the cost of the program is determined under the terms of a Joint Use Agreement between the two parties.

Date Issued: **AUG 12 2004**
Date Amended:
(most recent)
Page: 4 of 5



R. Alexander
for Director, *Environmental Management Act*

OPERATIONAL CERTIFICATE: ME-05989

ACL 2004/08/05

3.3 Monitoring Procedures

3.3.1 Sampling and Analytical Procedures

Sampling and flow measurement shall be carried out in accordance with the procedures described in the "British Columbia Field Sampling Manual For Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples, 2003 Edition (Permittee)," or most recent edition, or by suitable alternative procedures as authorised by the Director. A copy of the above manual may be purchased from the Queen's Printer Publications Centre, PO Box 9452, Stn Prov Gov't Victoria, British Columbia, V8W 9V7 (1 800 663-6105 or 250 387-6409), and is also available for inspection at all Environmental Protection offices.

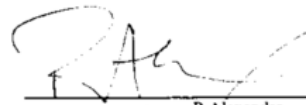
Analyses are to be carried out in accordance with procedures described in the "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment, Biological Materials and Discrete Ambient Air Samples, 2003 Edition (Permittee)", or most recent edition, or by suitable alternative procedures as authorised by the Director. A copy of the above manual may be purchased from the Queen's Printer Publications Centre, PO Box 9452, Stn Prov Gov't Victoria, British Columbia, V8W 9V7 (1 800 663-6105 or 250 387-6409), and is also available for inspection at all Environmental Protection offices.

3.4 Reporting

Maintain data of analyses and flow measurements for inspection and every 6 months submit the data, suitably tabulated, to the Regional Manager, Environmental Protection for the previous 6 months. All reports shall be submitted within 30 days of the end of the 6 month period. Based on the results of the monitoring program, the Regional District of Nanaimo monitoring requirements may be extended or altered by the Director.

An annual report, which includes a summary and interpretation of the discharge and receiving environment monitoring results for the previous year, shall be submitted to the Regional Manager, Environmental Protection within 60 days of the end of the calendar year. The summary and interpretation of the receiving environment monitoring results obtained as required in Section 3.2 shall be prepared by an independent qualified professional. The annual report shall provide an assessment of the impact of this discharge on the receiving environment and recommend changes (if any) to the monitoring program.

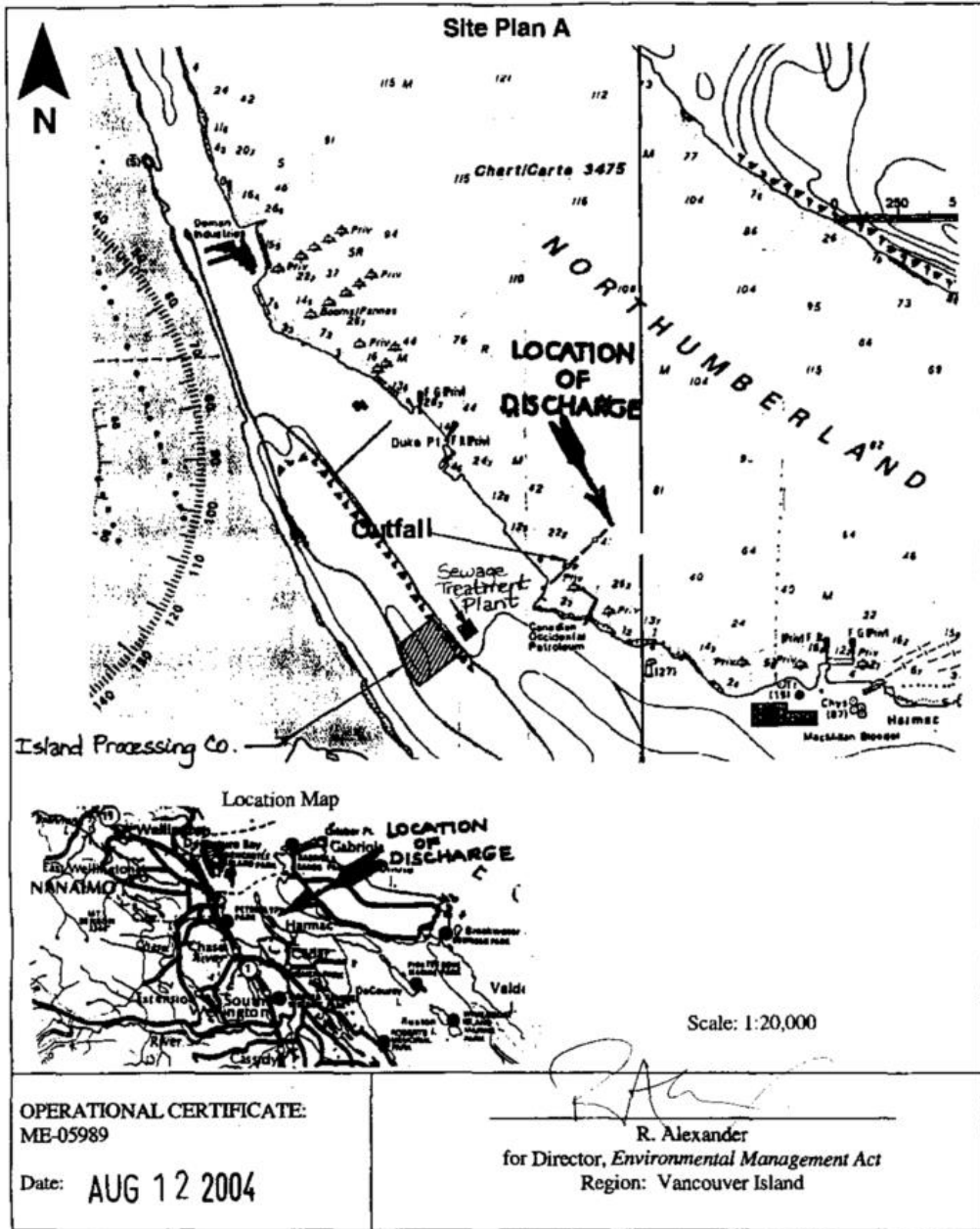
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(most recent)
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R. Alexander
for Director, *Environmental Management Act*

OPERATIONAL CERTIFICATE: ME-05989

ACL 2004/06/05



ACL 2004/06/05



RECEIVED
SEP 08 2005
REGIONAL DISTRICT
of NANAIMO

August 31, 2005

File: ME-05989
PE-16725

Regional District of Nanaimo
6300 Hammond Bay Rd
Nanaimo BC V9T 6N2

West Coast Reduction Ltd.
c/o 1900-1040 W Georgia St
Vancouver BC V6E 4H3

Sean DePol

ATTENTION: Dennis Trudeau, Manager, Liquid Waste
Regional District of Nanaimo

Ken Ingram, Environmental Coordinator
West Coast Reduction

Dear Messrs Trudeau and Ingram:

Re: Receiving Environment Monitoring for the Shared Outfall at Duke Point

In accordance with Section 3.2 of Operational Certificate ME-05989 and Section 3.2 of Waste Management Permit PE-16725, the following receiving environment monitoring program shall be conducted.

Water column profiles shall be taken quarterly at four monitoring stations, established for the baseline receiving environment monitoring study (see "Duke Point Marine Outfall Water Column Characterisation (Pre-Discharge Assessment)", September 2002, by Komex International Ltd.), shown as #1, #2, #3 and #4 on the attached Site Plan.

.../2

Ministry of
Environment

Vancouver Island Region
Environmental Protection Division

Mailing Address:
2080A Labieux Rd
Nanaimo BC V9T 6J9

Telephone: 250 751-3100
Facsimile: 250 751-3103
Website: <http://wlapwww.gov.bc.ca>

Measurements of the following parameters shall be obtained in the water column at each monitoring station at the halocline and at depths of 0, 2, 4, 6, 8, 10, 15, 20, 25, 30, 35 and 40 metres (or to bottom, by 5 metre increments):

Dissolved Oxygen, mg/L;
Salinity, g/kg or ‰;
Temperature, °C;
pH.

Measurements of fecal coliforms and NH₃-N shall be obtained in the water column at each monitoring station at depths of 0 m and at the halocline. An additional measurement of NH₃-N shall be obtained in the water column at each monitoring station at a depth of 40 metres.

Sampling shall be carried out in accordance with the procedures described in the "British Columbia Field Sampling Manual For Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples, 2003 Edition (Permittee)," or most recent edition, or by suitable alternative procedures as authorised by the Regional Waste Manager. A copy of the above manual may be purchased from the Queen's Printer Publications Centre, PO Box 9452, Stn Prov Gov't Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or 250 387-6409), and is also available for inspection at all Environmental Protection offices.

Analyses are to be carried out in accordance with procedures described in the "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment, Biological Materials and Discrete Ambient Air Samples, 2003 Edition (Permittee)", or most recent edition, or by suitable alternative procedures as authorised by the Regional Waste Manager. A copy of the above manual may be purchased from the Queen's Printer Publications Centre, PO Box 9452, Stn Prov Gov't Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or 250 387-6409), and is also available for inspection at all Environmental Protection offices.

These monitoring requirements may be reconsidered by the Director after the second annual reports required under Section 3.4 of the Operational Certificate ME-05989 and Section 3.4 of the Waste Management Permit PE-16725 have been submitted and reviewed.

.../3

Please attach this letter to the Operational Certificate ME-05989 and Waste Management Permit PE-16725.

Yours truly,



R. Alexander
for Director, *Environmental Management Act*

cc: West Coast Reduction

**DRAFT OPERATIONAL CERTIFICATE
GREATER NANAIMO POLLUTION CONTROL CENTRE**

MINISTRY OF ENVIRONMENT

OPERATIONAL CERTIFICATE

ME-338

Under the Provisions of the Environmental Management Act

**Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, B.C.
V9T 6N2**

is authorized to discharge effluent from a municipal wastewater collection and treatment system located in Nanaimo, British Columbia to the Strait of Georgia, subject to the conditions listed below. Contravention of any of these conditions is a violation of the Environmental Management Act and may result in prosecution.

1. **AUTHORIZED DISCHARGES**

This section applies to the discharge of effluent from a municipal wastewater treatment system (commonly known as the Greater Nanaimo Pollution Control Centre), a **MUNICIPAL WASTEWATER TREATMENT PLANT** serving a portion of the Regional District of Nanaimo. The site reference number for this discharge is E100008.

1.1 The maximum authorized rate of discharge is 169,000 cubic metres per day.

1.2 The average dry weather flow shall not exceed 55,000 cubic metres per day.

1.3 **UNTIL DECEMBER 31, 20XX**, the characteristics of the discharge to the Strait of Georgia shall not exceed the following requirements:

Carbonaceous 5-day Biochemical Oxygen Demand	130 mg/L
Total Suspended Solids	130 mg/L
pH	6.0 – 9.0 pH units

The characteristics must be measured based on the sampling procedures and frequencies stipulated under Subsection 3.1.

1.4 **ON OR BEFORE DECEMBER 31, 20XX**, for that portion of the flow up to two times the average dry weather flow, the characteristics of the discharge to the Strait of Georgia shall not exceed the following requirements:

Carbonaceous 5-day Biochemical Oxygen Demand	45 mg/L
Total Suspended Solids	45 mg/L
pH	6.0 – 9.0 pH units

For that portion of the daily flow in excess of two times the average dry weather flow the characteristics of the discharge to the Strait of Georgia shall not exceed:

Carbonaceous 5-day Biochemical Oxygen Demand	130 mg/L
Total Suspended Solids	130 mg/L
pH	6.0 – 9.0 pH units

The characteristics must be measured based on the sampling procedures and frequencies stipulated under Subsection 3.1.

All flows shall be recombined prior to discharge through the outfall.

1.5 The authorized works must be complete and in operation as follows:

1.5.1 UNTIL DECEMBER 31, 20XX, mechanical screens, grit removal tanks, primary sedimentation tanks, odour control facilities, and an outfall with a 104 port diffuser extending 2030 m from mean low water to a depth of 70 m below mean low water, and related appurtenances approximately located as shown on attached the attached site plan (Appendix A), on and from the date of this Operational Certificate

1.5.2 ON OR BEFORE DECEMBER 31, 20XX in accordance with the following:

Wastewater Facility Component	Redundancy Requirement
mechanical screens	Multiple units, 75% of design flow when one tank is out of service
grit removal tanks	Multiple units, 75% of design flow when one tank is out of service
primary sedimentation tanks	Multiple units, 75% of design flow when one tank is out of service
biological reactors	Multiple units, 75% of design flow when one tank is out of service
secondary clarifiers	Multiple units, 75% of design flow when one tank is out of service
anaerobic digesters	2 digesters, 50% of maximum design when one digester is out of service
biosolids thickening and dewatering facilities	Multiple units, 75% of design flow when one unit is out of service

and OUTFALL SPECIFICATIONS TO FOLLOW, and related appurtenances.

1.6 The location of the facilities from which the effluent originates is legally described as,

- Lot 1, District Lot 51, Wellington District, Plan 26263 (4600 Hammond Bay Road)
- Lot 2, District Lot 51, Plan 7504 EXC Plans 23005 & 26263 (4520 Hammond Bay Road)
- Lot 1, District Lot 51, Wellington District, Plan 23005 (4500 Hammond Bay Road)
- Lot 1, District Lot 41, Wellington District Plan 32351 (4470 Hammond Bay Road)
- Lot 1, District Lot 41, Wellington District, Plan VIP63399 (3075 Shores

- Drive)
- Lot A, District Lot 41, Wellington District, Plan 48249 (3025 Shores Drive)

The location of the point of discharge is in the Strait of Georgia at 49.236°N, 123.940°W (Seaconsult, 1999), as approximately shown on the attached site plan.

2. GENERAL REQUIREMENTS

2.1 Maintenance of Works

The Regional District of Nanaimo must inspect the authorized works regularly and maintain them in good working order.

2.2 Bypasses

The Regional District of Nanaimo shall ensure that no waste is discharged without being processed through the authorized works unless prior written approval is received from the Director.

2.3 Process Modifications

The Director must be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge. Despite notification under this section, authorized discharge rates and characteristics must not be exceeded.

2.4 Plans – New Works

Plans and specifications of new works authorised in subsection 1.5 must be certified and sealed by a qualified professional licensed to practice in the Province of British Columbia, and submitted to the Director before construction. Prior to the commencement of discharge, a qualified professional licensed to practice in the Province of British Columbia must certify that the works have been constructed in accordance with the submitted plans and a copy of final design drawings reflecting the actual construction of authorized works, certified as correct and sealed by a qualified professional, must be provided to the Director.

2.5 Future Upgrading of Works

Based on receiving environment monitoring data and/or other information obtained in connection with this discharge, the Regional District of Nanaimo may be required to provide additional treatment facilities.

The Director may require repair, alteration, removal, improvement or addition to works or construction of new or existing works, and submission of plans and specifications for works specified in this Operational Certificate.

2.6 Posting of Outfall

The Regional District of Nanaimo shall erect a sign on shore along the alignment of

the outfall above high water mark. The sign shall identify the nature of the works. The wording and size of the sign must be acceptable to the Director.

2.7 Outfall Inspection

The outfall must be inspected by a qualified professional once every 5 years, or as may otherwise be required by the Director, to ensure it is in good working condition. The inspection must include examination of the entire length of the pipe and diffuser for leaks, breaks and blockages. An inspection report must be submitted to the Director, Environmental Protection, within 60 days after the inspection date. Outfall inspections shall continue as per existing 5 year schedule..

2.8 Odour Control

Should objectionable odours attributable to the operation of the authorized works occur, measures or additional works will be required to reduce odours to acceptable levels.

2.9 Biosolids Treatment, Disposal and Reuse

Biosolids generated by the treatment plant shall be managed in a manner approved by the Director and in accordance with the biosolids management strategies developed in the Regional District of Nanaimo Liquid Waste Management Plan.

2.10 Operating Plan, Including Commissioning and Emergency Procedures

The Regional District of Nanaimo must prepare an Operating Plan that provides for proper operation, maintenance and monitoring of the sewage conveyance, wastewater treatment and disposal facilities, and biosolids management, including monitoring details, emergency procedures and staff education and certification.

The Operating Plan must also include a commissioning plan that addresses operational procedures required to commission the authorized works identified in subsection 1.5, including the monitoring required to demonstrate that no adverse environmental impacts result from commissioning.

The Operating Plan must include a contingency plan that describes emergency procedures for the wastewater facility, including lift stations; procedures for notifying the Director and a health officer; and, actions to be taken if the discharge fails to meet the authorized discharge requirements.

The Director may reduce or suspend the operations to protect the environment until the approved method of pollution control has been restored, and/or corrective steps taken to prevent unauthorized discharge.

The Operating Plan must be submitted to the Director, Environmental Protection within 60 days from Operational Certificate's approval date. The Regional District of Nanaimo must notify the Director of any changes to the Operating Plan within 30 days of implementation.

2.11 Facility Classification and Operator Certification

The Regional District of Nanaimo must have the works authorized by this Operational Certificate classified (and the classification must be maintained) by the Environmental Operators Certification Program Society (Society). The works must be operated and maintained by persons certified within and according to the program provided by the Society. Certification must be completed to the satisfaction of the Director. In addition, the Director must be notified of the classification level of the facility and certification level of the operators and changes of operators and/or operator certification levels within 30 days of any change.

2.12 Qualified Professional

All information including plans, drawings, assessments, investigations, surveys, programs and reports, must be certified by a qualified professional. As-built plans and drawings of the facilities and works must be certified by a qualified professional, as defined in the Municipal Wastewater Regulation (507/99).

3. MONITORING REQUIREMENTS

3.1 Discharge Monitoring

3.1.1 Flow Measurement

(a) This section applies to the discharge authorized in Subsection 1.3.

Provide and maintain a suitable flow measuring device and record once per day the effluent volume discharged over a 24-hour period from the municipal wastewater treatment plant to the outfall.

(b) This section applies to the discharge authorized in Subsection 1.4.

ON OR BEFORE DECEMBER 31, 20XX provide and maintain a suitable flow measuring device and record once per day the effluent volume discharged over a 24-hour period for the following:

- The volume of the flow which receives secondary treatment and which is up to no less than two times the average dry weather flow discharged from the municipal wastewater treatment plant to the outfall; and,
- The volume of the flow, at no less than the excess of two times the average dry weather flow, which bypasses secondary treatment and is discharged from the municipal wastewater treatment plant to the outfall.

3.1.2 Sampling and Analysis

Effluent samples shall be collected as follows:

(a) **UNTIL DECEMBER 31, 20XX** the Regional District of Nanaimo shall maintain a suitable sampling facility and obtain samples of the discharge from the municipal wastewater treatment plant.

(b) **ON OR BEFORE DECEMBER 31, 20XX** the Regional District of Nanaimo shall install suitable sampling facilities and obtain samples of the discharges from the municipal wastewater treatment plant at the following locations:

- A sampling location representing the portion of the daily discharge which receives secondary treatment, which is no less than two times the average dry weather flow;
- A sampling location representing the portion of the daily discharge which bypasses secondary treatment, which is no less than the excess of two times the average dry weather flow; and
- A sampling location at a point after which the above two discharges are recombined, as authorized in Subsection 1.4.

Analyses of effluent samples shall be carried out in accordance with the following schedule:

<u>Parameter</u>	<u>Frequency</u>	<u>Type</u>
Carbonaceous 5-day	twice/week	24-hour composite
Biochemical Oxygen Demand	twice/week	24-hour composite
Total Suspended Solids	twice/week	24-hour composite
Total Phosphorus	monthly	24-hour composite
Phosphate Phosphorus	monthly	24-hour composite
Fecal Coliform	twice/month	grab

The composite samples are to consist of samples taken over a 24-hour period in proportion to flow and mixed to form a single sample. There must be at least 10 days between samples for monthly samples, and 7 days between samples if required to sample twice per month.

Proper care must be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.2 Biosolids Monitoring

A biosolids monitoring program shall be carried out by the Regional District of Nanaimo. The program shall be established in consultation with the Regional Waste Manager.

3.3 Receiving Environment Monitoring

A receiving environment monitoring program shall be carried out by the Regional District of Nanaimo. The program shall be developed in consultation with the Vancouver Island Health Authority, First Nations and the Director.

The proposed monitoring program shall be developed in accordance with the goals and commitments in the approved Regional District of Nanaimo Liquid Waste Management Plan and shall be submitted to the Director for review on or before December 31, 20XX.

Based on the results of this monitoring program, the monitoring requirements may be extended or altered by the Director, who will advise the Regional District of Nanaimo in writing of the altered program requirements.

3.4 Monitoring Procedures

3.4.1 Sampling and Analytical Procedures

Sampling and flow measurement must be carried out in accordance with the procedures described in “BRITISH COLUMBIA FIELD SAMPLING MANUAL for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples, 2003 Edition”, or most recent edition, or by suitable alternative procedures as authorized by the Director.

Analyses are to be carried out in accordance with procedures described in the latest version of BRITISH COLUMBIA ENVIRONMENTAL LABORATORY MANUAL (2009 Edition)", or the most recent edition, or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or 250-387-6409) or via the internet at www.crownpub.bc.ca. A copy of the manual is also available for review at all Environmental Protection offices.

4. REPORTING REQUIREMENTS

4.1 Discharge Reporting

Maintain data of analyses and flow measurements for inspection and submit the data, suitably tabulated, to the Director, Environmental Protection for the previous quarter. With prior written authorization from the Director, Environmental Protection, data may be submitted, suitably formatted on a computer storage media, or with prior arrangement, be electronically transmitted directly to the Ministry of Environment central computer system. Such data must be transmitted quarterly (within 31 days of the end of the quarter) with an annual report completed once per year (within 120 days of the end of the calendar year).

4.2 Receiving Environment Reporting

Receiving environment monitoring results and reports must be submitted to the Director, Environmental Protection in accordance with Subsection 3.3 and must be made available by the Regional District of Nanaimo to the public on request. The report on the receiving environment monitoring results must provide an assessment of the impacts of this discharge on the receiving environment and recommend changes, if any, to the monitoring program. The first report must be submitted on or before April 30th, 20XX.

4.3 Annual Report

An Annual Report, suitable for public review, must be submitted to the Director, Environmental Protection by April 30th of each year, for the preceding calendar year. The Annual Report must include a summary and interpretation, by a qualified professional, of the discharge monitoring results for the preceding calendar year. The Annual Report must include an evaluation of the performance of the treatment works and identify any necessary changes. The Annual Report must include an implementation schedule for any alterations to the treatment and disposal works.

APPENDIX A (SITE PLAN)

DRAFT

**DRAFT OPERATIONAL CERTIFICATE
FRENCH CREEK POLLUTION CONTROL CENTRE**

MINISTRY OF ENVIRONMENT

OPERATIONAL CERTIFICATE

ME-4200

Under the Provisions of the Environmental Management Act

**Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, B.C.
V9T 6N2**

is authorized to discharge effluent from a municipal wastewater collection and treatment system located at French Creek, British Columbia, to the Strait of Georgia and to storage ponds at Morningstar Golf Course, subject to the conditions listed below. Contravention of any of these conditions is a violation of the Environmental Management Act and may result in prosecution.

1. AUTHORIZED DISCHARGES

This section applies to the discharge of effluent from a municipal wastewater treatment system (commonly known as the French Creek Pollution Control Centre), a **MUNICIPAL WASTEWATER TREATMENT PLANT** serving a portion of the Regional District of Nanaimo. The site reference number for this discharge is E241709.

- 1.1** The maximum authorized rate of discharge is 46,100 cubic metres per day to the Strait of Georgia. The maximum authorized rate of discharge is 1,370 cubic metres per day to the Morningstar Golf Course storage ponds.
- 1.2** The average dry weather flow shall not exceed 14,900 cubic metres per day.
- 1.3** The characteristics of the discharge to the Strait of Georgia shall not exceed the following requirements:

Carbonaceous 5-day Biochemical Oxygen Demand	45 mg/L
Total Suspended Solids	45 mg/L
pH	6.0 – 9.0 pH units
Ammonia	As per RDN back calculation following EIS)

The characteristics must be measured based on the sampling procedures and frequencies stipulated under Subsection 3.1.

For that portion of the daily flow in excess of two times the average dry weather flow the characteristics of the discharge to the Strait of Georgia shall not exceed:

Carbonaceous 5-day Biochemical Oxygen Demand	130 mg/L
Total Suspended Solids	130 mg/L
pH	6.0 – 9.0 pH units

The characteristics must be measured based on the sampling procedures and frequencies stipulated under Subsection 3.1.

All flows shall be recombined prior to discharge through the outfall.

- 1.4** The characteristics of the discharge to the Morningstar Golf Course storage ponds shall not exceed the following requirements:

Carbonaceous 5-day Biochemical Oxygen Demand	20 mg/L
Total Suspended Solids	30 mg/L
pH	6.5 – 9.0 pH units

The characteristics must be measured based on the sampling procedures and frequencies stipulated under Subsection 3.1.

- 1.5** The authorized works are as follows:

Wastewater Facility Component	Redundancy Requirement
mechanical screens	Multiple units, 75% of design flow when one tank is out of service
grit removal tanks	Multiple units, 75% of design flow when one tank is out of service
primary sedimentation tanks	Multiple units, 75% of design flow when one tank is out of service
biological reactors	Multiple units, 75% of design flow when one tank is out of service
secondary clarifiers	Multiple units, 75% of design flow when one tank is out of service
auto-thermal aerobic digesters	4 digesters, 75% of maximum design when one digester is out of service
biosolids thickening and dewatering facilities	2 centrifuges, 75% of maximum design when one centrifuge is out of service.

an outfall with a multiple port diffuser extending 2,440 m from mean low water to a depth of 61 m below mean low water, an effluent pumping station and pipeline to convey effluent to the storage ponds at Morningstar Golf course, and related appurtenances approximately located as shown on attached the attached site plan Appendix A).

- 1.6 The location of the facilities from which the effluent originates is legally described as Lot 2, District Lot 28, Nanoose District, Plan 2570 as shown on the attached site plan (Appendix A).
- 1.7 The location of the point of discharge is in the Strait of Georgia 2,440 m off shore at 49°22.007 N, 124°21.319X W, and Morningstar Golf Course storage ponds located in the northern half of Lot A, District Lots 29, 81, 83 and 126, Nanoose District, Plan 49145, except parts in plans VIP51714, VIP52613, VIP76030 and VIP76051 all located approximately as shown on the attached site plan.

2. GENERAL REQUIREMENTS

2.1 Maintenance of Works

The Regional District of Nanaimo must inspect the authorized works regularly and maintain them in good working order.

2.2 Bypasses

The Regional District of Nanaimo shall ensure that no waste is discharged without being processed through the authorized works unless prior written approval is received from the Director.

2.3 Process Modifications

The Director must be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge. Despite notification under this section, authorized discharge rates and characteristics must not be exceeded.

2.4 Plans – New Works

Plans and specifications of new works authorised in subsection 1.5 must be certified and sealed by a qualified professional licensed to practice in the Province of British Columbia, and submitted to the Director before construction. Prior to the commencement of discharge, a qualified professional licensed to practice in the Province of British Columbia must certify that the works have been constructed in accordance with the submitted plans and a copy of final design drawings reflecting the actual construction of authorized works, certified as correct and sealed by a qualified professional, must be provided to the Director.

2.5 Future Upgrading of Works

Based on receiving environment monitoring data and/or other information obtained in connection with this discharge, the Regional District of Nanaimo may be required to provide additional treatment facilities.

The Director may require repair, alteration, removal, improvement or addition to works or construction of new or existing works, and submission of plans and specifications for works specified in this Operational Certificate.

2.6 Posting of Outfall

The Regional District of Nanaimo shall erect a sign on shore along the alignment of the outfall above high water mark. The sign shall identify the nature of the works. The wording and size of the sign must be acceptable to the Director.

2.7 Outfall Inspection

The outfall must be inspected by a qualified professional once every 5 years, or as may otherwise be required by the Director, to ensure it is in good working condition. The inspection must include examination of the entire length of the pipe and diffuser for leaks, breaks and blockages. An inspection report must be submitted to the Director, Environmental Protection, within 60 days after the inspection date. Inspections shall be completed as per existing program.

2.8 Odour Control

Should objectionable odours attributable to the operation of the authorized works occur, measures or additional works will be required to reduce odours to acceptable levels.

Existing odour control facilities shall be maintained in good working order.

2.9 Biosolids Treatment, Disposal and Reuse

Sludge generated by the treatment plant shall be managed in a manner approved by the Director and in accordance with the biosolids management strategies developed in the Regional District of Nanaimo Liquid Waste Management Plan.

2.10 Operating Plan, Including Commissioning and Emergency Procedures

The Regional District of Nanaimo must prepare an Operating Plan that provides for proper operation, maintenance and monitoring of the sewage conveyance, wastewater treatment and disposal facilities, and biosolids management, including monitoring details, emergency procedures and staff education and certification.

The Operating Plan must also include a commissioning plan that addresses operational procedures required to commission the authorized works identified in subsection 1.5, including the monitoring required to demonstrate that no adverse environmental impacts result from commissioning.

The Operating Plan must include a contingency plan that describes emergency procedures for the wastewater facility, including lift stations; procedures for notifying the Director and a health officer; and, actions to be taken if the discharge fails to meet the authorized discharge requirements.

The Director may reduce or suspend the operations to protect the environment until the approved method of pollution control has been restored, and/or corrective steps taken to prevent unauthorized discharge.

The Operating Plan must be submitted to the Director, Environmental Protection within 60 days from Operational Certificate's approval date. The Regional District of Nanaimo must notify the Director of any changes to the Operating Plan within 30 days of implementation.

2.11 Facility Classification and Operator Certification

The Regional District of Nanaimo must have the works authorized by this Operational Certificate classified (and the classification must be maintained) by the Environmental Operators Certification Program Society (Society). The works must be operated and maintained by persons certified within and according to the program provided by the Society. Certification must be completed to the satisfaction of the Director. In addition, the Director must be notified of the classification level of the facility and certification level of the operators and changes of operators and/or operator certification levels within 30 days of any change.

2.12 Qualified Professional

All information including plans, drawings, assessments, investigations, surveys, programs and reports, must be certified by a qualified professional. As-built plans and drawings of the facilities and works must be certified by a qualified professional, as defined in the Municipal Wastewater Regulation (507/99).

3. MONITORING REQUIREMENTS

3.1 Discharge Monitoring

3.1.1 Flow Measurement

Provide and maintain a suitable flow measuring device and record once per day the effluent volume discharged over a 24-hour period for the following:

- The volume of the flow which receives secondary treatment and which is up to no less than two times the average dry weather flow discharged from the municipal wastewater treatment plant to the outfall;

- The volume of the flow, at no less than the excess of two times the average dry weather flow, which bypasses secondary treatment and is discharged from the municipal wastewater treatment plant to the outfall.
- The volume of flow up discharged from the municipal wastewater treatment plant to the storage ponds at Morningstar Golf Course.

3.1.2 Sampling and Analysis

The Regional District of Nanaimo shall install suitable sampling facilities and obtain samples of the discharges from the municipal wastewater treatment plant at the following locations:

- A sampling location representing the portion of the daily discharge which receives secondary treatment, which is no less than two times the average dry weather flow;
- A sampling location representing the portion of the daily discharge which bypasses secondary treatment, which is no less than the excess of two times the average dry weather flow; and
- A sampling location at a point after which the above two discharges are recombined, as authorized in Subsection 1.4.
- A sampling location representing the discharge to the storage ponds at Morningstar Golf Course.

Analyses of effluent samples shall be carried out in accordance with the following schedule:

<u>Parameter</u>	<u>Frequency</u>	<u>Type</u>
Carbonaceous 5-day Biochemical Oxygen Demand	1 times per week	grab
Total Suspended Solids	1 times per week	grab
Ammonia Nitrogen	6 times/year	grab
Fecal Coliform	once monthly	grab
Total Phosphorus	6 times/year	grab
Phosphate Phosphorus	6 times/year	grab

There must be at least 10 days between samples for bi-monthly and monthly samples, and 5 days between samples if required for weekly samples.

Proper care must be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.2 Biosolids Monitoring

A biosolids monitoring program shall be carried out by the Regional District of Nanaimo. The program shall be established in consultation with the Regional Waste Manager.

3.3 Receiving Environment Monitoring

A receiving environment monitoring program shall be carried out by the Regional District of Nanaimo. The program shall be developed in consultation with the Vancouver Island Health Authority, First Nations and the Director.

The proposed monitoring program shall be developed in accordance with the goals and commitments in the approved Regional District of Nanaimo Liquid Waste Management Plan and shall be submitted to the Director for review on or before December 31, 2015.

Based on the results of this monitoring program, the monitoring requirements may be extended or altered by the Director, who will advise the Regional District of Nanaimo in writing of the altered program requirements.

3.4 Monitoring Procedures

3.4.1 Sampling and Analytical Procedures

Sampling and flow measurement must be carried out in accordance with the procedures described in "BRITISH COLUMBIA FIELD SAMPLING MANUAL for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples, 2003 Edition", or most recent edition, or by suitable alternative procedures as authorized by the Director.

Analyses are to be carried out in accordance with procedures described in the latest version of BRITISH COLUMBIA ENVIRONMENTAL LABORATORY MANUAL (2009 Edition)", or the most recent edition, or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or 250-387-6409) or via the internet at www.crownpub.bc.ca. A copy of the manual is also available for review at all Environmental Protection offices.

4. REPORTING REQUIREMENTS

4.1 Discharge Reporting

Maintain data of analyses and flow measurements for inspection and submit the data, suitably tabulated, to the Director, Environmental Protection for the previous six months. With prior written authorization from the Director, Environmental Protection, data may be submitted, suitably formatted on a computer storage media, or with prior arrangement, be electronically transmitted directly to the Ministry of Environment central computer system. Such data must be transmitted twice per year (within 31 days of the end of the half) with an annual report completed once per year (within 120 days of the end of the calendar year).

4.2 Receiving Environment Reporting

Receiving environment monitoring results and reports must be submitted to the Director, Environmental Protection by April 30th of the year following receiving environment sampling and must be made available by the Regional District of Nanaimo to the public on request. The report on the receiving environment monitoring results must provide an assessment of the impacts of this discharge on the receiving environment and recommend changes, if any, to the monitoring program. The first report must be submitted on or before April 30th, 20XX..

4.3 Annual Report

An Annual Report, suitable for public review, must be submitted to the Director, Environmental Protection by April 30th of each year, for the preceding calendar year. The Annual Report must include a summary and interpretation, by a qualified professional, of the discharge monitoring results for the preceding calendar year.

APPENDIX A (SITE PLAN)

DRAFT

**DRAFT OPERATIONAL CERTIFICATE
NANOOSE BAY POLLUTION CONTROL CENTRE**

MINISTRY OF ENVIRONMENT

OPERATIONAL CERTIFICATE

ME-XXXX

Under the Provisions of the Environmental Management Act

Regional District of Nanaimo

6300 Hammond Bay Road

Nanaimo, B.C.

V9T 6N2

is authorized to discharge effluent from a municipal wastewater collection and treatment system located on the Nanoose Peninsula, British Columbia to the Strait of Georgia, subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may result in prosecution.

1. **AUTHORIZED DISCHARGES**

This section applies to the discharge of effluent from a municipal wastewater treatment system (commonly known as the Nanoose Bay Pollution Control Centre), a **MUNICIPAL WASTEWATER TREATMENT PLANT** serving a portion of the Regional District of Nanaimo. The site reference number for this discharge is EXXXXX.

1.1 The maximum authorized rate of discharge is 2,760 cubic metres per day.

1.2 The average dry weather flow shall not exceed 530 cubic metres per day.

1.3 **UNTIL DECEMBER 31, 20XX**, the characteristics of the discharge to the Strait of Georgia shall not exceed the following requirements:

Carbonaceous 5-day Biochemical Oxygen Demand	100 mg/L
Total Suspended Solids	100 mg/L
pH	6.0 – 9.0 pH units
Ammonia	(As per RDN back calculation following EIS)

The characteristics must be measured based on the sampling procedures and frequencies stipulated under Subsection 3.1.

1.4 **ON OR BEFORE DECEMBER 31, 20XX**, for that portion of the flow up to two times the average dry weather flow, the characteristics of the discharge to the Strait of Georgia shall not exceed the following requirements:

Carbonaceous 5-day Biochemical Oxygen Demand	45 mg/L
Total Suspended Solids	45 mg/L
pH	6.0 – 9.0 pH units
Ammonia	As per RDN back calculation following EIS

For that portion of the daily flow in excess of two times the average dry weather flow the characteristics of the discharge to the Strait of Georgia shall not exceed:

Carbonaceous 5-day Biochemical Oxygen Demand	130 mg/L
Total Suspended Solids	130 mg/L
pH	6.0 – 9.0 pH units

The characteristics must be measured based on the sampling procedures and frequencies stipulated under Subsection 3.1.

All flows shall be recombined prior to discharge through the outfall.

1.5 The authorized works must be complete and in operation as follows:

1.5.1 UNTIL DECEMBER 31, 20XX, mechanical screens, grit removal tanks, primary sedimentation tanks, odour control facilities, and an outfall with a x port diffuser extending approximately 450 metres m from mean low water to a depth of 39 m below mean low water, and related appurtenances approximately located as shown on attached the attached site plan (Appendix A), on and from the date of this Operational Certificate

ON OR BEFORE DECEMBER 31, 20XX the design of the wastewater facility meets the requirements of section 1.4 and the components each meet 75% of design flow when one unit in that component is out of service and an outfall with multiple port diffuser extending approximately 450 m from mean low water to a depth of 39 m below mean low water.

1.6 The location of the facilities from which the effluent originates is legally described as Lot A, District Lot 30, Nanoose District, Plan 52451, as shown on the attached site plans (Appendix A).

1.7 The location of the point of discharge is in the Strait of Georgia at 49.291° N, 124.129 W, as approximately shown on the attached site plan.

2. GENERAL REQUIREMENTS

2.1 Maintenance of Works

The Regional District of Nanaimo must inspect the authorized works regularly and maintain them in good working order.

2.2 Bypasses

The Regional District of Nanaimo shall ensure that no waste is discharged without being processed through the authorized works unless prior written approval is received from the Director.

2.3 Process Modifications

The Director must be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge. Despite notification under this section, authorized discharge rates and characteristics must not be exceeded.

2.4 Plans – New Works

Plans and specifications of new works authorised in subsection 1.5 must be certified and sealed by a qualified professional licensed to practice in the Province of British Columbia, and submitted to the Director before construction. Prior to the commencement of discharge, a qualified professional licensed to practice in the Province of British Columbia must certify that the works have been constructed in accordance with the submitted plans and a copy of final design drawings reflecting the actual construction of authorized works, certified as correct and sealed by a qualified professional, must be provided to the Director.

2.5 Future Upgrading of Works

Based on receiving environment monitoring data and/or other information obtained in connection with this discharge, the Regional District of Nanaimo may be required to provide additional treatment facilities.

The Director may require repair, alteration, removal, improvement or addition to works or construction of new or existing works, and submission of plans and specifications for works specified in this Operational Certificate.

2.6 Disinfection (to be determined by EIS)

Although disinfection of the effluent is not required at this time, suitable provisions should be made to include disinfection facilities in the future. Disinfection by chlorination is not permitted; other methods such as ultra violet and ozone shall be used.

2.7 Posting of Outfall

The Regional District of Nanaimo shall erect a sign on shore along the alignment of the outfall above high water mark. The sign shall identify the nature of the works. The wording and size of the sign must be acceptable to the Director.

2.8 Outfall Inspection

The outfall must be inspected by a qualified professional once every 5 years, or as

may otherwise be required by the Director, to ensure it is in good working condition. The inspection must include examination of the entire length of the pipe and diffuser for leaks, breaks and blockages. An inspection report must be submitted to the Director, Environmental Protection, within 60 days after the inspection date. Inspections shall be completed as per existing program..

2.9 Odour Control

Should objectionable odours attributable to the operation of the authorized works occur, measures or additional works will be required to reduce odours to acceptable levels.

2.10 Treatment Plant Sludge Wasting and Disposal

Sludge generated by the treatment plant shall be managed in a manner approved by the Director and in accordance with the biosolids management strategies developed in the Regional District of Nanaimo Liquid Waste Management Plan.

2.11 Operating Plan, Including Commissioning and Emergency Procedures

The Regional District of Nanaimo must prepare an Operating Plan that provides for proper operation, maintenance and monitoring of the sewage conveyance, wastewater treatment and disposal facilities, and biosolids management, including monitoring details, emergency procedures and staff education and certification.

The Operating Plan must also include a commissioning plan that addresses operational procedures required to commission the authorized works identified in subsection 1.5, including the monitoring required to demonstrate that no adverse environmental impacts result from commissioning.

The Operating Plan must include a contingency plan that describes emergency procedures for the wastewater facility, including lift stations; procedures for notifying the Director and a health officer; and, actions to be taken if the discharge fails to meet the authorized discharge requirements.

The Director may reduce or suspend the operations to protect the environment until the approved method of pollution control has been restored, and/or corrective steps taken to prevent unauthorized discharge.

The Operating Plan must be submitted to the Director, Environmental Protection within 60 days from Operational Certificate's approval date. The Regional District of Nanaimo must notify the Director of any changes to the Operating Plan within 30 days of implementation.

2.12 Facility Classification and Operator Certification

The Regional District of Nanaimo must have the works authorized by this Operational Certificate classified (and the classification must be maintained) by the Environmental Operators Certification Program Society (Society). The works must be

operated and maintained by persons certified within and according to the program provided by the Society. Certification must be completed to the satisfaction of the Director. In addition, the Director must be notified of the classification level of the facility and certification level of the operators and changes of operators and/or operator certification levels within 30 days of any change.

2.13 Qualified Professional

All information including plans, drawings, assessments, investigations, surveys, programs and reports, must be certified by a qualified professional. As-built plans and drawings of the facilities and works must be certified by a qualified professional, as defined in the Municipal Wastewater Regulation (507/99).

3. MONITORING REQUIREMENTS

3.1 Discharge Monitoring

3.1.1 Flow Measurement

(a) This section applies to the discharge authorized in Subsection 1.3.

Provide and maintain a suitable flow measuring device and record once per day the effluent volume discharged over a 24-hour period from the municipal wastewater treatment plant to the outfall.

(b) This section applies to the discharge authorized in Subsection 1.4.

ON OR BEFORE DECEMBER 31, 20XX provide and maintain a suitable flow measuring device and record once per day the effluent volume discharged over a 24-hour period for the following:

- The volume of the flow which receives secondary treatment and which is up to no less than two times the average dry weather flow discharged from the municipal wastewater treatment plant to the outfall; and,
- The volume of the flow, at no less than the excess of two times the average dry weather flow, which bypasses secondary treatment and is discharged from the municipal wastewater treatment plant to the outfall.

3.1.2 Sampling and Analysis

Effluent samples shall be collected as follows:

(a) **UNTIL DECEMBER 31, 20XX** the Regional District of Nanaimo shall maintain a suitable sampling facility and obtain samples of the discharge from the municipal wastewater treatment plant.

(b) **ON OR BEFORE DECEMBER 31, 20XX** the Regional District of

Nanaimo shall install suitable sampling facilities and obtain samples of the discharges from the municipal wastewater treatment plant at the following locations:

- A sampling location representing the portion of the daily discharge which receives secondary treatment, which is no less than two times the average dry weather flow;
- A sampling location representing the portion of the daily discharge which bypasses secondary treatment, which is no less than the excess of two times the average dry weather flow; and
- A sampling location at a point after which the above two discharges are recombined, as authorized in Subsection 1.4.

Analyses of effluent samples shall be carried out in accordance with the following schedule:

<u>Parameter</u>	<u>Frequency</u>	<u>Type</u>
Carbonaceous 5-day Biochemical Oxygen Demand	monthly	grab
Total Suspended Solids	monthly	grab
Ammonia Nitrogen	quarterly	grab
Phosphate Phosphorus	quarterly	grab
Total Phosphorus	quarterly	grab
Fecal Coliform	6 times/year	grab

There must be at least 2 months between samples for quarterly samples, and 10 days between samples for monthly samples

Proper care must be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.2 Biosolids Monitoring

A biosolids monitoring program shall be carried out by the Regional District of Nanaimo. The program shall be established in consultation with the Regional Waste Manager.

3.3 Receiving Environment Monitoring

A receiving environment monitoring program shall be carried out by the Regional District of Nanaimo. The program shall be developed in consultation with the Vancouver Island Health Authority, First Nations and the Director.

The proposed monitoring program shall be developed in accordance with the goals and commitments in the approved Regional District of Nanaimo Liquid Waste Management Plan and shall be submitted to the Director for review on or before December 31, 20XX.

Based on the results of this monitoring program, the monitoring requirements may be extended or altered by the Director, who will advise the Regional District of Nanaimo in writing of the altered program requirements.

3.4 Monitoring Procedures

3.4.1 Sampling and Analytical Procedures

Sampling and flow measurement must be carried out in accordance with the procedures described in "BRITISH COLUMBIA FIELD SAMPLING MANUAL for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples, 2003 Edition", or most recent edition, or by suitable alternative procedures as authorized by the Director.

Analyses are to be carried out in accordance with procedures described in the latest version of BRITISH COLUMBIA ENVIRONMENTAL LABORATORY MANUAL (2009 Edition)", or the most recent edition, or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or 250-387-6409) or via the internet at www.crownpub.bc.ca. A copy of the manual is also available for review at all Environmental Protection offices.

4. REPORTING REQUIREMENTS

4.1 Discharge Reporting

Maintain data of analyses and flow measurements for inspection and submit the data, suitably tabulated, to the Director, Environmental Protection for the previous six months. With prior written authorization from the Director, Environmental Protection, data may be submitted, suitably formatted on a computer storage media, or with prior arrangement, be electronically transmitted directly to the Ministry of Environment central computer system. Such data must be transmitted semi-annually (within 31 days of the end of the half year).

4.2 Receiving Environment Reporting

Receiving environment monitoring results and reports must be submitted to the Director, Environmental Protection by April 30th of the year following receiving environment sampling and must be made available by the Regional District of Nanaimo to the public on request. The report on the receiving environment monitoring results must provide an assessment of the impacts of this discharge on the receiving environment and recommend changes, if any, to the monitoring program. The first report must be submitted on or before April 30th, 20XX.

APPENDIX A (SITE PLAN)

DRAFT

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE
REGIONAL PARKS AND TRAILS SELECT COMMITTEE MEETING
HELD ON TUESDAY, DECEMBER 3, 2013 AT 11:30PM
IN THE RDN COMMITTEE ROOM

Attendance: Director Diane Brennan, Chair, City of Nanaimo
Director Howard Houle, Electoral Area 'B'
Director Maureen Young, Electoral Area 'C',
Director Joe Stanhope, Electoral Area 'G'
Director Dave Willie, Town of Qualicum Beach
Director Brian Dempsey, District of Lantzville
Director Marc Lefebvre, City of Parksville

Staff: Tom Osborne, General Manager of Recreation and Parks
Paul Thorkelsson, Chief Administrative Officer
Wendy Marshall, Manager of Park Services
Kelsey Cramer, Regional Parks Planner
Margaret Paridaen, Parks Planner
Ann-Marie Harvey, Recording Secretary

Regrets: Director Julian Fell, Electoral Area 'F'

CALL TO ORDER

Chair Brennan called the meeting to order at 11:30pm.

MOVED Director Lefebvre, SECONDED Director Stanhope that the agenda be approved.

CARRIED

MINUTES

MOVED Director Houle, SECONDED Director Dempsey that the minutes of the Regular Regional Parks and Trails Select Committee meeting held June 4, 2013 be approved.

CARRIED

COMMUNICATIONS/CORRESPONDENCE

MOVED Director Dempsey, SECONDED Director Lefebvre that the following correspondence be received:

K. Fulton, Nature Conservancy of Canada to T. Osborne, RDN, **RE: Conservation Covenant with NCC**

J. MacNaughton, S. MacNaughton, to T. Osborne, RDN, **RE: Horne Lake Roads**

MOVED Director Dempsey, SECONDED Director Stanhope that a letter be sent to J. & S. MacNaughton in response to their July 9, 2013 letter regarding the condition of Horne Lake Road advising them of the government bodies that maintain the road.

CARRIED

REPORTS

Monthly Update of Community and Regional Parks and Trails Projects June-October 2013 (verbal)

Ms. Marshall gave a verbal update of the Regional Parks and Trail Projects. She noted that the costing has started for Horne Lake Regional Parks upgrades to the boat ramp and parking lot. Moorecroft caretaker agreement has been renewed and staff have been happy with their service. Ms. Marshall said that staff met with the Trans Canada Trail organization, E & N Spine Trail organization, CowVRD & CRD staff to collaborate and see if the TCT trail will be completed for 2017 and how the E & N can work into that. Little Qualicum Regional Park had some invasive plant removal and 1,000 new plants planted to maintain the vegetation.

MOVED Director Stanhope, SECONDED Director Young that the update be received.

CARRIED

Islands Trust Park Rezoning Bylaw Parks Report

Mr. Osborne summarized the report to the committee.

MOVED Director Houle, SECONDED Director Lefebvre that the Island Trust Park Rezoning Bylaw Report be received.

CARRIED

Benson Creek Falls Management Plan Report

Ms. Marshall gave a presentation of the Benson Creek Falls Management Plan to the committee.

After discussion, Mr. Osborne noted that based on the comments and feedback from the committee, that staff would make some amendments with regards to the renewal of the land lease timeline for when the report goes to the Board so that some certainty is attained when the Capital projects can proceed.

MOVED Director Young, SECONDED Director Lefebvre that the 2014-2024 Benson Creek Falls Management Plan be approved.

CARRIED

Parks Trails Guidelines Report

MOVED Director Dempsey, SECONDED Director Houle that the Parks and Trails Guidelines Report be approved and adopted as a guide for parks and trail development and operations.

CARRIED

IN CAMERA

MOVED Director Stanhope, SECONDED Director Dempsey, that pursuant to Section 90(1) (e) of the Community Charter the Committee proceed to an In Camera Committee meeting to consider items related to land issues.

Time: 12:25

CARRIED

NEW BUSINESS

Morden Mine Tipple

Director Young provided a copy of a letter from Canadian Historical Society that the Morden Mine Society's application was turned down.

Mr. Osborne updated that staff had direction to work with the Morden Mines Society to secure the site. Staff have not been able to locate the engineering report estimating the cost of stabilizing the tipples and maybe the lack of this information may be the reason behind the society being turned down.

MOVED Director Young, SECONDED Director Houle that the letter from the Canadian Historical Society regarding the Morden Mine Tipple be referred to the next Regional Parks and Trail Select Committee meeting.

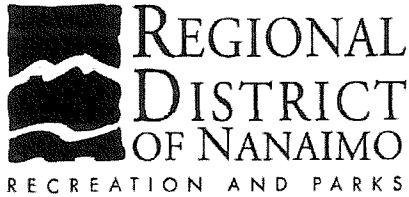
CARRIED

ADJOURNMENT

MOVED Director Young that the meeting be adjourned at 1:30pm

CARRIED

Chair



CAP APPROVAL		###
EAP		
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RHD		
BOARD		
RPTSC		

MEMORANDUM

TO: Wendy Marshall
Manager of Parks Services

DATE: November 26, 2013

FROM: Margaret Paridaen
Parks Planner

FILE:

SUBJECT: Benson Creek Falls Regional Park Management Plan 2014-2024

PURPOSE

To review and approve the Benson Creek Falls Regional Park (BCF) Management Plan 2014-2024.

BACKGROUND

In February 2013, the Regional Board approved the Terms of Reference for a Management Plan Update for BCF. The 2014-2024 plan has now been completed.

The 31.3 hectare (78 acres) Benson Creek Falls Regional Park (BCF) was established in August 1, 1991 through a lease with the Province of British Columbia for a period of 30 years, to August 2021. The site's steep topography, diverse and fragile habitats, combined with growing recreation pressures and safety concerns indicate the need for an updated comprehensive management plan that protects the conservation values and manages positive visitor experiences into the future.

The first management plan, completed in 1999, outlined vision and recommendations for the operations and development of the park. The 2014-24 plan updates the 1999 Benson Creek Falls Management Brief by filling information gaps; providing an updated long-term vision; and, identifying a focused set of policies and actions to guide the operations, development, and stewardship of the park over the next ten years. The plan is to be reviewed after five years (2019) and updated formally at ten-year intervals.

The BCF Management Plan process was carried out between May 2013 and November 2013 with support from the firm, Golder and Associates Ltd. The creation of the Management Plan was overseen by RDN park staff and the BCF Advisory Committee composed of two members of the Regional Parks & Trails Select Committee.

Through research, analysis, public and stakeholder engagement, the management planning process identified several issues present in BCF related to public safety, environmental protection and visitor amenities. These included the need for improved access to Ammonite Falls; bridging over Benson Creek;

the need for improved access and off-road parking at Jameson Road and improved parking at Weigles Rd; as well as the need for improved signage and wayfinding throughout the park.

In response to the issues identified in BCF, a 10-year Implementation Plan was developed as part of the plan.

- Key immediate actions (1-2 years) include developing off-road parking at Jameson Road (\$10,000-\$20,000); geotechnical review for stairs and Benson Creek bridge (\$20,000); engineering design for stair access to Ammonite Falls (\$30,000); and Ammonite Falls stairs construction and slope remediation (\$245,000-\$295,000).
- Key short-term actions (3-5 years) include new Jameson Road Access Route (\$19,000); and signage program (\$19,000).
- Key medium priority (5-10 years) actions include Benson Creek bridge design (\$25,000) and construction (\$320,000-\$440,000); Benson Creek slope remediation (\$40,000); trailhead and trail improvements (\$25,000); Weigles Rd parking improvements (\$7,000); and "at risk" amphibian surveys (\$8,000).

ALTERNATIVES

1. The Benson Creek Falls Regional Park Management Plan be approved as presented.
2. The Benson Creek Falls Regional Park Management Plan not be approved and alternative direction be provided.

FINANCIAL IMPLICATIONS

Several projects outlined in Section 7 of the Management Plan impact the capital and operation budgets for the next 10 years. The 2014 Regional Parks Preliminary Capital Budget includes funding for developing a parking lot at Jameson Road, the geotechnical review and the engineering design and stair construction at the falls. Other costs associated with actions identified in Section 7 have been outlined in a cost estimate matrix attached to the Management Plan.

Funding for development projects and administrative activities will be through the Regional Parks Capital and Operational Budgets which will be reviewed and prioritized annually as part of the budget review process. It is also possible that funding may be augmented by project partnerships and applicable grant funding.

PUBLIC CONSULTATION IMPLICATIONS

Several engagement strategies were used to seek input for the BCF Management Plan update: park signage, two Open House sessions, two surveys (which were offered as on-line postings), website updates, social media postings, select interviews with stakeholders, and email and phone correspondence with interested members of the public.

Stakeholder consultations including in person and phone interviews and email communications were also conducted with adjacent land owners and a range of organizations, agencies and individuals that

had interests in the park. First Nations, with traditional territories in the vicinity of the park, were invited to discuss interests and concerns for the park - Snuneymuxw, Snaw-naw-as, Stz-uminus First Nations and the Te'Mexw Treaty Association. No direct concerns or issues were received from First Nations during the project term.

STRATEGIC PLAN IMPLICATIONS

The vision, goals and action items of the Management Plan emphasize the protection and enhancement of BCF's streams, ravines and environmental features which in turn, help protect water and critical natural habitat. Under this management plan the majority of the park will be kept undeveloped for protection of habitat. For example trails will be kept outside of the root zones and drip lines of veteran trees. The construction of stair access to Ammonite Falls will allow safer designated access to the Falls, and will allow for the remediation and protection of the eroded embankments.

These actions support the strategic goals of providing recreational opportunities while meeting conservation objectives, and of incorporating innovative environmental practices for environmental protection. Safe and enjoyable opportunities for recreation and visitor education in the park also meet the strategic goal of enhancing the recreational experience and opportunities for the region's increasingly diverse population.

The Plan includes working with community partners such as VIU for baseline studies to help understand and mitigate visitor impacts. As well, there is opportunity to support the ecological and riparian restoration activities of groups such as the BC Conservation Foundation (BCCF). These partnering relationships are in line with the strategic goal of fostering public knowledge and an ethic of stewardship of our shared natural resources.

SUMMARY

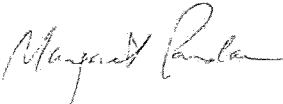
In February 2013, the Regional Board approved the Terms of Reference to develop a Management Plan Update for Benson Creek Falls Regional Park that would guide the day-to-day and longer term operations and administration of the park for ten years.

The Management Plan outlines the long-term vision, management principles and goals for the park and provides specific policies and actions for the management and stewardship of the natural and recreational features of the park.

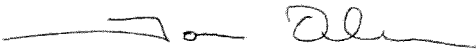
At present Benson Creek Falls Regional Park remains a very popular park for residents and guests to the region, however if left in its current state, pressures caused by its high recreational use will continue to degrade the park and protecting the areas high ecological values will be more challenging in time. The Management Plan as presented provides direction to ensure the natural qualities of the park can be restored and for the site to developed in manner that will enhance the recreational experience and opportunities for the region's growing population.

RECOMMENDATION

That the 2014-2024 Benson Creek Falls Regional Park Management Plan be approved.



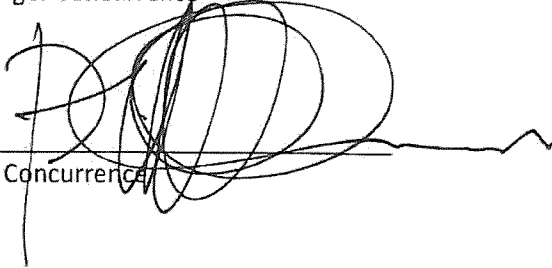
Report Writer



General Manager Concurrence



Manager Concurrence



CAO Concurrence

Appendix I:

Benson Creek Falls Regional Park Management Plan 2014-2024



Benson Creek Falls Regional Park Management Plan Update

**FINAL PLAN
FOR BOARD REVIEW
January 2014**

DRAFT

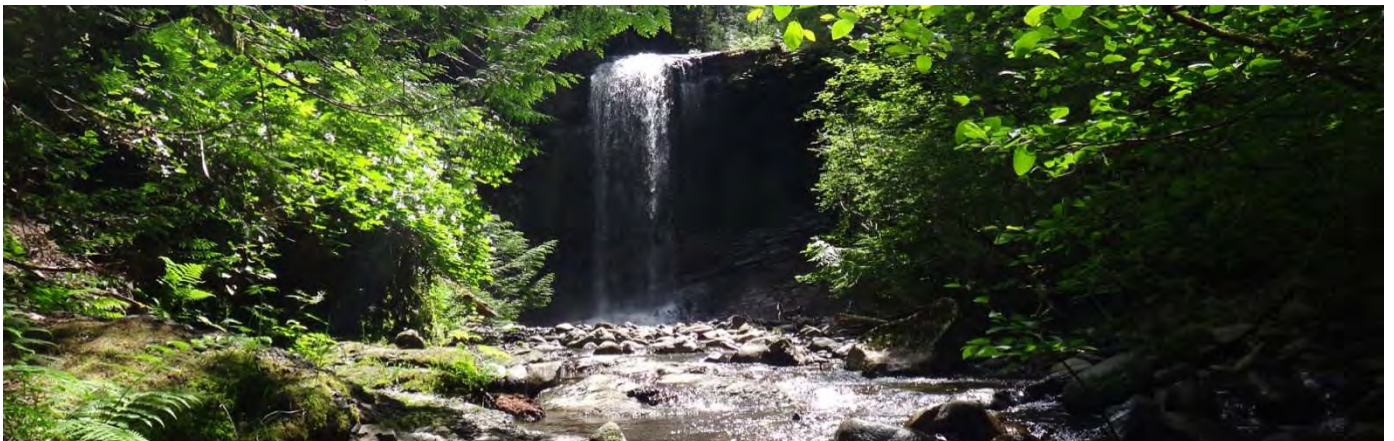




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APPENDICES

- Appendix A: 1999 Plan Action Summary
- Appendix B: Park History
- Appendix C: Summary of Public and Stakeholder Consultation
- Appendix D: Stakeholder Consultation List
- Appendix E: Environmental Overview of Benson Creek Falls Regional Park, Ursus Environmental, March 22, 2013



ACKNOWLEDGEMENTS

This plan has been prepared under the guidance of the Benson Creek Regional Park Staff Working Group, which included:

Wendy Marshall, Manager of Park Services, RDN

Margaret Paridaen, Regional Parks Planner, RDN

Kelsey Cramer, Regional Parks Planner, RDN

Input into plan development and review of draft materials was provided by the Benson Creek Falls Regional Park Advisory Committee, which included the following members of the Regional Parks & Trails Select Committee:

Brian Dempsey, Regional District Board Director

Maureen Young, Regional District Board Director

The support, commitment and vision of the members of these committees were central to the development of the project.

Review of the final plan was provided by the Regional Parks & Trails Select Committee.

Thank you to MFLNRO Environment, the Ministry of Transportation and Infrastructure, adjacent landowners and woodlot managers for participating in discussions during the plan development and for continued discussions for park improvements.

To the many citizens, neighbours, organizations and park users who provided input and ideas for the management plan through the online park survey, public open houses and comments on the draft plan – thank you for your time, insights and ideas.

Environmental base information, support and files provided by Joe Materi, R.P.Bio., Ursus Environmental Consulting.

This report was prepared by Golder Associates Ltd.

Anne-Marie Whittaker, Planner

Jana Zelenski, Associate, Landscape Architect

David Reid, Principal, Landscape Architect





1.0 EXECUTIVE SUMMARY

The first Management Plan Brief for Benson Creek Falls Regional Park (BCFRP) was prepared by the Regional District of Nanaimo (RDN) in 1999. This initial plan set a framework for the park's vision, use and future development. To achieve the vision, the plan outlined recreation and environmental objectives and recommended actions.

The 2014-2024 Benson Creek Falls Regional Park Management Plan updates the 1999 Benson Creek Falls Management Plan Brief. Specifically, this updated plan:

- fills information gaps;
- provides an updated long-term vision; and
- identifies a focused set of short-term policies and actions for the period of 2014 - 2024.

Park Overview

Benson Creek Falls Regional Park is forested in character, with second-growth trees and understorey. Key features within the park are the steep-sided ravines, which are 20 m to 50 m deep and follow Benson Creek and Flynnfall Creek, the two main watercourses that traverse the park.

Flynnfall Falls, located at the confluence of these two creeks are approximately 10 metres high. Upstream from the confluence along Benson Creek are Benson Creek Falls, also known as Ammonite Falls. These falls are 15 m to 20 m in height and are a main park attraction.

The park contains an established network of unmaintained trails. These trails are predominately used by residents for dog walking, recreational hiking, mountain biking, trail running and bird watching.

Park Vision & Goals

The following vision guides the Management Plan:

Benson Creek Falls Regional Park is a Regional Natural Area with high habitat value, environmentally sensitive areas and regionally significant geological and ecological features. The Park will continue to provide nature-based recreation and stewardship activities to nearby residents and visitors and be a place to connect with nature for many years to come.



Park Concept

In the next phase of park development, it is envisioned there will be several improvements to trails, facilities, signage and promotion of the park. A primary 'maintained' trail route from Weigles Road, crossing Benson Creek, extending to the Ammonite Falls, and out to Jameson Road is a future goal for the park. Secondary trail loops will provide park users with alternate trail options. Negotiation of agreements to cross adjoining crown and private lands will allow proper signage and trail building to support this system.

Trailheads, kiosks with trail maps and trail markers along the main routes will reinforce the network and support navigation for visitors. Interpretive signage will promote appreciation and respect of the park and provide educational value for key park assets such as, environmental and habitat values, geology and land uses.

Proposed upgrades and addition of amenities will support user safety, limit liability and reduce ongoing erosion and vegetation damage associated with access to steep slopes and sensitive areas. In the short-term, a viewing platform and stair access to Ammonite Falls will support safe access to the main destination of the park. In the longer-term, a proper bridge crossing is envisioned at Benson Creek to replace the current fallen log crossing.

To maintain and improve access to the park from the south, the plan proposes to establish an official park entry point at Jameson Road. This entry is anticipated as a managed access point with a formal trail route, off-road parking and trail signage.

Map 5 outlines an overall summary of the key recommended Benson Creek Park Management Plan for the next phase of park management and development.

Key Actions

Seven immediate actions (1-2 year timeframe), seven short-term priority actions (3-5 year timeframe) and eight medium priority (5-10 year timeframe) capital and operational actions are identified in the Implementation Plan (Section 7.0). In addition, four ongoing actions are identified, which do not have a specific timeframe or budget requirement, but involve RDN staff time, and possible partnerships, volunteers, or external participation from consultants or contractors.



Key immediate implementation actions (1-2 years) include:

- Application to MFLNRO for renewal of the lease and exploration of options for tenure (staff time and potential legal costs)
- Development of off-road parking area at the Jameson Road access area (\$10,000 - \$20,000)
- Geotechnical engineering review for both the Ammonite Falls descent and the Benson Creek crossing (\$20,000)
- Engineering design and environmental management planning for stair access to Ammonite Falls (\$30,000)
- Development of stair access to Ammonite Falls including remediation for eroded slopes (\$245,000 - \$295,000)

Key short-term implementation actions (3-5 years) include:

- Formalization and development of a Jameson Road access route to RDN Parks standards (\$19,000)
- Design and implementation of a signage program for the park that includes park entry, park maps, trail markers, regulatory and cautionary signage and boundary markers (\$19,000)

Key medium-term implementation actions (5-10 years) include:

- Engineered design (\$25,000) and construction of a bridge crossing over Benson Creek (\$320,000 - \$440,000)
- Trail improvements to the Benson Creek bridge descent and slope remediation (\$40,000)
- Improvements to Weigles Road parking and trailhead development at both Weigles and Jameson Access routes (\$23,000)
- Other trail improvements (\$9,000)





2.0 INTRODUCTION

2.1 About the Plan



*Ammonite Falls at Benson Creek
Regional Park.*

The first Management Plan Brief for Benson Creek Falls Regional Park (BCFRP) was prepared by the Regional District of Nanaimo (RDN) in 1999. This initial plan set a framework for the park's vision, use and future development. To achieve the vision, the plan outlined recreation and environmental objectives and recommended actions. To date, several of the 1999 actions have been implemented. See **Appendix A: 1999 Plan Action Summary** for a summary of implementation actions from the 1999 Plan, the current status of these actions and a cross-reference to the 2013 Plan.

The 2014-2024 Benson Creek Falls Regional Park Management Plan updates the 1999 Benson Creek Fall Management Plan Brief. This Plan builds upon previous studies and investigates current conditions and priorities for the park that will help guide future recreational management, environmental stewardship and development actions.

Specifically, this updated plan:

- fills information gaps;
- provides an updated long-term vision; and
- identifies a focused set of short-term policies and actions for the period of 2014 - 2024.

The Management Plan Update has been informed by a public and stakeholder consultation process to review and explore with stakeholders, community groups and residents relevance of the existing vision, objectives and actions in the 1999 Brief and where new ideas and directions were desirable for the park's next phase of development. The consultation process is described in **Section 3.0: Planning Process**.

The BCFRP Management Plan is to be reviewed after five years (2019) and updated formally at ten years (2024).



2.2 Park Overview

Benson Creek Falls Regional Park is located less than 2 km from the Nanaimo City limits), at the confluence of Benson Creek and Flynnfall Creek, within Electoral Area C: Extension, Arrowsmith-Benson, East Wellington, Pleasant Valley of the Regional District of Nanaimo.

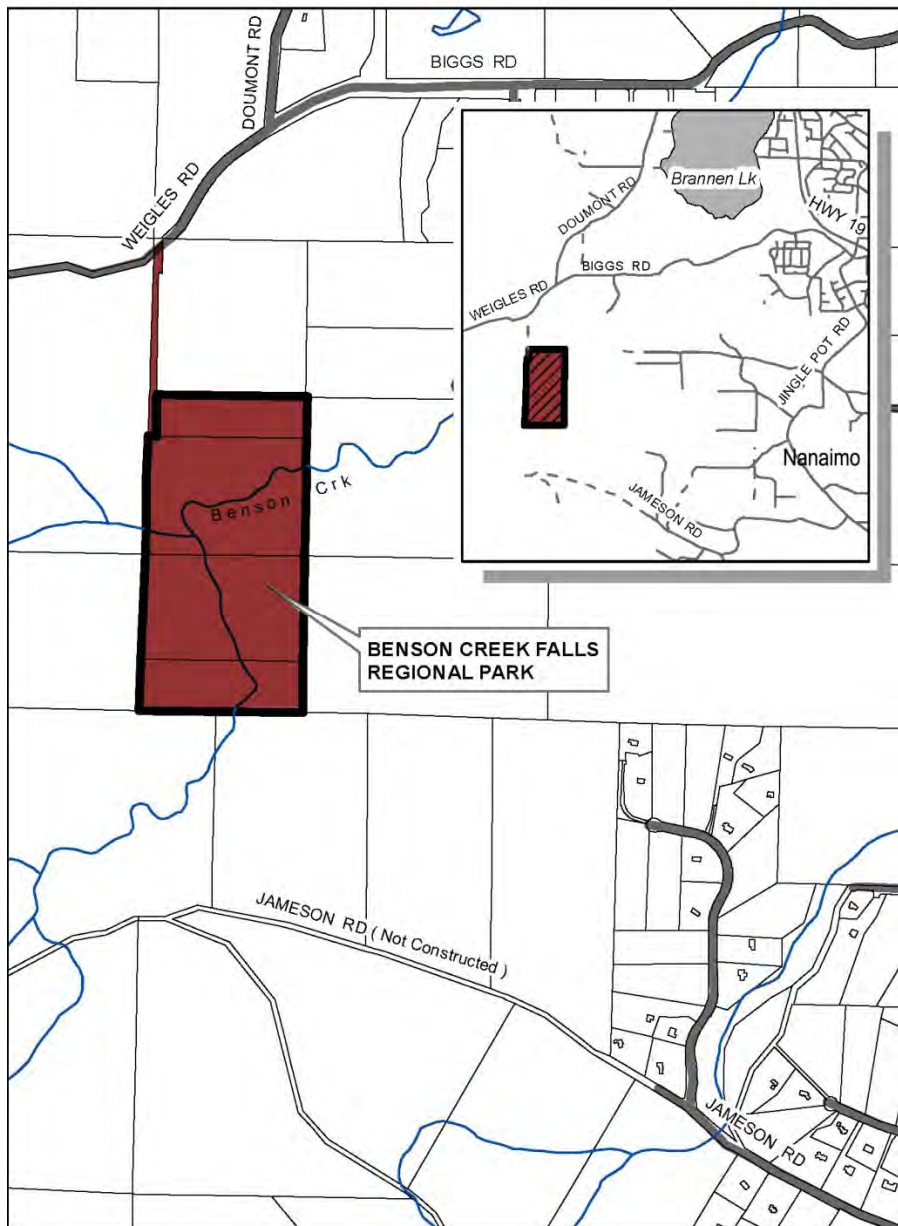


Figure 1: Location & Context Map



Benson Creek Falls was first identified for Park Status consideration in the early 1960s when a 201.8 acre section of land was proposed for Provincial Park. As a result of these early proposals, in 1969, a BC Map Reserve (Recreation) was designated for 80 acres of the land. The Map Reserve designation remained until 1984.

When the designation was cancelled, the Regional District of Nanaimo began negotiations with the Province to preserve the area around Benson Creek Falls as Regional Park. On August 1, 1991 the Province issued Lease #103987 to the RDN for Benson Creek Falls to be used for regional park purposes for a period of 30 years. Benson Creek Falls Regional Park was the second designated Regional Park created in the RDN.



Typical forest character at BCFRP.

Benson Creek Falls Regional Park is forested in character, with second-growth trees and understorey. Key features within the park are the steep-sided ravines, which are 20 m to 50 m deep and follow Benson Creek and Flynnfall Creek, the two main watercourses that traverse the park. Several other tributary streams occur within the park, but are typically dry in summer, including Hoskins Creek which flows eastward through the park near the north boundary.

Flynnfall Falls, located at the confluence of these two creeks are approximately 10 metres high. Upstream from the confluence along Benson Creek are Benson Creek Falls, also known as Ammonite Falls. These falls are 15 m to 20 m in height and are a main park attraction.

The park contains an established network of unmaintained trails. These trails are predominately used by residents for dog walking, recreational hiking, mountain biking, trail running and bird watching. In addition to informal use, a number of community and recreational groups use the park for tourism and recreation.



2.3 Park Planning Context

The Regional District of Nanaimo (RDN) manages approximately 2,026 hectares of regional park, trail and conservation lands in the mid-Vancouver Island area along with another 584 hectares of neighbourhood or community park and trails.

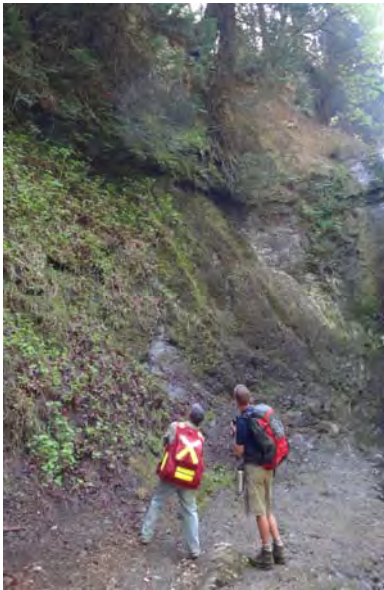
A Regional Parks and Trails Plan, completed in 2005, sets out the goals of the RDN in respect to land management, stewardship and recreational use of regionally significant properties. The RDN seeks to protect and steward the lands while at the same time, provide rewarding and educational outdoor recreational experiences. An overarching management goal for these lands is to strike a sustainable balance between environmental protection and human use.



3.0 PLANNING PROCESS

3.1 Approach Overview

The BCFRP Management Plan Update was completed in three phases. The three phases and key steps in the planning process are described below and shown in **Figure 1: Planning Process Diagram** (next page).



Phase 1 of the project included site reviews to observe and collect information about the park today.

Phase 1: Project Initiation

Phase 1 of the process involved mapping park areas, completing site reviews and collecting information about the park's current use. This phase was an opportunity to identify key issues and develop a greater understanding of the current vision for the park. Consultations during this phase included an initial park user survey, stakeholder engagement and a public open house to gather input and ideas.

Phase 2: Draft Master Plan Concept & Management Plan

Phase 2 used the information collected in Phase 1 to prepare an initial draft plan. This plan contained background about technical information (e.g. environmental values, existing trails, etc.) and park uses. Using input from park users, residents and stakeholder groups, the draft plan outlined an updated vision and set of proposed actions for managing BCFRP over the coming decade. The draft plan was provided for review at public open house #2, where public and stakeholders were asked for their feedback on the draft plan and areas for refinement.

Phase 3: Final Management Plan

In Phase 3, the draft plan was refined in response to public and stakeholder feedback and internal review. The final management plan was presented to the Regional District of Nanaimo Parks & Trails Select Committee for review and consideration.

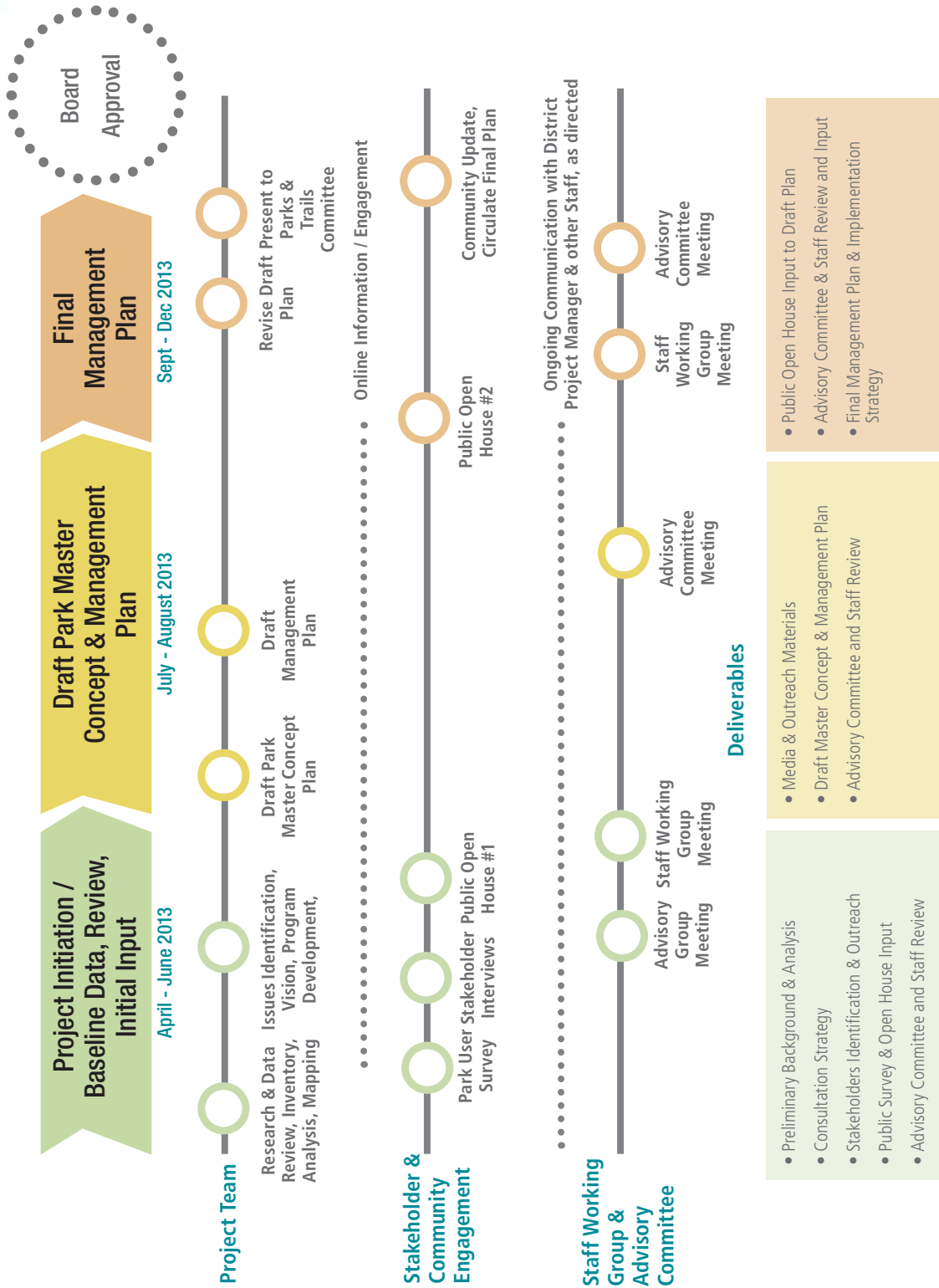


Figure 2: Panning Process Diagram



3.2 Outreach



A key component of Phase 1 was outreach to let people know about the planning process and how to participate. As part of the outreach process, signs were posted at BCFRP to inform park users.

A key component of the planning process was to undertake outreach to solicit input from nearby residents, park users and others with an interest in the park. Outreach for the process occurred at the following key milestones in the project, these were:

- 1) Introduction and notification of the planning process initiation
- 2) Advertisement for public events
- 3) Notification of the draft plan and opportunity to provide comment
- 4) Notification of the final plan and approval

Messaging was provided through the following means:

- Project webpage hosted on the RDN Parks website, with regular updates and postings
- Signage within BCFRP, including a QR code link to take people to the project webpage
- Email communications to stakeholder groups and phone/meeting follow-up with key stakeholder groups
- Email communications to park user groups and other community group email/list-serves
- Door to door notification for nearby residents
- Flyer/post card drops at community parks/facilities
- Newspapers, community publications, social media ads and local radio ads to notify people about public events
- Posters on local area bulletin boards and postal boxes

3.3 Summary of Consultations

Several engagement strategies were used to solicit input about the plan update:

- Project Webpage & Social Media
- Park User Survey
- Public Open Houses
- Stakeholder Consultations
- Staff Working Group & Advisory Committee

Each consultation strategy is summarized below and further details about the events and outcomes are available in **Appendix B: Summary of Public and Stakeholder Consultation**.



Project Webpage & Social Media:

The RDN website hosted a BCFRP Management Plan Update page which hosted background information about the park, information about the planning process, the online survey and summaries of input and events. Throughout the process the page was updated to maintain current information.

In addition to the project webpage, regular updates and notification of events were posted to the RDN's Facebook Page and on Twitter.

Park User Survey:

A survey was launched at the onset of the project to opportunities for community members to record their ideas about park use, current issues, opportunities and updates to the vision statement. This early feedback, combined with input from the first open house, was used to identify key management plan issues and recommend directions for the plan update.

Survey Summary:

Dates:	Open from May 27 th through June 29 th , 2013
Locations:	Available online and in hard copy at the first public open house and the RDN offices.
Responses:	106 completed surveys
Key Feedback:	<p>Vision:</p> <ul style="list-style-type: none"> 1999 Vision remains applicable today Expanded recreation uses such as mountain biking and trail running could be considered <p>Key Issues:</p> <ul style="list-style-type: none"> Navigation & park signage Park access Parking Trail improvements

The project website hosted information about the project, process and events over the course of the project.



Public Open Houses:

Over the course of the project, two public open houses events were completed.

Open House #1



Open House #1

A public open house was early in the process to obtain input on issues, opportunities, vision and program development and provide the public with an opportunity to record and discuss their ideas with RDN staff, the consulting team and each other.

Open House #1 Summary:

Date:	Saturday, June 22, 2013 10:00am – 1:00pm
Locations:	Main Venue – Creekside Place Community Park Satellite Venues – Weigles Road Park Entry and Jameson Road Access
Participants:	Approximately 75 contacts
Key Feedback:	<ul style="list-style-type: none"> ▪ Improve accessibility to Ammonite Falls. Suggestions primarily focused on addition of stairs and a safer viewing platform. ▪ Improve signage throughout the park. Suggestions indicated directional signage as a top priority, but also included park boundary information and park maps. ▪ Improve parking and access into park. Ideas included improvements at the Weigles Road entry (with an improved route to Ammonite Falls), parking/access from Galloway Gulch, formalized parking/access at Jameson Road or potential access through the adjacent gravel quarry. ▪ Add/improve connections to adjacent public lands (e.g. Creekside Place Community Park and Mount Benson Regional Park). ▪ Address parking issues and garbage at Jameson Rd. access. Many residents adjacent to the park indicated the Jameson access was problematic due to roadside parking restricting vehicle passage, nuisance and garbage. ▪ Protect and acknowledge geological history. Several residents told stories about fossils found in the park.



Open House #2

A second public open house was held after the Draft Plan development to obtain input and confirmation on proposed vision and directions. Participants were asked to provide feedback on the plan through a series of interactive boards, as well as through a feedback form.

Open House #2 Summary:

Date:	Wednesday, October 23, 2013 5:00pm – 8:00pm
Location:	Mountain View Elementary School
Participants:	Approximately 45 attendees
Key Feedback:	<ul style="list-style-type: none"> ▪ Support for the proposed vision and goals for the park. ▪ General support for actions and priorities. ▪ Caution should be exercised when increasing public access to BCFRP. If access becomes too easy there is risk of overuse and damage. ▪ The RDN should consider opportunities to obtain more land to expand the park. ▪ Signage improvements should include distance markers, trail maps and information about level of difficulty. ▪ If use increases, issues between motorized and non-motorized use may occur. While conflicts weren't identified as an existing major concern within the park, the trails accessing the park may have more potential conflicts. ▪ Parking options: <ul style="list-style-type: none"> ○ Even support for Option 1 (Creskide Place Community Park) and Option 2 (Corner of Creskide Pl. and Jameson Road) ○ Little support for Option 3 (within woodlot) ○ Alternate suggestions included having access only from Weigles Road or moving the north access to Galloway Gulch or Longview Road ○ Concern that improved parking will attract more traffic to the area



	<ul style="list-style-type: none"> ▪ Priority Actions: <ul style="list-style-type: none"> ○ Developing stair access and viewing platform to Ammonite Falls ○ Designing and Implementing a comprehensive park sign system ▪ Priorities for amenities at trailheads included: <ul style="list-style-type: none"> ○ Jameson Road: Trail maps, signage, restrooms ○ Weigles Road: Signage, bench ○ Mixed support ○ Concerns there could be trail user conflicts ○ Some current users like the challenge of the steeper slope and that it takes some effort to access the park ▪ Feedback on the proposed new Jameson Road Access Route (to avoid steep slopes): ▪ Alternate routes suggested
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Stakeholder Consultations:

Adjacent land owners, first nations and a variety of organizations, agencies and individuals were contacted to inform them about the process and seek their input about Benson Creek Falls Regional Park. See **Appendix C: Stakeholder Consultation List** for a list of stakeholders contacted during the planning process. The purpose of stakeholder engagement was to gain input on issues and opportunities relevant to the stakeholders and obtain feedback on draft plan directions.

Initial contact with all stakeholders was established through email to inform stakeholders about the management plan process and invite participation in the online survey and initial public open house. Subsequent contacts and meetings were undertaken during the draft plan development to meet with key stakeholders and review emerging draft plan directions.

First Nations with traditional territories in the vicinity of the park were contacted to invite their engagement in discussing any interests and concerns for the park. Letters of invitation signed by Joe Stanhope were sent in May 2013 to the Snuneymuxw, Snaw-naw-as, Stz-uminus First Nations and the Te'Mexw Treaty Association and were followed up by email and phone calls. The First Nations were also directly invited by email letters and by phone in October 2013 to review and relay any concerns about the



Draft Management Plan. No direct concerns or issues were received during the project term.

Staff Working Group & Advisory Committee:

Two committees were involved with the development of the plan update:

- **Staff Working Group:** This group was comprised of RDN parks staff and members of the consulting team. The working group met regularly over the course of the project to review ongoing project developments and directions.
- **BCFRP Advisory Committee:** This group was comprised of members of the Staff Working Group, along with representatives of the Regional District of Nanaimo's Parks & Trails Select Committee. Three meetings were held with this group at key project milestones to gain initial input on issues and opportunities and review outreach and engagement materials, review the draft plan and review the final plan.



4.0 EXISTING PARK CONDITIONS

This section outlines key aspects of the current park use, condition and facilities.

4.1 Park Lease

See Map 1: Park Area and Context.

Map 1 shows the Benson Creek Falls Regional Park boundary and surrounding context. The park originally encompassed 22 ha of Crown land and was established in 1991 through Lease #103987 to the RDN with the Province of British Columbia, Lands Branch. Since this initial lease was negotiated, two additional Crown land areas were added to the lease in 2007 – on north and south boundaries of the original park area. The current lease area is for 31.33 ha and designated for Regional Park purposes. The existing 30-year lease will expire in 2021.

The lease maintains a number of standard covenants, including requirements to:

- Work with the neighbouring properties and land owners on adjacency issues;
- Maintain adequate insurance and manage liabilities within the leased lands,
- Be responsible for facilities built on the land area;
- Maintain and/or improve access to the park lands as needed and determined required to meet obligations set out in the lease;
- Follow applicable Provincial legislation (Lands Act, Forest Act, Mineral Tenure Act, Wildlife Act, Water Act, etc.)

In addition, the lease maintains one special provision stating that the RDN shall not fill, build or remove vegetation within 7.5 metres of the top of the stream banks without prior written consent of the Province.

The RDN will seek to renew the 30-year lease before or at the time of expiry. Discussions with the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) during this project did not identify known barriers to lease renewal.



4.2 Park Access

See Map 2: Park Access & Adjacent Land Use

4.2.1 Adjacent Land Use

Map 2 shows existing adjacent land uses around BCFRP. The park is mostly surrounded by large tracts of privately leased or owned resource lands. There are forestry woodlots to the north, south and west of the park and gravel extraction operation to the east. The VIU-leased woodlot to the south of the park is actively used for logging. In the foreseeable future, it is likely these areas' land uses will remain resource-based, but long-term change, including conclusion of resource extraction activities, could result in potential changes in the long-term. Should land use changes occur, the RDN should endeavour to maintain public access to BCFRP and should encourage compatible adjacent land uses.

Woodlots are accessible to the public for recreational purposes. Users are asked to respect the forest environment by staying on roads and trails and keeping pets under control. Several popular trail routes, including access from Jameson Road require crossing of woodlot properties.

To the south east of the park at Jameson Road there is a rural residential area. This neighbourhood consists primarily of large single family lots (over 2 acres), zoned RU1. To the north and north east of the park and along Biggs Road there are established single family residential areas, as well as some community use areas (such as a Scouts Camp).

Landowners were contacted as part of the planning process to identify issues related to private lands and access to the park.

4.2.2 Park Access Routes

A challenge identified during the planning process was a lack of awareness about the extents of the park boundary. Because park access points cross through private property before entering the park and trails traverse the park boundary, it is difficult for park users to understand where the park boundaries end and private land begins. Many park users failed to realize they were actually using private lands when they believed they were within the park boundary.

During plan development, two main access routes to BCFRP were identified:



Weigles Road Park Entrance

The Weigles Road trailhead is a formal, signed entrance for people arriving at BCFRP. A parking lot that accommodates approximately 6-10 vehicles is located about 400 metres east from the Biggs-Doumont intersection. The majority of park users entering at the Weigles Road Entrance are accessing loop trails on the north side of BCFRP, including mountain bike trails that are outside the park boundary. To a less extent, this entrance is used to access Ammonite Falls, although steep terrain and a challenging crossing at Benson Creek make it a more difficult route to the falls.

Jameson Road Access

Most people visiting Ammonite Falls within BCFRP access the park from Jameson Road at the corner of Jameson Road and Creekside Place. People using this access typically parallel park along Jameson Road and cross privately-leased woodlot to access the trail to the falls. While this route is not secured as public land, it is well-known and popular. The Woodlot Licence Plan for W0020 identifies this route as a trail. During this process, concerns were identified about managing this park access.

Other Access Routes

Over the course of consultations, other informal park entry routes including a trail from Galloway Gulch and various logging roads and mountain bike trails were also identified as park access routes.

4.2.3 Fire and Emergency Service Access

Emergency services for the park are provided by the RCMP, Nanaimo Fire Rescue Department and Nanaimo Search and Rescue, a registered non-profit society.

The East Wellington Firehall responds to fire reports in BCFRP, accessing the park via logging roads. Anecdotal information suggests that the emergency responders have assisted in rescuing injured people in the park. They have also assisted with campfire reports within the park.

Improvements to information and signage, including route identification and clear mapping would support the department's ability to respond quickly to emergency requests. Ideas like trail distance markers would help park users provide a better indication of their location in case of emergency.

Emergency responders identified congestion related to the on-street parking on Jameson Road as an issue with potential impacts to emergency access



to Creekside Place. Parking improvements similar to those completed at Witchcraft Lake were recommended as a potential model.

4.3 Park Features

See Map 3: Trails & Destination Points

4.3.1 Trail Routes & Destinations

Map 3 shows current commonly-used trail routes and key destinations within the park. Current park use includes walking, hiking and trail running, nature appreciation and walking dogs off-leash. In the summer, Benson and Flynnfall Creeks are destinations for picnicking, and in some cases, swimming.



Park trail.

In 2013, a Risk Control Survey for the park was completed¹. The survey identified four key recommendations for Benson Creek Falls Regional Park:

- 1) Consideration should be given to erecting barriers/fencing along the cliff edge which is used for viewing.
- 2) The fallen log crossing should either be made safer to use or removed.
- 3) To provide clear direction; trails leading to the waterfall(s) should be clearly marked.
- 4) Consideration should be given to installing adequate steps with railings at the Benson Creek Falls and along certain trails at the side of a ravine.

Roadbeds from historical logging activities form some routes in the park, while others have been developed through use over time. To date, the RDN has not been active in trail development. Trail maintenance is undertaken as needed by RDN staff or volunteers. Some of the more challenging trail routes, notably the ravine crossing at Benson Creek and the trail down to Ammonite Falls, are classified as ‘unmaintained’ or ‘hazardous,’ and use is discouraged. Though these trails are signed as closed, park visitors continue to use the routes. The Risk Control Survey identifies these trails as hazardous and recommends consideration for installation of steps, handrails or some other adequate support system for climbing down the steep embankments.

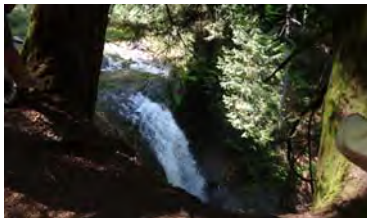
¹ Risk Control Survey, Municipal Insurance Association of British Columbia. Provided by Risk Management Services to the Regional District of Nanaimo.



4.3.2 Infrastructure



Footbridge on the north access route.



Steep drop-off at lookout area. Fence installation completed in summer 2013.

Infrastructure in BCFRP is limited, due to the natural setting of the park. In 2000, four foot bridges were built on the north access route from Weigles Road. A park entrance sign has been installed at the Weigles Road entrance and the route from the Jameson Road access on the south side of the park has some directional signage.

In addition to infrastructure installed by the RDN, several ad hoc installations have been observed within the park, including rope aids along steep slopes in the ravines at Ammonite Falls and the Benson Creek crossing. These unsanctioned installations are a liability concern.

In 2013 a fence was installed at the Ammonite Falls overlook to discourage people from standing close to the edge of a dangerous drop-off. The Risk Control Survey identified the risk of falling in this location as a high risk and recommended barriers at the edge, along with signage warning users not to stand close to the cliff edge.

4.3.3 Park Users

Park users come from both nearby residential areas as well as from the Nanaimo area, Vancouver Island, off-Island and beyond. The majority of park visitors are individuals or small informal groups; there are some organized groups and small businesses (e.g. dog walkers) that use the park seasonally or regularly. The park is used in all seasons, although the summer months see slightly higher visitation rates.

The park, and in particular, Ammonite Falls, is well-known locally and is also advertised as a key visitor attraction on tourist websites. Most of these sites advertise access from Jameson Road, which is an unofficial and unmarked entrance. While promotion of the falls builds the park's profile, it also increases risk of liability, as many tourists may not be prepared for the physically-demanding terrain and may not be familiar with trail routes. The Risk Control Survey identifies a "duty of care" to tourists that have been drawn to the natural attraction, to be provided with clear directions. The plan recommends clear and visible signage that clearly marks the trail that should be used to reach the falls.

In recent years, use of trails in the park area for mountain biking has increased. Some mountain bikers stage at Jameson Road or Weigles Road and ride the south ridge lines on Crown and private forestry lands, crossing through the park in some locations. The mountain biking community has established a significant network of trails, which in some cases can make navigation of the park routes more challenging for those unfamiliar with the



trail networks. This community is active in trail building, maintenance and management of trails, in many cases having agreements for trail use and building. Opportunities for collaboration may exist.

4.4 Environment

See Map 4: Environmental Overview

This section summarizes key findings outlined in the report: '**Environmental Overview of Benson Creek Falls Regional Park**' submitted by Ursus Environmental to the Regional District of Nanaimo, March, 2013. See **Appendix D** for a copy of the report.

The report builds upon information provided in an initial overview by J.C. Lee & Associates in 1999 and discusses observable impacts to the park in the past 14 years since the first overview.

The most valuable, diverse and ecologically sensitive habitats within the Park are the deep, steep-sided ravines and associated Benson Creek and Flynnfall Creek stream beds. The park encompasses several threatened forest ecosystem types, which are under-represented in regional protected areas due to the historical pattern of development and logging. Management of the park endeavours to protect these ecosystems.

4.4.1 Plants & Plant Communities

Native plant species identified during the February 2013 field review included 10 tree species, 17 shrub species and 25 non-woody plants. Five non-native species were also observed and included English Holly, Spurge-laurel, Yellow Archangel, Herb-Robert and Hairy Cat's-ear. It was noted that additional plant species could likely be identified during different seasons.

Three regionally uncommon plants were recorded within the park: *Taxus brevifolia* (Pacific yew), *Adiantum pedatum* (Maidenhair fern) and *Vaccinium ovatum* (Evergreen huckleberry). *Pinus contorta* (Shore pine), although common in other parts of the region, is found very infrequently in BCFRP.

The Ursus report suggests park ecosystems are more representative of the CWHxm Variant² than the CDFmm variant³. At least seven CWHxm Variant plant communities have been identified with the park, four of which are upland forest ecosystems and three are wetlands.

² CWHxm Variant is Coastal Western Hemlock, Eastern Very Dry Maritime.

³ CDFmm Variant is Coastal Douglas-fir, Moist Maritime.



The four upland forest ecosystem types⁴ are as follows (see Map 4 for extents of each ecosystem type):

- **HwFd-Kindbergia**⁵ – This is the most extensive plant community type in BCFRP. It is red-listed and assigned the highest conservation priority (Priority 1) under the Provincial Conservation Framework. It is dominated by Douglas-fir and Salal, with a lesser occurrence of Dull Oregon Grape and Bracken Fern.
- **FdPI-Cladina**⁶ – This type is broadly distributed across the park and typically occurs along ridge crests and on the steep slopes of the ravines. It is red-listed, but is a Priority 2. The tree canopy is dominated by Douglas-fir, with a lesser occurrence of Arbutus and Lodgepole Pine. The forest understorey is dominated by Salal, with Baldhip Rose, Prickly Rose, Trailing Blackberry and Dull Oregon Grape.
- **Cw-Sword Fern**⁷ – This community is located on benches and lower slopes near creeks. It is blue-listed and Priority 2 under the Provincial Conservation Framework. It has a mixed canopy of conifers and Red Alder, sword fern dominates the understorey.
- **Cw-Foamflower**⁸ – This community is in some locations on lower slopes next to Benson and Flynnfall Creeks. It is red-listed and Priority 2. It has a mixed canopy of firs, cedar, Big Leaf Maple and Red Alder, with a sword-fern dominated understorey with a minor cover of Oregon Grape, Salmonberry, Lady Fern and Foamflower.

4.4.2 Mammals

Columbian Black-tailed deer occur at fairly high densities within BCFRP and a moderate level of deer use was evident by browsing of preferred shrubs. The park contains limited wetlands and narrow riparian wetlands which are attractive habitat for elk. As such, no evidence of Roosevelt Elk was reported.

Black bear and cougar occur infrequently in the local area. No sign of either was detected during the 2013 fieldwork. Grey wolf is primarily associated with major river valleys and is not expected to be seen in BCFRP.

⁴ Ecosystem types are described by a combination of dominant tree and key ground species. For example, the HwFd-Kindbergia ecosystem is dominated by Western Hemlock (Hw) and Douglas-fir (Fd) with Kindbergia oregana moss.

⁵ HwFd-Kindbergia: Western Hemlock and Douglas-fir with Kindbergia oregana moss.

⁶ FdPI-Cladina: Douglas-fir and Lodgepole Pine with Cladina rangiferina lichen.

⁷ Cw-Sword Fern: Western Redcedar with sword fern understorey.

⁸ Cw-Foamflower: Western Redcedar with foamflower understorey.



Raccoon, mink and river otter are expected to occur in the park as they prefer riparian habitats. Mammals associated with upland forest are also expected within the park and include Eastern Cottontail, Marten, Red Squirrel, Deer Mouse and Dusky shrew. During the fieldwork only signs of squirrel presence were observed.

4.4.3 Avifauna

BCFRP contains a diverse range of bird species with a strong representation of raptors, sparrows, warblers/vireos, thrushes, corvids and finches. During the 2013 fieldwork, 12 resident species were noted around BCFRP; however, earlier work by Cousens et al (1999) documented an additional 56 bird species. The park also supports several 'Regionally Important' bird species including the Coopers Hawk, Sharp-shinned Hawk, Pileated Woodpecker and the Brown Creeper. The 2013 report indicates that the Woodpecker and Brown Creeper use the park extensively. The Band-tailed Pigeon, Northern Pygmy owl and the Olive-sided Flycatcher are Blue-listed species and have been recorded in the park in recent decades. No red-listed species have been recorded recently.

No nesting raptors or Great Blue Herons were detected during the 2013 fieldwork; however, two Great Blue Heron nests have been recorded within 1000m of BCFRP. The nearest known Bald Eagle nests are located near Brannen Lake to the north and Jingle Pot Road to the south east.

The 2013 report recommends additional field work to update the occurrence of Conservation Data Centre's (CDC) listed birds and regionally-important raptors.

4.4.4 Herptiles

The 2013 fieldwork observed one native amphibian species, the ubiquitous Pacific Treefrog. The Red-legged Frog, a Provincially Blue-listed species was recorded fairly recently (2003) in the lower portion of Flynnfall Creek (outside but close to the BCFRP boundary). The breeding of this species would be restricted to the few small wetland areas within the park.

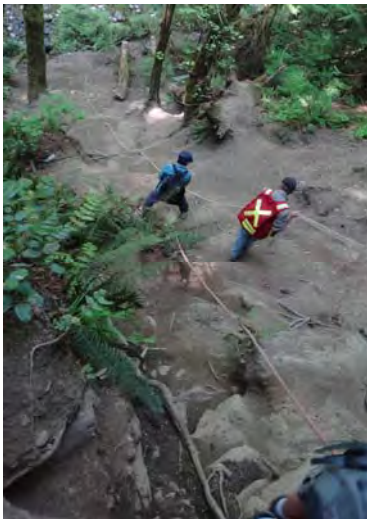
Although not observed during the fieldwork, several other amphibian species are likely to occur in the park, including the Rough-skinned Newt, Northwestern Salamander and the Long-toed Salamander. Native salamanders may occur within the moister areas of the park.



Amphibian field inventory information for this area is largely lacking and the 2013 report recommends future surveys to determine the presence of at risk species and other amphibians.

4.4.5 Fish

Fisheries values were summarized in 1999 by J.C. Lee and Associates. Cutthroat Trout and juvenile Coho Salmon were document in the lower reaches of Benson Creek in the late 1990s. The report suggested it is expected that these salmonids would be present to the first significant obstacle in Benson Creek, a short falls downstream of the Fallen Log crossing.



Erosion on the spur trail to the base of Ammonite Falls was identified as an issue in 1999. Since that time, erosion issues appear to have increased.

Despite fish not being present higher in the creek, these ravines are considered sensitive because they flow directly into fish habitat. Erosion issues at Ammonite Falls and the Fallen Log Crossing within the ravine may impact water quality within the downstream fish habitat.

4.4.6 Observations about Change

The Environmental Overview notes that limited photographic documentation of the site conditions from 1999 make it difficult to determine whether impacts from park use, windthrow events, and exotic invasive vegetation have increased, stabilized or decreased with BCFRP since that time.

One notable issue that was first identified in 1999 and remains today is the short, steep spur trail that leads to the base of Ammonite Falls. Since 1999, the trail has had no opportunity to naturally re-vegetate due to ongoing use and the damaged area has widened over the years. Erosion in this location remains a significant source of environmental concern.

4.5 Landform & Geology

4.5.1 Landform

Elevations within the park range from 110m – 210 m above sea level. Benson Creek and Flynnfall Creek generally have steep gradients with riparian areas situated along ravines 20m – 50m deep and bluffs. There are two major water falls within the park: Flynnfall Falls – a 10m grade change and Ammonite Falls (on Benson Creek) – a 15m – 20 m grade change. Outside the ravines, the park's terrain is typically gently undulating, with some steeper slopes near the northern boundary.



The park's topography limits access by park users with mobility limitations and has contributed to the development of ad hoc climbing aids such as ropes, being constructed by park users to access difficult areas of the park. As visitors to BCFRP continue to increase, slope erosion along the steep ravines and in trail areas is becoming increasingly prevalent.

4.5.2 Geology & Fossils

Historically, the park was known to contain significant ammonite fossils. At one time there was a 16" diameter ammonite fossil located near the Ammonite Falls; however, this fossil was destroyed by vandals in the 1960s. This event provided the impetus for a group of local supporters to seek protection for the area's unique geology, along with the dramatic ravines and waterfalls.

The RDN is responsible for protecting fossils under the Community Charter and Local Government Act.



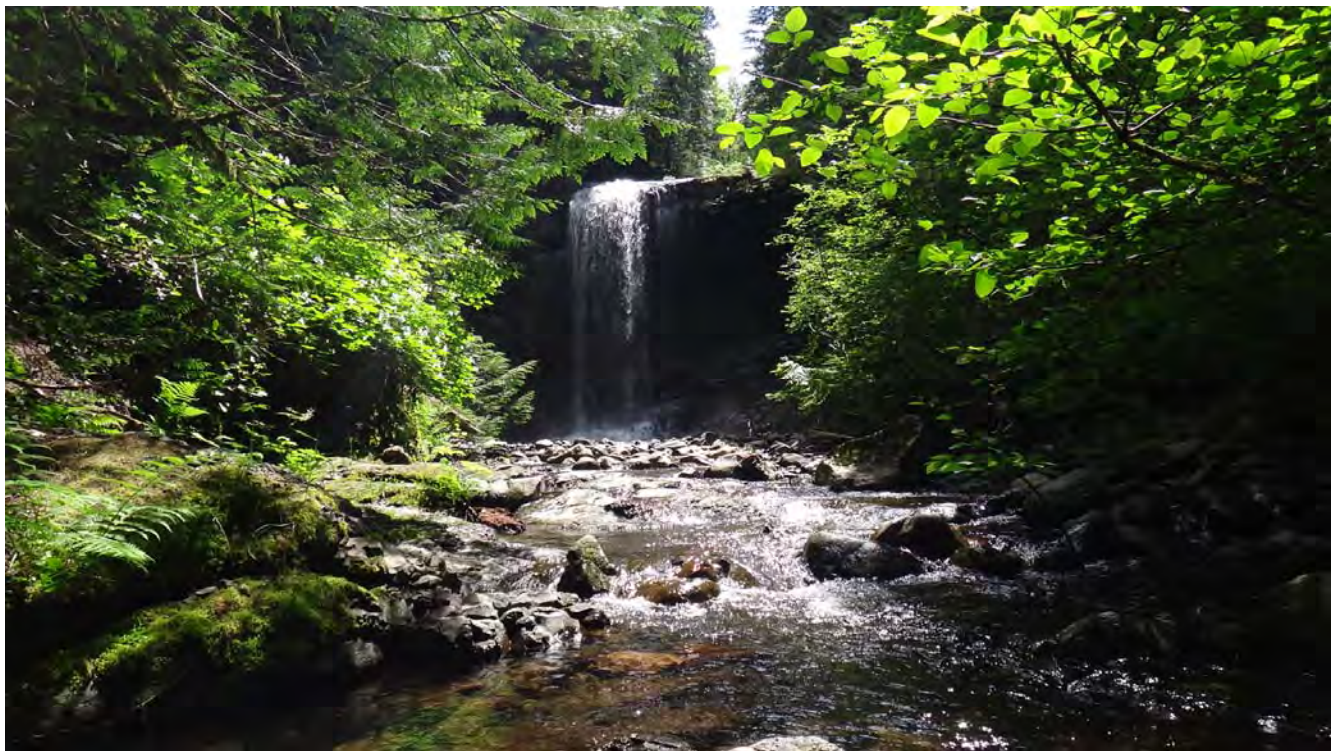
5.0 VISION, GOALS & PRINCIPLES

5.1 Vision for Benson Creek Falls Regional Park

A vision is a guiding statement by which decisions about the future of Benson Creek Falls Regional Park are made and which measures management and progress. Public input revealed that the 1999 vision remains viable today and reflects the fundamental objective of protecting and enhancing the park's valuable environmental aspects in balance with its high recreational value through the management of uses and addition of basic amenities.

Vision:

Benson Creek Falls Regional Park is a Regional Natural Area with high habitat value, environmentally sensitive areas and regionally significant geological and ecological features. The Park will continue to provide nature-based recreation and stewardship activities to nearby residents and visitors and be a place to connect with nature for many years to come.





5.2 Goals

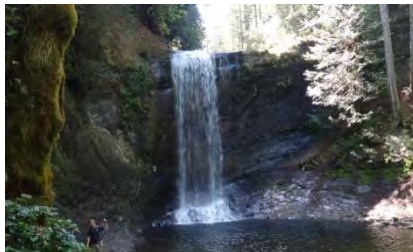
Goals provide a framework for the vision by providing specific guidance for park management and development. These goals act as a 'checklist' for proposed park improvements; if a proposed project meets these goals it will support the spirit and intent of the vision for BCFRP.

**Balanced
Recreational Use**



Ensure that the park continues to be a place for nature-based recreation such as walking, hiking and bird-watching and foster a limited amount of responsible active recreational use, such as hiking, trail running and mountain biking.

**Regionally
Significant
Features**



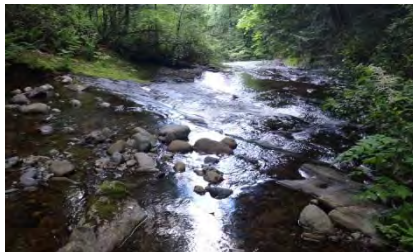
Provide visitors the opportunity to see and learn about regionally significant features, landforms, geology, plant, fish and wildlife communities.

**Environmental
Protection**



Recognize the environmental significance of the park and continue to protect environmentally sensitive areas, including the establishment of park facilities to manage access and use of known sensitive and valuable areas.

**Environmental
Connectivity**



Provide a degree of connectivity between adjacent areas with relatively high habitat value to help offset ongoing habitat loss and fragmentation in the area.

Park Stewardship



Promote understanding and appreciation of the park environment by providing opportunities for visitors, schools or special interest groups to participate in stewardship activities such as research, restoration planting, or guided walks.



5.3 Management Principles

Principles represent the basic constraints that underlie this Management Plan and which all management policies and actions must observe.

Park Lease

Improvements or changes to the park will be consistent with the terms of the park lease.

On August 1st, 1991, the Regional District of Nanaimo secured Lease #103987 for regional park purposes at Benson Creek Falls Regional Park for a period of 30 years (to 2021). The lease includes standard lease conditions and one special provision:

- The RDN shall not fill, build or remove vegetation within 7.5 metres of the top of the stream bank without prior written consent of MOELP (today MFLNRO).

RDN Regional Parks & Trails Plan

Management of Benson Creek Falls Regional Park will be consistent with the RDN Regional Parks and Trails Plan vision.

The RDN's Regional Parks and Trails Plan sets out the future directions, policies, priorities, and actions for regional parks and trails. The vision of the plan is for a system that protects and stewards natural values while providing rewarding recreational opportunities; fostering education and appreciation of the natural environment; and, enhancing the liveability of the Region.

RDN Park Use Regulations Bylaw No.1399

Management of park use at Benson Creek Falls Regional Park will be guided by the RDN's Park Use Regulations Bylaw.

The RDN's Park Use Regulations Bylaw no.1399 (2009) regulates park use in community and regional parks including public conduct, vehicles, parking, permits, camping, domestic animals and more.



5.4 Park Management Site Plan

See Map 5: Park Concept Plan

Map 5 outlines an overall summary of the key recommended Benson Creek Park Management Plan for the next phase of park management and development. Actions related to the site plan are summarized in Section 6.0.

In the next phase of park development, it is envisioned there will be several improvements to trails, facilities, signage and promotion of the park. A primary 'maintained' trail route from Weigles Road, crossing Benson Creek, extending to the Ammonite Falls, and out to Jameson Road is a future goal for the park. Secondary trail loops will provide park users with alternate trail options. Negotiation of agreements to cross adjoining crown lands will allow proper signage and trail building to support this system.

Trailheads, kiosks with trail maps and trail markers along the main routes will reinforce the network and support navigation for visitors. Interpretive signage will promote appreciation and respect of the park and provide educational value for key park assets such as environmental and habitat values, geology and land uses.

Proposed upgrades and addition of amenities will support user safety, limit liability and reduce ongoing erosion and vegetation damage associated with access to steep slopes and sensitive areas. In the short-term, a viewing platform and stair access to Ammonite Falls will support safe access to the main destination of the park. In the longer-term, a proper bridge crossing is envisioned at Benson Creek to replace the current fallen log crossing.

To maintain and improve access to the park from the south, the plan proposes to establish an official park entry point at Jameson Road. This entry is anticipated as a managed access point with a formal trail route, off-road parking and trail signage.



6.0 MANAGEMENT POLICIES & ACTIONS

The management planning process identified several issues present in Benson Creek Falls Regional Park today. This section outlines policies and actions to address these issues over the next 10 years and into the future. These policies and issues align with the vision and goals for the park.

6.1 Park Lease

The Issue: The current park lease will expire in 2021.

Discussion with MFLNRO representatives identified two options for lease renewal:

- Renew the lease at the expiration of the current lease; or
- Apply for early renewal of the lease, initiating the process prior to the expiry.

No known barriers to renewal of the lease were identified during the management planning process. However, due to the level of investment being considered for BCFRP, it is recommended that early lease renewal be pursued to help protect RDN investments for the future. It is also recommended that the RDN work with MFLNRO to explore alternatives for securing alternative tenure for the park, including potential for a Crown grant.

Policy 1:

Maintain Benson Creek Falls Regional Park as a Regional Park property for the foreseeable future.

Action 1:

Submit a lease renewal application to MFLNRO. As part of the renewal process, explore tenure options with MFLNRO.

Public input suggested it would be desirable to expand the park boundaries if opportunity arises. While currently no opportunities for park expansion are identified, the RDN should recognize opportunities that arise to increase park area and access.

Policy 2:

Monitor opportunities to expand the park boundary with a focus on securing recreational and habitat corridors.



6.2 Park Access

The Issue: Benson Creek Falls Regional Park has two main access routes: Weigles Road on the north side of the Park and Jameson Road on the south side of the park. Both of these primary access routes have limitations.

In Spring 2013, the RDN installed trail counters at the Weigles Road and Jameson Road access points. **Table 1** shows the number of people accessing BCFRP between May and August 2013.

Table 1: Trail Counter Data – May to August 2013

Access Route	May	June	July	August	Total ⁹ (4 months)
Weigles Road	1,388	1,108	1,118	1,580	5,194
Jameson Road	1,023	1,218	1,256	1,158	4,655

Trail counts suggest that both routes to BCFRP are well-used. While further counts will identify trends, it appears that Weigles Road may be used more consistently throughout the year as a destination for regular visitors, such as dog walkers. The Jameson Road route may have more frequent use during summer as a popular route for visitors accessing Ammonite Falls.

Policy 3:

Secure two public access routes to Benson Creek Falls Regional Park – one to the north side of Benson Creek and one to the south side.

Weigles Road Access (North Access)

The Weigles Road Park Access is the official entrance to Benson Creek Falls Regional Park. There is a small existing parking lot with space for about 8-10 vehicles and the RDN has a lease that provides trail access from the parking lot to the main area of the park.

The parking lot is small, poorly organized and, on busy days, overflow parking spills onto Weigles Road. The lot is also in relatively poor condition with uneven grade and potholes.



Disorganized parking at the Weigles Road parking lot.

Action 2:

Upgrade, reorganize and expand the Weigles Road parking lot.

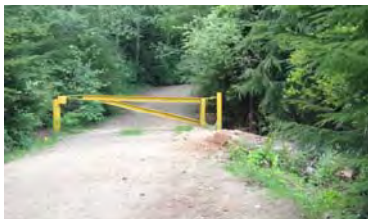
⁹ Trail counts may include both park entry and exit of an individual during a single park visit.



To help keep people from parking on Weigles Road, expansion and improvements to the organization of the parking lot are recommended. Key considerations when planning parking lot improvements:

- Connect with the adjacent Crown Lot lease-holder of Woodlot #W0012 regarding opportunities for aligning future forestry access with parking lot improvements.
- Confirm the legal boundaries of the parking area to determine if the lot falls within the BCFRP lease area or within the road ROW.
- Contact the adjacent gravel quarry to identify opportunities for obtaining gravel for parking lot development.

Jameson Road Access (South Access)



Woodlot gate at the Jameson Road Access Route.

Jameson Road is a popular park access point, but currently does not have official access agreements in place and does not have sufficient parking.

The north access at Weigles Road is popular for park users accessing shorter trail loops or bike routes at the north end of the park; however, people destined for Ammonite Falls typically enter the park from an unofficial access point at the end of Jameson Road on the south side of the park. The trail to Ammonite Falls in this location is shorter and easier than the route from Weigles Road. However, park users must cross privately-leased Crown woodlot (Woodlot Licence W0020) to access the trailhead.



Informal parking on Jameson Road and Creekside Place.

There is no formal parking at the Jameson Road entrance which results in roadside parking at the intersection of Jameson Road and Creekside Place, a concern for local residents. On busy days at the park, on-street parking may restrict access for large vehicles, including emergency vehicles.

During the management planning process, several options to address the access and parking issues were considered, including:

- Securing official parking at Jameson Road and a formalized access route through the woodlot into the park;
- Improved trail access to Ammonite Falls from the Weigles Road access to make it a more attractive and easier route; and
- Identifying an alternative access point to the park from the east.

A review of these options identified that the best short-term solution for public access to Ammonite Falls was from Jameson Road. While improvements to the trails from Weigles Road are planned (see Section 6.3.1), the terrain through Benson Creek Ravine will continue to be a barrier for those with lesser mobility. Several access points from the east were also investigated, but land ownership and parking were identified as deterrents to



these routes. It was also determined that Jameson Road provides the best emergency access point to the park and surrounding area.

Action 3:


Develop an off-road parking area at the Jameson Road Access point.

Because it is anticipated that Jameson Road will remain a popular park access point for the foreseeable future, a parking solution is required to resolve on-street parking concerns. During the plan development, three potential parking lot options were identified. **Table 2** shows preliminary analysis of the three options.

Table 2: Summary of Parking Options

Option	Potential Layout Study	Potential Pros	Potential Cons
<p>P1: Creekside Place Community Park using the Existing Parking Lot</p>		<ul style="list-style-type: none"> ▪ Lowest cost ▪ Could be implemented immediately at low cost ▪ Minimal disturbance 	<ul style="list-style-type: none"> ▪ Could affect available parking for Community Park ▪ Longer walk to Park
<p>P2: Corner of Jameson Road and Creekside Place</p>		<ul style="list-style-type: none"> ▪ Very close to existing informal parking on Jameson Road ▪ Easy to access ▪ Safe sightlines ▪ Keeps traffic out of residential area 	<ul style="list-style-type: none"> ▪ Higher cost including costs for grading and building new lot ▪ Retaining walls may be needed at edge of ravine



Option	Potential Layout Study	Potential Pros	Potential Cons
P3: Inside Woodlot Gate		<ul style="list-style-type: none"> Closest to the park entrance 	<ul style="list-style-type: none"> Highest cost, including costs for clearing, grading, retaining and road access to parking Requires agreements with Crown/MOTI No passive surveillance/potential security issues Potential closures during fire season

The three parking options were presented for public review and feedback during Open House #2. Feedback suggested that:

- Option P1: Creekside Place Community Park using the Existing Parking Lot and Option P2: Corner of Jameson Road and Creekside Place were equally preferred.
- Option P3: Inside Woodlot Gate received the lowest support due to challenges with access, cost, potential conflict with Woodlot uses and potential security issues.

Based on this feedback the following approach to parking at the Jameson Road Access is provided:

- Complete minor improvements at Creekside Place Community Park to upgrade surfacing and potentially expand the existing parking area (Option P1).
- Install 'No Parking' signage at corner of Jameson Road and Creekside Place (where people are currently parking and blocking access) with direction to parking at Creekside Place Community Park.
- Monitor parking demand through one summer season and identify if people are parking at the park and if parking in that area is sufficient.
- If demand exceeds capacity in that location, or people do not abide by 'No Parking' signs, consider development a new parking lot at the corner of Creekside Place and Jameson Road (Option 2). Parking lot in this location will require design development for grading and creek protection prior to development.



Action 4:

Obtain a formal agreement with MFLNRO, with support from the Woodlot #0020 Manager, for a public access route from Jameson Road to BCFRP.

Typical components of the trail application will include:

- Completed application form
- Updated Management Plan
- Rationale for selecting the route
- Information that addresses potential issues (e.g. parking impacts) that could arise through formalization of the route

Public input noted that the existing Jameson Road Access Route has several steep and difficult slopes. During development of the Management Plan, an existing alternate route with gentler slopes was identified and supported by the Woodlot manager. See **Figure 3: Potential Jameson Route Alignment** for an approximate alignment for this route.

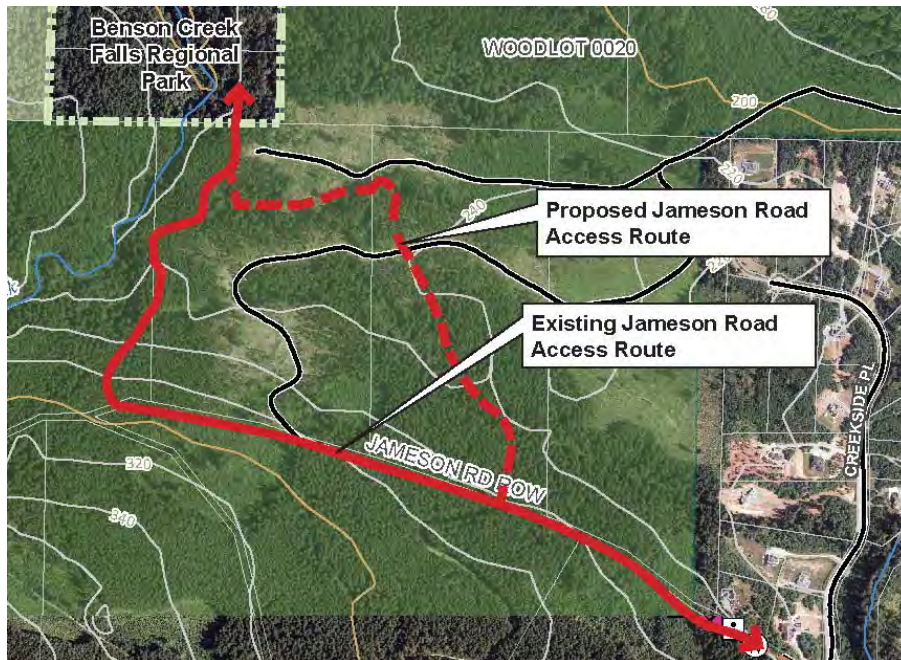


Figure 3: Potential Jameson Route Alignment



During Open House #2, public feedback about the proposed alternate route was mixed – with participants both supporting and not supporting the route.

Concerns about the route included:

- Potential conflicts with motorized/equestrian users on the alternate route.
- Development of an alternate, easier route may make it ‘too easy’ to access the park – inviting increased use and potential impacts to the environment and local neighbourhood.
- Some prefer the challenge of the existing route.

It is recommended that the RDN investigate potential route alternatives prior to identifying and securing the preferred access to the park.

A Section 56 Provincial Trails Partnership Agreement for this route may warrant consideration to establish this route and require its consideration during future resource planning.

6.3 Park Trails

The Issue: Commonly used trail sections within the park have identified challenges to public use.

Three priority trail routes within BCFRP were identified during the management planning process. See **Figure 4: Priority Trail Routes** (next page) for approximate alignment of each route.

These routes are the most commonly used and were identified as having the highest priority for improvements:

- The North-South route from the Weigles Road parking lot to the south boundary of the park (just past Ammonite Falls);
- The Jameson Road access route from Jameson Road to the south boundary of the park (connecting with the north-south route); and
- The short trail loop at the Weigles Road entrance that includes the BCFRP access and an existing trail through Woodlot W0012.



Small side trail that intersects with the north-south route.

Beyond these major routes, several minor trail routes cross or link to trails within the park. These routes are typically used by the mountain biking community as part of their larger Doumont trail network. While these routes are not as popular amongst BCFRP users, they can confuse users if they are not familiar with the area.

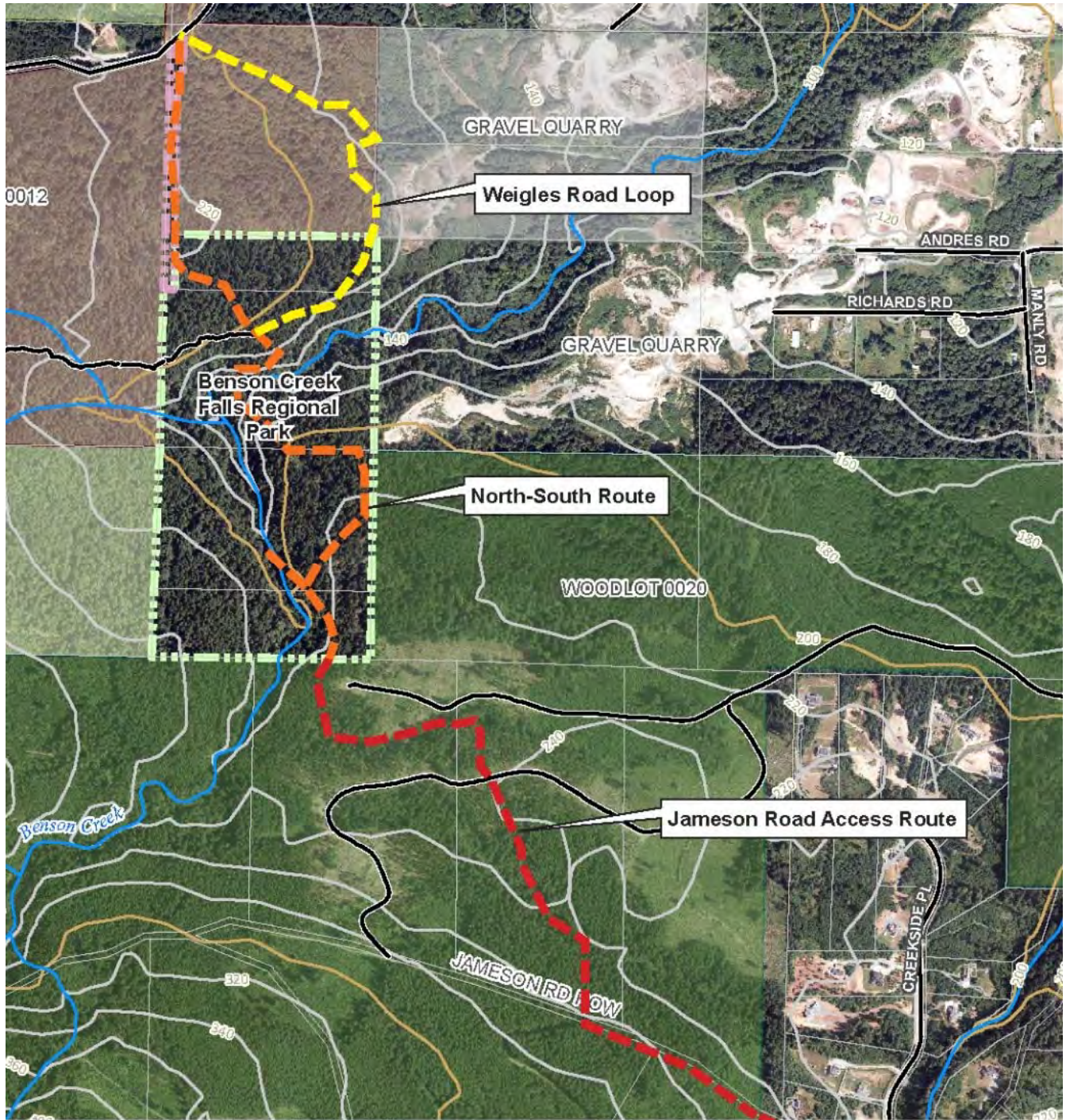


Figure 4: Priority Trail Routes



Policy 4:

Improve and maintain trail access on the three priority trail routes identified in this plan.

North-South Route

The trail route between the Weigles Road parking lot and south boundary of the park has potential to provide access to Ammonite Falls; however, two notable gaps exist:

- At Benson Creek Ravine, steep-sided banks (approx. 50 m deep) require switchback trails and the creek crossing is a fallen log that is used for crossing the creek. These barriers are a challenge and safety issue for many park users. Due to these issues this route is not currently identified as a route for accessing the falls – it is signed as an “unmaintained trail”. On the north side of the creek, bank erosion is especially present, largely due to informal “short-cut” trails that have been created to shorten the switchbacks down the slope.
- A portion of trail route, approximately 250m in length, on the south side of Benson Creek Ravine previously crossed private land and has been decommissioned by the private land owner. An alternate route has been flagged, but has not yet been cleared or constructed.



Unmaintained Trail sign at the top of Benson Creek Ravine.



Flagged, but undeveloped alternate route.

Action 5:

Undertake trail improvements or relocation of the ravine descent to Benson Creek in conjunction with a new bridge crossing over the ravine (See Section 6.5: Park Infrastructure). Consult with MFLNRO for review and selection of the preferred crossing location.

As a first step in the process, it is recommended that the ravine area be reviewed to determine if an alternate route exists that has better grades and safety. MFLNRO should be consulted during the crossing location review process for input on potential alternative routes. If a new route can be identified, the existing route should be closed and remediated.

If the existing route is determined to be the preferred route, trail improvements should include enhanced delineation of the switchbacks and closing and rehabilitation of short-cut routes using techniques such as staked small-diameter logs and native shrub planting and signage – especially on the north side of the creek¹⁰.



Improvements to the Benson Creek ravine trail should include closing and rehabilitation of short-cut routes.

¹⁰ Per Ursus Environmental Overview of Benson Creek Falls Regional Park.



Action 6:

Clear and develop the flagged trail route to reconnect the Weigles Park Access to Ammonite Falls. Trail construction should be routed to avoid larger standing trees and their drip-lines¹¹.

Jameson Road Access Route

Action #3 of this plan recommends securing formal public access from Jameson Road. The most commonly-used route from Jameson Road has a steep section of trail, approximately 250 m in length. It is recommended that the formalized public access follow an existing trail about 600 m west of the woodlot gate (see Map 5), as this route has easier grades. A small bridge over an intermittent creek may be required as part of the trail development.

Action 7:

Once a formalized agreement with MFLNRO has been obtained (See Action #4), develop and sign the Jameson Road access route as an entrance to BCFRP.

Weigles Road Loop

Many users entering BCFRP from Weigles Road are using a 1.3 km trail loop that starts and finishes at the parking lot. Approximately 500 m of this loop is on Woodlot W0012, outside the park boundary. Trail users are not generally aware that a portion of the loop is outside the park.

Public input suggested that this loop route is very popular and efforts should be made to support its continued availability for public use. Recognizing that it is on privately-leased Woodlot land, the RDN should work closely with the woodlot owner to maintain trail access in the event of logging activities.

Action 8:

Work with MFLNRO and the Woodlot owner to secure an agreement for the Loop Route at the Weigles Road Entrance as a recreational trail and maintain its use during woodlot activities. Sign the trail to inform users when they are outside the park boundary.



The Weigles Road Loop traverses a small stream at the northeast corner of the park before crossing onto Woodlot W0012.

¹¹ Per Ursus Environmental Overview of Benson Creek Falls Regional Park, p.17.



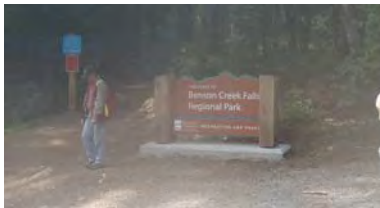
6.4 Signage, Information & Communications

The Issue: Navigation of Benson Creek Falls Regional Park is challenging, especially for those unfamiliar with the park.

Park Signage

Currently in BCFRP, signage, trail maps and markers are very limited. Current signage includes:

- A park entry sign at the Weigles Road Access;
- 3 small directional signs from the Jameson Road Access;
- Regulatory signs about ‘unmaintained trails’ and hazard areas.



Existing park entry sign.



Existing small directional sign.

During the public and stakeholder consultation process, several issues about insufficient information were identified:

- The lack of signage, mapping or a clear trail hierarchy could make navigation a challenge.
- Most park users do not know where the park boundary is or when they have crossed a park boundary while on a trail route. This can be confusing, especially related to the woodlot activities occurring on adjacent properties.

The Risk Control Survey recommends installation of clear and visible signage that clearly marks trails that should be used to reach park destinations.

Policy 5:

The RDN will endeavour to develop a park information system, including signage within the park, along with external information that is clear and easy to understand.



Action 9:

Design and implement a park signage system that includes:

- *A park entry sign at the Jameson Road Access Route (once agreement has been obtained – See Action #3);*
- *Park maps and information signs at the two main park access routes – Weigles Road and Jameson Road;*
- *Trail markers and location maps at intersections that provide clear direction to help people navigate the main park routes;*
- *Interpretive information about the park’s history and natural features;*
- *Regulatory and cautionary signage that encourages safe and respectful use of the park; and*
- *Park boundary signage that informs people when they are entering private lands. Opportunities to design park boundary signs in consultation with Woodlot owners should be explored to help inform users about Woodlot activities and rights.*



The recently completed Mount Benson Regional Park trailhead sign is a strong precedent.

Park information signs should include components such as:

- *Maps;*
- *Time, distance and level of difficulty for reaching key destinations;*
- *Rules of the trail and etiquette;*
- *Personal safety and emergency preparedness; and*
- *Interpretive information about the geological and environmental features of the park.*

Park Information

BCFRP is well known and is advertised on many tourism websites as a destination. However, much of this information as ‘ad hoc’ and can fail to provide sufficient information on park access, trails, user preparedness or the level of physical ability needed to access the park.

Action 10:

Develop park user information about BCFRP that can be posted on the RDN’s website or provided in hard copy. Distribute official information to key organizations that post or provide tourism information about the park.

Communications

During the planning process, communications with key stakeholders occurred. These communications were informative and helpful for park planning. It is recommended that the RDN continue positive working relationships with these stakeholders through ongoing communications.

Action 11:

Establish an annual check-in meeting with the Woodlot managers to discuss changes, ideas and actions related to Regional Parks, including, but not limited to, Benson Creek Falls Regional Park and promote inclusion of key trail routes acknowledged in Woodlot Licence Plans.



6.5 Park Infrastructure

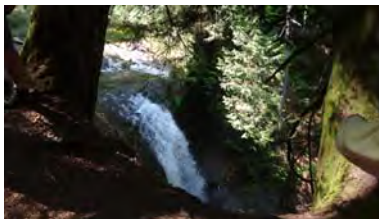
The Issue: Challenging slopes and conditions within key park use areas have potential safety concerns and environmental impacts.

Policy 6:

Infrastructure improvements will be completed to support environmental protection and public safety. However, park and trail use will continue to be ‘use at own risk.’

During the consultation process, three key sites were identified as potential safety concerns and environmental impact areas.

Viewing Area above Ammonite Falls



The Viewing area above Ammonite Falls has a steep drop-off.

Prior to descending to the falls, there is a popular overlook sight that provides a view of the falls from above. This site has a steep drop-off and an unreinforced earth overhang that could pose safety concerns. The Risk Control Survey recommends fencing or other barriers at the edge of the cliff with signs to warn people not to stand close to the cliff edge.

Action 12:

Develop a barrier structure that restricts access to the edge of the overlook on the overhang. Consider incorporating interpretive signage as a part of the overlook area.

Access to the Base of Ammonite Falls



Significant erosion is occurring on the slopes to Ammonite Falls.

One of the top activities at BCFRP is descending the ravine to view Ammonite Falls from their base. Ongoing use of the steep descent has contributed to significant erosion of the ravine bank and park users have installed ad hoc rope climbing aids to assist with the climb. The 2013 Ursus Environmental Overview identified that no natural regeneration of vegetation has occurred on the slopes since the erosion issue was identified in 1999.



Rope climbing aids have been installed ad-hoc.

Public input suggested that stair access down to the falls would be supported, although some concerns included that it may impact the ‘natural challenge’ that appeals to park users. However, given the ongoing environmental impacts and increasing use of the park by people with a wide range of physical abilities, development of stair access is recommended as a short-term priority¹². This recommendation is supported by the 2013 Risk Control Survey that recommends installation of adequate steps, handrails

¹² The Ursus Environmental Overview of Benson Creek Falls Regional Park recommends stair construction to reduce environmental impacts related to human use within the riparian area.



and/or some other adequate support system for climbing down the steep embankments.

Design of the staircase should consider use of long-lasting, low maintenance materials, durability, character and safety. Aluminium construction, while having a higher initial cost, typically has much lower requirements for long-term maintenance. Detailed design should investigate and provide costing for material alternatives.

Design development should include creation of an environmental management and slope remediation plan by an R.P. Bio to identify, mitigate and/or compensate for environmental impacts. MFLNRO should be consulted early in the design development process to identify concerns and potential issues and reviews for mitigation or compensation.

The RDN may also consider exploring partnership with VIU's welding or construction programs for design and/or build of the staircase.

Action 13:

Complete geotechnical engineering review for both the Ammonite Falls descent and the Benson Creek crossing to identify options and potential issues related to developing stair access to Ammonite Falls and a bridge crossing over Benson Creek.

Action 14:

Complete an engineered design and environmental management plan for stair access to Ammonite Falls that helps manage the steep grades and provides safer access. Consult with MFLNRO during the design and submit required applications.

Action 15:

Develop stair access with viewing platforms to Ammonite Falls, including slope remediation for eroded slopes.



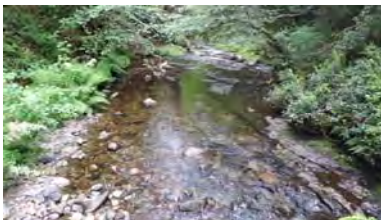
Example of stair access at Cowichan River in the CVRD.



Benson Creek Fallen Log Crossing



The fallen log and adjacent log jam at Benson Creek Ravine.



Benson Creek downstream of the fallen log crossing.

Currently the trail route through Benson Creek Ravine is unmaintained and not advertised as a park trail due to the safety concerns related to steep slopes and the fallen log crossing. The 2013 Risk Control Survey recommends either removal of the fallen log or modifications such that the crossing can be safely used for crossing the creek.

The 1999 Management Plan discussed the potential of a bank to bank ravine bridge crossing; however, this bridge would be approximately 160 m in length and is considered to be prohibitively expensive to construct in the foreseeable future. Preliminary discussions with MFLNRO identified that a bridge crossing within the ravine may be possible, but would require the following challenges to be addressed:

- An environmental assessment of the proposed crossing would be required to determine the environmental impacts and mitigation measures of bridge development.
- Accessibility to the bridge site for construction equipment could be a limitation and may have cost implications. An alternate entrance option is from Galloway Gulch.
- The log jam near the existing fallen log crossing may have to be dislodged to limit future damage to a constructed structure.
- There is potential for damage to a future bridge related to other flowing debris if the log jam is removed.

It is recommended that in the medium to long-term, a pedestrian bridge crossing be established over Benson Creek.

Design of the bridge crossing should make use of long-lasting, low maintenance materials. Design development should follow the *Standards and Best Practices for Instream Works* as well as the Terms and Conditions of the Habitat Officer for the West Coast Region. Design will include creation of an environmental management and slope remediation plan by an R.P. Bio, in consultation with MFLNRO.

Action 16:

Complete an engineered design and environmental management plan for an improved crossing at Benson Creek. Consult with MFLNRO during the design and submit required applications.

Action 17:

Develop a bridge crossing over Benson Creek.



6.6 Park Amenities

Amenities

The Issue: Benson Creek Falls Regional Park is a nature park and therefore visitor amenities are minimal.

During the consultation process, park users identified that garbage receptacles at the trailheads would be a desirable amenity. Other amenities such as washroom facilities and benches did not receive extensive input, but could be considered in the future if need is identified.

Action 18:

Develop trailheads at Weigles Road & the Jameson Parking Area to RDN Parks Standards if need is identified.

Camping & Campfires

The Issue: Evidence of camping and campfire use is present at the clearing near Ammonite Falls.

The clearing is relatively distant from populated areas, but is still readily accessible by foot, bike or motorized vehicle. Under Park Use Regulation Bylaw No. 1399, camping is only permitted in Regional Parks with constructed camping areas, which does not include Benson Creek Falls Regional Park. Camping and fires have potential hazards including wildfire risks, limited emergency access and environmental damage.



Evidence of campfire use at the clearing near Ammonite Falls.

Policy 7:

Camping and campfires are not permitted in Benson Creek Falls Regional Park.

Viewpoint

The Issue: A knoll on the eastern boundary of the park provides views out to Nanaimo, but is directly adjacent to a private gravel quarry.

Southeast of Benson Creek Ravine, a small spur trail leads to a knoll that has views over the private gravel quarry to the City of Nanaimo and surrounding areas. This viewpoint is an appealing rest stop along the trail.



The viewpoint on the eastern boundary of the park provides view over Nanaimo.



Action 19:

In consultation with the adjacent landowner, develop signage that provides direction from the trail to the viewpoint and advises people not to venture beyond the viewpoint into the gravel quarry.

6.7 Park Users



Off-leash dogs are common in BCFRP, but the public process identified relatively few concerns about conflicts.

The Issue: Public consultation and observation identified a number of different user groups in BCFRP, including, but not limited to: hikers, trail runners, dog-walkers, mountain bikers and ATV users. Generally public input did not identify conflicts between users groups; in most cases terrain dictates user groups within the park. As popularity of the park grows, a plan for managing the different user groups may be required.

Policy 8:

Use of Benson Creek Falls Regional Park will be governed by RDN Park Use Bylaw No. 1399 that provides that:

- Pets must be under human-control at all times in the park. Pets may be off-leash, but must respond to their owner's commands. Information regarding this policy should be posted at the park entrances.
- Motorized vehicle use is not permitted within Regional Parks. It is recognized that this use occurs in the woodlot and vicinity and it is recommended that signage be posted at the park boundaries to inform trail users that motorized vehicles are not permitted within the park boundary. Information should also be posted to let users know that these uses may be encountered when using trails outside the park.
- Mountain biking is permitted within Regional Parks. The RDN should work with the mountain biking community to identify routes within the park that are being used by the mountain biking community and to provide signage that communicates where multiple uses exist.

6.8 Habitat & Environmental Protection

The Issue: Public use of BCFRP continues to increase, which if not managed, could lead to negative environmental impacts.

Key environmental concerns identified through this process included erosion and habitat impacts within the steep ravine and riparian zones along Benson



Creek ravine and near Ammonite Falls. As park development occurs, care should be taken to protect the environmental assets of BCFRP.

Policy 9:

Construction activities within steep slope and ravine areas should include design development, review and monitoring by a R.P. Bio.

Policy 10:

If new trails within the park are planned (beyond those identified in this plan), detailed study to identify environmental constraints such as erodible slopes, “at-risk” species and ecosystems, nesting birds, archaeological and paleontological assets and veteran trees/snags could be completed¹³.

Ongoing monitoring and regular review of park ecosystems and wildlife in the park will support protection and conservation. Monitoring activities can be connected with educational and stewardship programming to create a more meaningful experience for park users and offer opportunities for educational institutions. For example, recent Vancouver Island University coursework included assessment and monitoring of Benson Creek fish habitat. Such connections should be fostered and continued for the park’s next phase of development.

Policy 11:

The RDN will support and encourage stewardship activities that promote ecological health within the park and/or compile knowledge about the natural systems of the park.

Action 20:

Encourage and support connections with educational institutions (such as VIU) to undertake relevant coursework that includes survey and monitoring of habitat and wildlife within the park or assessment of impacts of recreational use on sensitive sites within the park. Where research and survey is completed within BCFRP, the RDN should request copies of data and analysis.

As described in Section 4.5, a recent inventory of habitat, wildlife and sensitive ecosystems was conducted by Ursus Environmental. A number of actions were recommended within this report to support the development of a better understanding of natural values within BCFRP and address potential park management issues.

¹³ Per Ursus Environmental Overview for Benson Creek Falls Regional Park.



Action 21:

Maintain a map and list of environmentally sensitive areas and CDC-listed species identified within the park boundary.

Action 22:

Complete targeted surveys to determine the presence of two potential “at-risk” amphibian species within the park; the Northern Red-legged Frog and Clouded Salamander.

Action 23:

Complete a modest invasive species inventory and removal program to remove Yellow Archangel at the Weigles Road Trailhead over the short-term, along with periodic removal of English Holly along the northern trail network, as resources allow.

Action 24:

Undertake long-term monitoring of key areas within the park including the Ammonite Falls access and the Benson Creek crossing to assess erosion management and habitat re-establishment using standardized forms, GPS locations, and digital photographs updated at 3 to 5 year intervals.

6.9 Landform & Geology

The Issue: Ammonite fossils have been known to exist at Benson Creek Falls Regional Park.

The park’s inception is linked with a major finding, and subsequent vandalism, of a significant Ammonite fossil within the park. While no particular fossil sites have been identified to date, more fossils may exist within the park boundaries. With continued park use, erosion and park development, there is a potential to uncover additional fossils in the future. At present, the RDN does not have a policy for how to deal with fossil finds.

Action 25:

Develop a policy and protocol for potential fossil discoveries. A recommended policy is as follows:

“Fossils discovered within BCFRP are not to be moved or damaged. The RDN will report any found fossils to the Vancouver Island Paleontological Society for analysis.”



Action 26:

Include the policy and protocols on information for the park, including on park entry signs and online/print information. Sign wording as follows:

“Fossils discovered within BCFRP are not to be moved or damaged. The location of all potential discoveries should be reported immediately to the RDN.”

7.0 IMPLEMENTATION SUMMARY

The following section summarizes the management goals and actions outlined for the park within an implementation framework. Each management goal and list of actions are linked to a recommended timeframe, estimate of a magnitude of cost to implement and an assigned priority responsibility and/or additional parties involved in completing the actions.

7.1 Summary of Actions by Management Section

Table Headings

Recommended Timeframe:

Timeframe recommendations are based on consideration for anticipated budget, safety, public demand and environmental protection. Implementation timing may change depending on other demands within the Regional Parks system. Proposed timeframes are as follows:

	Immediate: 1-2 Years
	Short-Term: 3-5 Years
	Medium-Term: 6-10 years
	Ongoing: No Defined Timeframe

Estimated Capital Costs:

Capital costs are outlined to provide an order of magnitude for budgeting purposes. Cost estimates are based on historical cost information and are provided for planning purposes only. Estimates should be reviewed and updated at the time of project implementation.

Parties Involved:

Outlines at a high level the parties that will be involved in the implementation of the action.

Table 3: Implementation Recommendations

Management Section	Action	Recommended Timeframe	Estimated Capital Cost	Parties Involved
6.1 Park Lease	1. Submit a lease renewal application to MFLNRO. As part of the renewal process, explore tenure options with MFLNRO.	Immediate	Staff Time* * Potential legal costs may arise over the course of the lease renewal, depending on process outcomes.	RDN Staff MFLNRO
6.2 Park Access	2. Upgrade, reorganize and expand the Weigles Road parking lot.	Medium-Term	\$7,000	RDN Staff Woodlot Owner W0012 MOT
	3. Develop an off-road parking area at the Jameson Road Access point.	Immediate	\$10,00 - \$20,000* * Cost will depend on Parking Option selected (see Section 6.2: Park Access).	RDN Staff MFLNRO Woodlot Owner W0020
	4. Obtain a formal agreement with MFLNRO, with support from the Woodlot #0020 Manager, for a public access route from Jameson Road to BCFRP.	Short-Term	Staff Time	RDN Staff MOT Woodlot Owner W0020
6.3 Park Trails	5. Undertake trail improvements or relocation of the ravine descent to Benson Creek in conjunction with a new bridge crossing over the ravine (See <i>Action #17</i>). Consult with MFLNRO review and selection of the preferred crossing location.	Medium-Term	\$40,000	RDN Staff R.P. Bio MFLNRO

Management Section	Action	Recommended Timeframe	Estimated Capital Cost	Parties Involved
	6. Clear and develop the flagged trail route to reconnect the Weigles Park Access to Ammonite Falls. Trail construction should be routed to avoid larger standing trees and their drip-lines.	Medium-Term	\$6,000	RDN Staff
	7. Once a formalized agreement with MFLNRO has been obtained (See Action #4), develop and sign the Jameson Road access route as an entrance to BCFRP.	Short-Term	\$19,000	RDN Staff R.P. Bio
	8. Work with MFLNRO and the Woodlot owner to secure an agreement for the Loop Route at the Weigles Road Entrance as a recreational trail and maintain its use during woodlot activities. Sign the trail to inform users when they are outside the park boundary.	Immediate	\$3,000	RDN Staff MFLNRO Woodlot Owner W0012
6.4 Signage, Information & Communications	9. Design and implement a park signage system that includes: <ul style="list-style-type: none"> ▪ A park entry sign at the Jameson Road Access Route (once agreement has been obtained – See Action #3); ▪ Park maps and information signs at the two main park access routes – Weigles Road and Jameson Road; ▪ Trail markers and location maps at intersections that provide clear direction to help people navigate the main park routes; ▪ Interpretive information about the park’s history and natural features; ▪ Regulatory and cautionary signage that encourages safe and respectful use of the park; and ▪ Park boundary signage that informs people when they are entering private lands. Opportunities to design park boundary signs in consultation with Woodlot owners should be explored to help inform users about Woodlot activities and rights. 	Short-Term	\$19,000	RDN Staff
	10. RDN’s website or provided in hard copy. Distribute official information to key organizations that post or provide tourism information about the park.	Short-Term	Staff Time	RDN Staff Tourism Organizations
	11. Establish an annual check-in meeting with the Woodlot managers to discuss changes, ideas and actions related to Regional Parks, including, but not limited to, Benson Creek Falls Regional Park and promote inclusion of key trail routes acknowledged in Woodlot Licence Plans.	Short-Term	Staff Time	RDN Staff Woodlot owners
6.5 Park Infrastructure	12. Develop a barrier structure that restricts access to the edge of the overlook on the overhang. Consider incorporating interpretive signage as a part of the overlook area.	Immediate	Complete	
	13. Complete geotechnical engineering review for both the Ammonite Falls descent and the Benson Creek crossing to identify options and potential issues related to developing stair access to Ammonite Falls and a bridge crossing over Benson Creek.	Immediate	\$20,000	RDN Staff Consultant
	14. Complete an engineered design and environmental management plan for stair access to Ammonite Falls that helps manage the steep grades and provides safer access. Consult with MFLNRO during the design and submit required applications.	Immediate	\$30,000	RDN Staff Consultants R.P. Bio MFLNRO

Management Section	Action	Recommended Timeframe	Estimated Capital Cost	Parties Involved
	15. Develop stair access with viewing platforms to Ammonite Falls, including slope remediation for eroded slopes.	Immediate	<p>Option 1: Aluminum Substructure + Aluminum Treads/Handrail \$375,000</p> <p>Option 2: Aluminum Substructure + Wood Treads/Handrail \$295,000</p> <p>Option 3: Wood Substructure + Wood Treads/Handrail \$245,000*</p> <p>* All options assume concrete footings over an 80m distance with 1-2 landings.</p>	RDN Staff R.P. Bio Contractor Consultants
	16. Complete an engineered design and environmental management plan for an improved crossing at Benson Creek. Consult with MFLNRO during the design and submit required applications.	Medium-Term	\$25,000	RDN Staff Consultants
	17. Develop a bridge crossing over Benson Creek.	Medium-Term	<p>Option 1: Steel Girders \$190,000</p> <p>Option 2: Steel Trusses \$250,000</p> <p>* Both options assume 2m wide, 40m long clear-span bridge with timber decking and handrails over steel substructure. Option 1 includes steel girders which have lower cost, but provide less clearance between the bridge and watercourse. Option 2 includes steel trusses which have higher cost and better clearance.</p>	RDN Staff R.P. Bio Contractor Consultants
6.6 Park Amenities	18. Develop trailheads at Weigles Road & the Jameson Parking Area to RDN Parks Standards if need is identified.	Medium-Term	\$16,000	RDN Staff
	19. In consultation with the adjacent landowner, develop signage that provides direction from the trail to the viewpoint and advises people not to venture beyond the viewpoint into the gravel quarry.	Medium-Term	\$3,000	RDN Staff

Management Section	Action	Recommended Timeframe	Estimated Capital Cost	Parties Involved
	20. Encourage and support connections with educational institutions (such as VIU) to undertake relevant coursework that includes survey and monitoring of habitat and wildlife within the park or assessment of impacts of recreational use on sensitive sites within the park. Where research and survey is completed within BCFRP, the RDN should request copies of data and analysis.	Ongoing	Staff Time	RDN Staff Educational Institutions Stewardship Groups
6.8 Habitat & Environmental Protection	21. Maintain a map and list of environmentally sensitive areas and CDC-listed species identified within the park boundary	Ongoing	Staff Time	RDN Staff
	22. Complete targeted surveys to determine the presence of two potential “at-risk” amphibian species within the park; the Northern Red-legged Frog and Clouded Salamander.	Medium-Term	\$8,000	RDN Staff R.P. Bio
	23. Complete a modest invasive species inventory and removal program to remove Yellow Archangel at the Weigles Road Trailhead over the short-term, along with periodic removal of English Holly along the northern trail network, as resources allow.	Short-Term and Ongoing	Staff Time	RDN Staff Volunteers
	24. Undertake long-term monitoring of key areas within the park including the Ammonite Falls access and the Benson Creek crossing to assess erosion management and habitat re-establishment using standardized forms, GPS locations, and digital photographs updated at 3 to 5 year intervals.	Ongoing	Staff Time	RDN Staff
6.9 Landform & Geology	25. Develop a policy and protocol for potential fossil discoveries.	Immediate	Staff Time	RDN Staff Paleontology Society
	26. Include the policy and protocols on information for the park, including on park entry signs and online/print information.	Ongoing	Staff Time	RDN Staff



7.2 Summary of Actions by Priority

Table 4: Recommended Immediate Actions (1 - 2 Year Timeframe)

Actions	Estimated Capital Cost
1. Submit a lease renewal application to MFLNRO. As part of the renewal process, explore tenure options with MFLNRO.	Staff Time*
3. Develop an off-road parking area at the Jameson Road Access point:	
3A Complete minor improvements to the parking lot at Creekside Place Community Park. Provide 'No Parking' signage at the corner of Creekside Place and Jameson Road (where people currently park) and direct parking to Creekside Place Community Park.	\$10,000**
3B If demand exceeds capacity in that location, consider development a new parking lot at the corner of Creekside Place and Jameson Road (Option 2). Parking lot in this location will require design development for grading and creek protection prior to development.	\$20,000*
8. Work with MFLNRO and the Woodlot owner to secure an agreement for the Loop Route at the Weigles Road Entrance as a recreational trail and maintain its use during woodlot activities. Sign the trail to inform users when they are outside the park boundary.	\$3,000
12. Develop a barrier structure that restricts access to the edge of the overlook on the overhang. Consider incorporating interpretive signage as a part of the overlook area.	Complete
13. Complete geotechnical engineering review for both the Ammonite Falls descent and the Benson Creek crossing to identify options and potential issues related to developing stair access to Ammonite Falls and a bridge crossing over Benson Creek.	\$20,000
14. Complete an engineered design and environmental management plan for stair access to Ammonite Falls that helps manage the steep grades and provides safer access. Consult with MFLNRO during the design and submit required applications.	\$30,000
15. Develop stair access with viewing platforms to Ammonite Falls, including slope remediation for eroded slopes.	\$245,000 - \$375,000***
24. Develop a policy and protocol for potential fossil discoveries.	Staff Time
TOTAL, ESTIMATED CAPITAL COST FOR IMMEDIATE ACTIONS	\$308,000 - \$458,000
(25% CONTINGENCY)	\$77,000 - \$114,500
TOTAL RECOMMENDED ALLOCATION	\$385,000 - \$572,500

* Potential legal costs may arise over the course of the lease renewal, depending on process outcomes.

** Cost will depend on Parking Option selected (see **Section 6.2: Park Access**).

*** Cost will depend on Stair Substructure Option selected (see **Table 3, Action #15**).



Table 5: Recommended Short-Term Actions (3 - 5 Year Timeframe)

Actions	Estimated Capital Cost
4. Obtain a formal agreement with MFLNRO, with support from the Woodlot #0020 Manager, for a public access route from Jameson Road to BCFRP.	Staff Time
7. Once a formalized agreement with MFLNRO has been obtained (See Action #4), develop and sign the Jameson Road access route as an entrance to BCFRP.	\$19,000
9. Design and implement a park signage system that includes: <ul style="list-style-type: none"> ▪ A park entry sign at the Jameson Road Access Route (once agreement has been obtained – See Action #3); ▪ Park maps and information signs at the two main park access routes – Weigles Road and Jameson Road; ▪ Trail markers and location maps at intersections that provide clear direction to help people navigate the main park routes; ▪ Interpretive information about the park’s history and natural features; ▪ Regulatory and cautionary signage that encourages safe and respectful use of the park; and ▪ Park boundary signage that informs people when they are entering private lands. Opportunities to design park boundary signs in consultation with Woodlot owners should be explored to help inform users about Woodlot activities and rights. 	\$19,000
10. Develop park user information that can be posted on the RDN’s website or provided in hard copy. Distribute official information to key organizations that post or provide tourism information about the park.	Staff Time
11. Establish an annual check-in meeting with the Woodlot managers to discuss changes, ideas and actions related to Regional Parks, including, but not limited to, Benson Creek Falls Regional Park and promote inclusion of key trail routes acknowledged in Woodlot Licence Plans.	Staff Time
23. Complete a modest invasive species inventory and removal program to remove Yellow Archangel at the Weigles Road Trailhead over the short-term, along with periodic removal of English Holly along the northern trail network, as resources allow.	Staff Time
TOTAL, ESTIMATED CAPITAL COST FOR SHORT-TERM ACTIONS	\$38,000
(25% CONTINGENCY)	\$9,500
TOTAL RECOMMENDED ALLOCATION	\$47,500



Table 6: Recommended Medium-Term Actions (5 - 10 Year Timeframe)

Actions	Estimated Capital Cost
2. Upgrade, reorganize and expand the Weigles Road parking lot.	\$7,000
5. Undertake trail improvements or relocation of the ravine descent to Benson Creek in conjunction with a new bridge crossing over the ravine (See Action #17). Consult with MFLNRO review and selection of the preferred crossing location.	\$40,000
6. Clear and develop the flagged trail route to reconnect the Weigles Park Access to Ammonite Falls. Trail construction should be routed to avoid larger standing trees and their drip-lines.	\$6,000
16. Complete an engineered design and environmental management plan for an improved crossing at Benson Creek. Consult with MFLNRO during the design and submit required applications.	\$25,000
17. Develop a bridge crossing over Benson Creek.	\$190,000 - \$250,000*
18. Develop trailheads at Weigles Road & the Jameson Parking Area to RDN Parks Standards if need is identified.	\$16,000
19. In consultation with the adjacent landowner, develop signage that provides direction from the trail to the viewpoint and advises people not to venture beyond the viewpoint into the gravel quarry.	\$3,000
22. Complete targeted surveys to determine the presence of two potential "at-risk" amphibian species within the park; the Northern Red-legged Frog and Clouded Salamander.	\$8,000
TOTAL, ESTIMATED CAPITAL COST FOR MEDIUM-TERM ACTIONS	\$295,000 - \$355,000
(25% CONTINGENCY)	\$73,750 - \$88,750
TOTAL RECOMMENDED ALLOCATION	\$368,750 - \$443,750*

* Cost will depend on Bridge Crossing Substructure Option selected (see Table 3, Action #17).



Table 7: Recommended Ongoing Actions (No Defined Timeframe)

Actions	Recommended Timeframe
20. Encourage and support connections with educational institutions (such as VIU) to undertake relevant coursework that includes survey and monitoring of habitat and wildlife within the park or assessment of impacts of recreational use on sensitive sites within the park. Where research and survey is completed within BCFRP, the RDN should request copies of data and analysis.	Staff Time
21. Maintain a map and list of environmentally sensitive areas and CDC-listed species identified within the park boundary	Staff Time
24. Undertake long-term monitoring of key areas within the park including the Ammonite Falls access and the Benson Creek crossing to assess erosion management and habitat re-establishment using standardized forms, GPS locations, and digital photographs updated at 3 to 5 year intervals.	Staff Time
26. Include policy and protocol information about fossil discoveries, including on park entry signs and online/print information.	Staff Time



8.0 REPORT MAPS

The report maps provide a visual description of the information described in the Management Plan.

Maps:

Map 1: Park Area and Context.

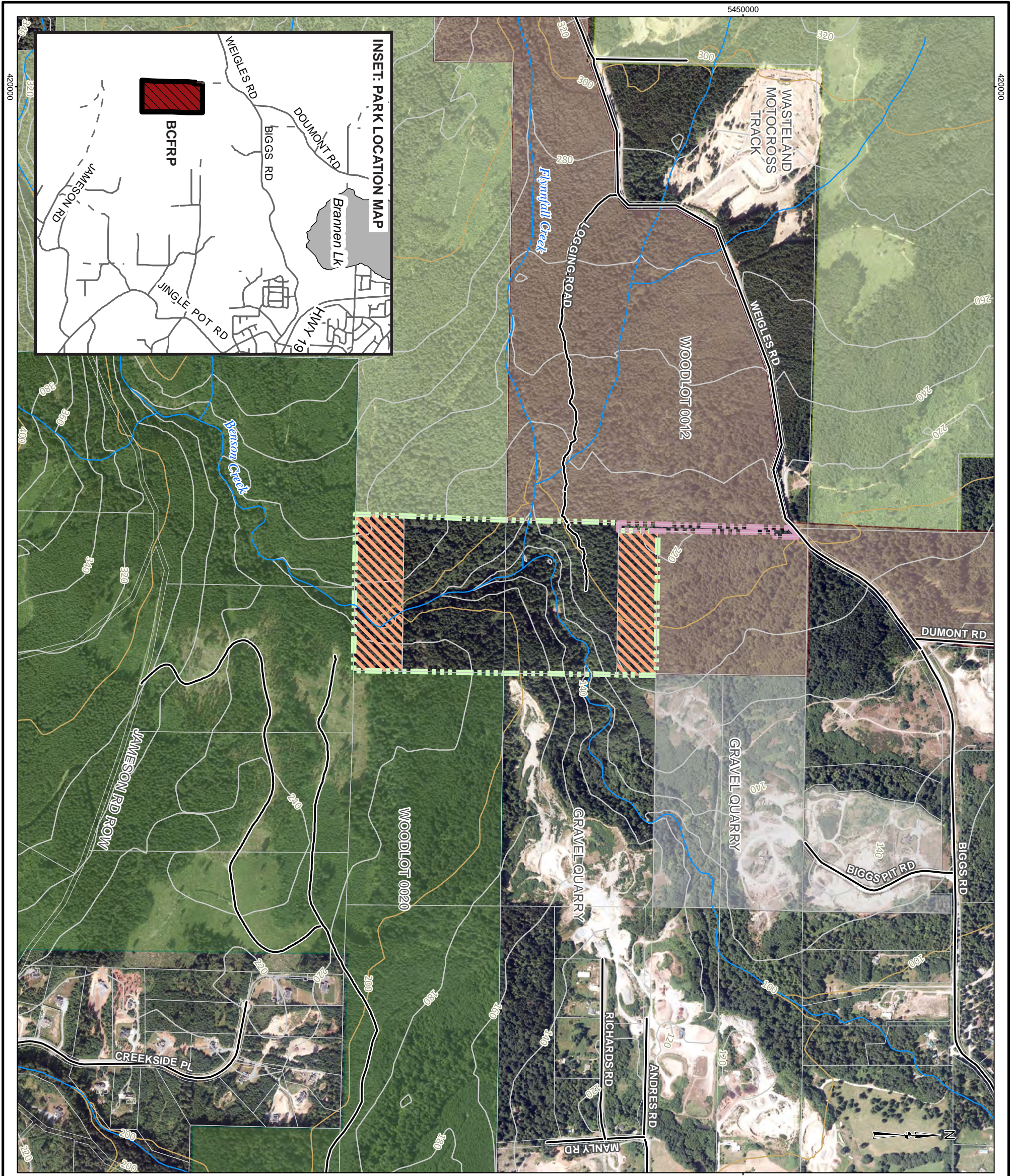
Map 2: Park Access & Adjacent Land Use

Map 3: Trails & Destination Points

Map 4: Environmental Overview

Map 5: Park Concept Plan





LEGEND

- 20m. CONTOUR
- 100m. CONTOUR
- ROAD
- WATERCOURSE

BENSON CREEK PARK

- 2007 PARK EXPANSION
- LEASE BOUNDARY
- PARK BOUNDARY

PROPERTIES

- WOODLOT W0012 - CROWN LAND
- WOODLOT W0020 - CROWN LAND
- WOOTLOT W0020 - PRIVATE LAND
- PROPERTY BOUNDARY - PRIVATE LAND
- LEASED CROWN LAND

REFERENCE

DATA PROVIDED BY REGIONAL DISTRICT OF NANAIMO, WOODLOT AND CROWN LAND DATA PROVIDED BY THE PROVINCE OF BRITISH COLUMBIA UNDER THE OPEN GOVERNMENT LICENSE FOR GOVERNMENT OF BC INFORMATION VBC1.0
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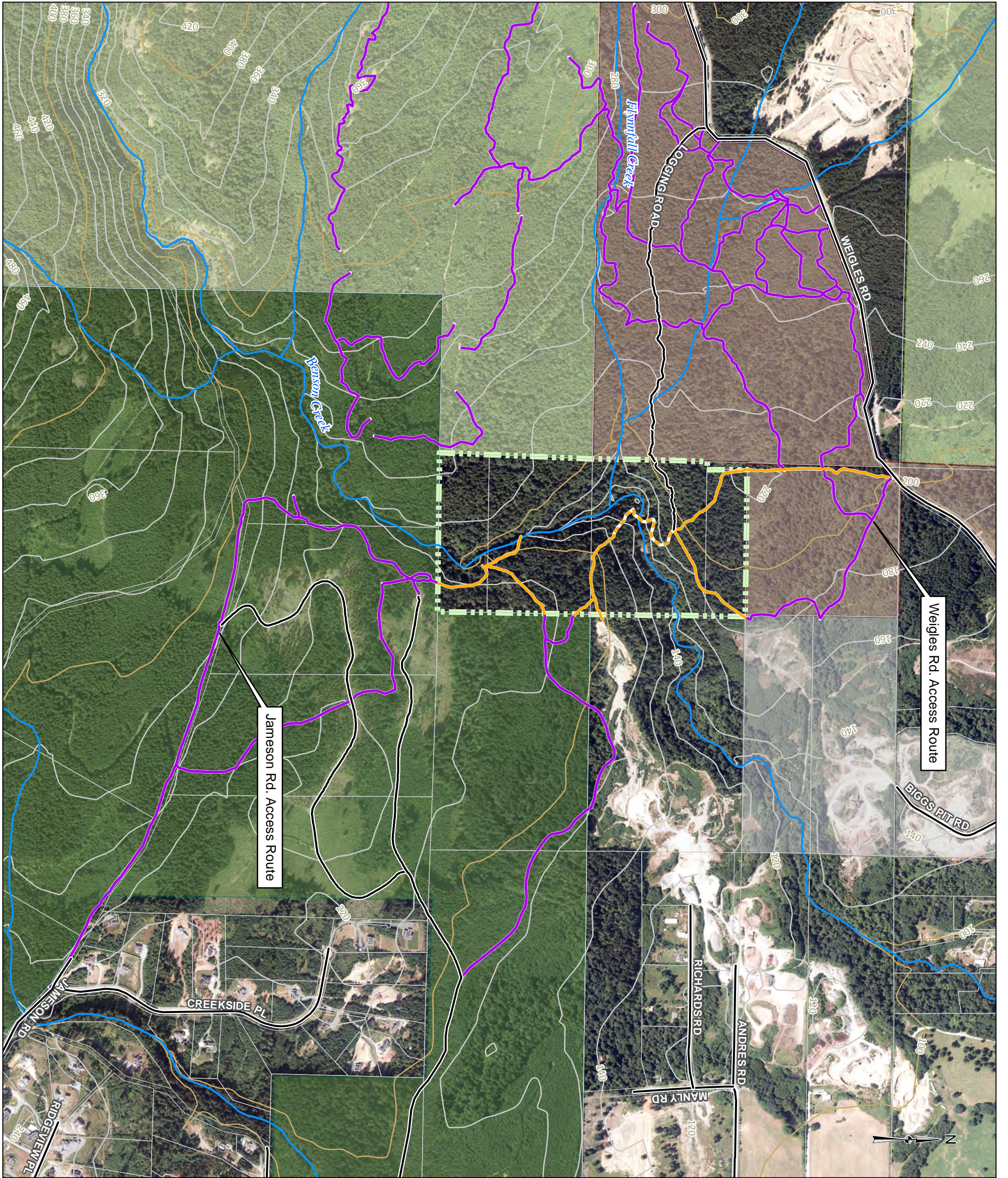
PARK AREA AND CONTEXT

PROJECT: Regional District of Nanaimo
 Benson Creek Falls Park
 Nanaimo, BC

Goldier Associates

PROJECT	13-1444-0019	FILE No.
DESIGN	JZ 15 MAY 2013	SCALE AS SHOWN
GIS	AD 23 SEPT. 2013	REV. 0
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MAP: 1

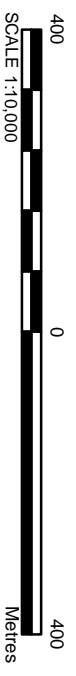


LEGEND

- 20m. CONTOUR
- 100m. CONTOUR
- ROAD
- WATERCOURSE
- TRAILS**
 - PARK TRAIL
 - UNMAINTAINED TRAIL
 - INFORMAL TRAIL
 - PARK BOUNDARY
- PROPERTIES**
 - WOODLOT W0012 - CROWN LAND
 - WOODLOT W0020 - CROWN LAND
 - WOODLOT W0020 - PRIVATE LAND
 - PROPERTY BOUNDARY - PRIVATE LAND
 - LEASED CROWN LAND

REFERENCE

MAP IS FOR INFORMATION PURPOSES ONLY. DATA LOCATIONS MAY NOT BE EXACTLY AS SHOWN. DATA PROVIDED BY REGIONAL DISTRICT OF NANAIMO. SECTIONS OF TRAILS DIGITIZED FROM [HTTP://WWW.WISLAND.NET/~PmCGARR/](http://www.wisland.net/~PmCGARR/) BY PHIL MCGARRI ON JUNE 06 2013. IMAGERY PROVIDED BY ESRI/ARCGIS ONLINE MAP SERVICES.

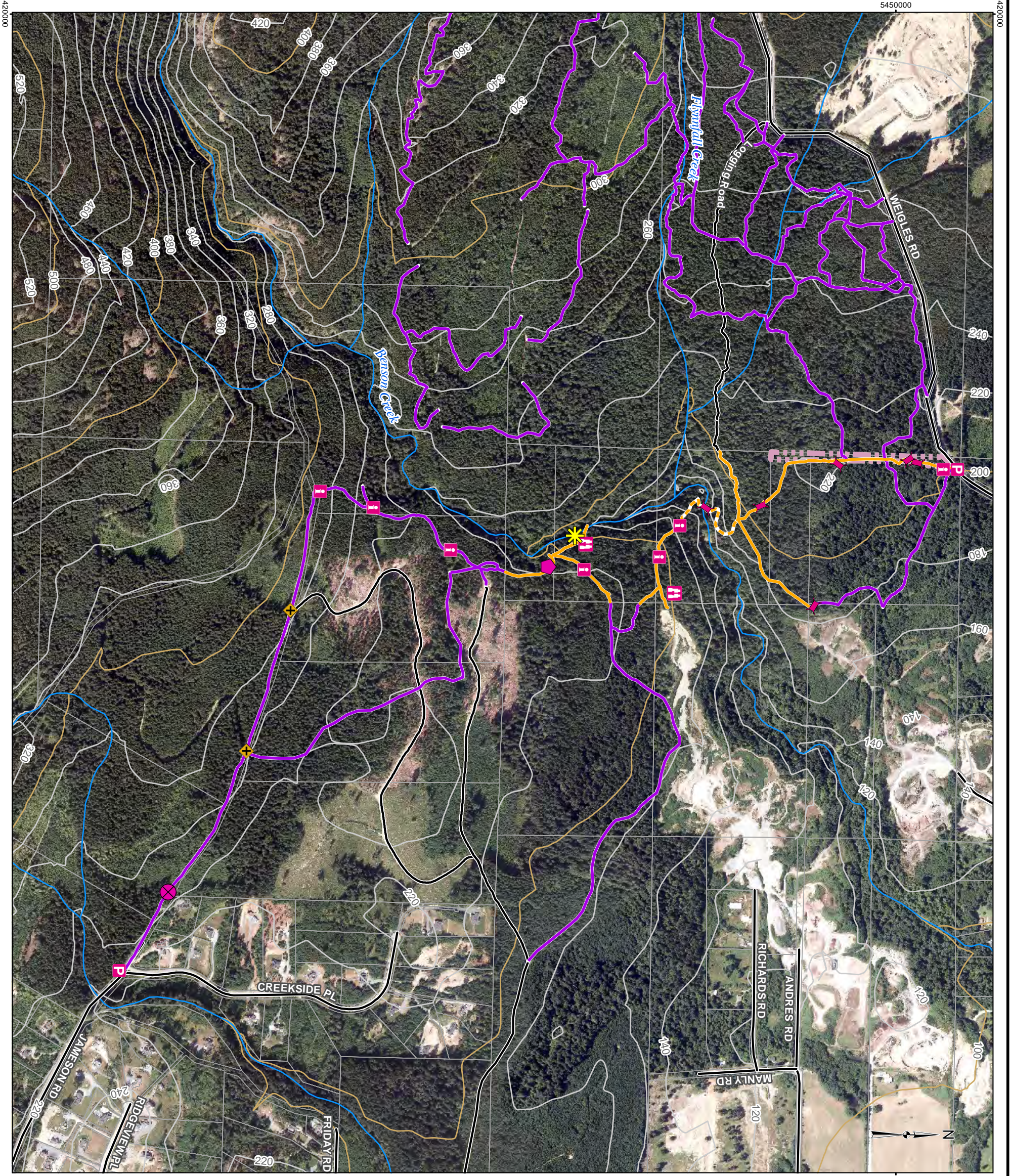


PROJECT
Regional District of Nanaimo
Benson Creek Falls Park
Nanaimo, BC

PARK ACCESS AND ADJACENT LAND USE

MAP: 2

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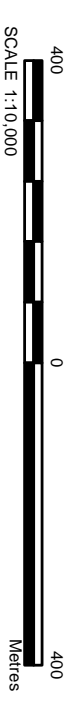
LEGEND

- EXISTING POINTS OF INTEREST**
- FOOTBRIDGE
 - AMMONITE FALLS
 - EXISTING GATE
 - CLEARING
 - VIEWPOINT
 - EXISTING PARKING
 - ROAD JUNCTION
 - INFORMATION SIGN

- TRAILS**
- PARK TRAIL
 - UNMAINTAINED TRAIL
 - INFORMAL TRAIL
 - ROAD
 - WATERCOURSE
 - 20m. CONTOUR
 - 100m. CONTOUR
 - LEASE BOUNDARY
 - PARK BOUNDARY
 - PROPERTY BOUNDARY

REFERENCE

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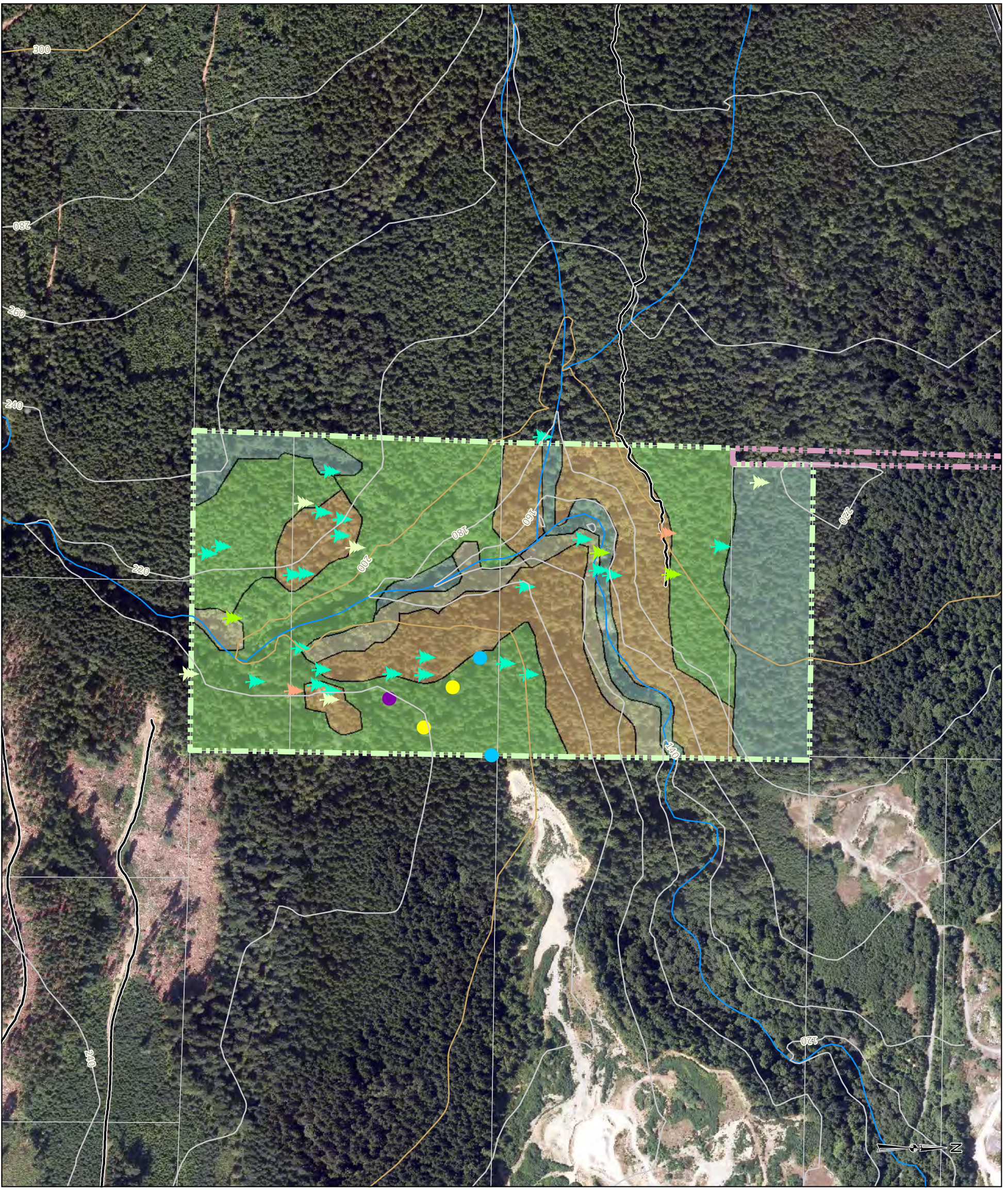
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 Benson Creek Falls Park
 Nanaimo, BC

TITLE

TRAILS AND DESTINATION POINTS

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GIS	AD 23 SEPT. 2013	REV. 0
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MAP: 3



LEGEND

WETLAND ECOSYSTEMS

- CW - SLOUGH SEDGE
- HARDHACK FEN
- SEDGE FEN

SIGNIFICANT TREES

- ▲ SNAG
- ▲ UNCOMMON
- ▲ VETERAN
- ▲ WILDLIFE USE

- 20m. CONTOUR
- 100m. CONTOUR
- ROAD

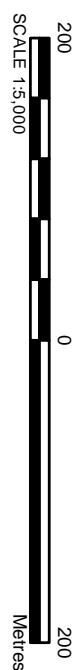
- WATERCOURSE
- LEASE BOUNDARY
- PARK BOUNDARY
- PROPERTY BOUNDARY

FOREST ECOSYSTEMS

- CW - FOAMFLOWER (RED LIST, CF PRIORITY 2)
- CW - SWORDFERN (BLUE LIST, CF PRIORITY 2)
- FDP1 - CLADINA (RED LIST, CF PRIORITY 2)
- HWFD - KINDBERGIA (RED LIST, CF PRIORITY 1)


REFERENCE

DATA PROVIDED BY REGIONAL DISTRICT OF NANAIMO. ECOSYSTEM DATA PROVIDED BY URSUS NANAIMO.
 DATUM: NAD83 PROJECTION: UTM ZONE 10



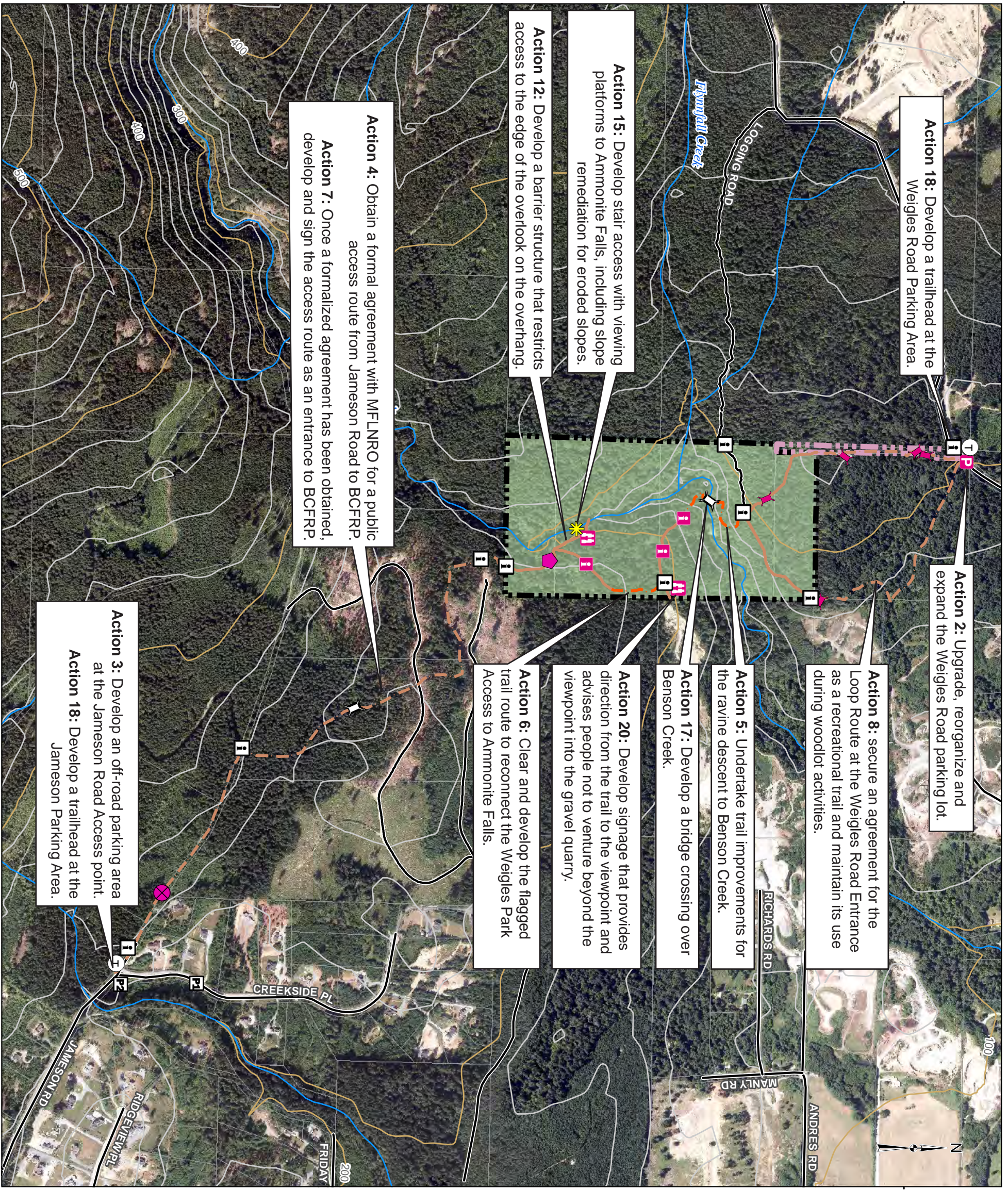
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 Benson Creek Falls Park
 Nanaimo, BC

ENVIRONMENTAL OVERVIEW



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MAP: 4

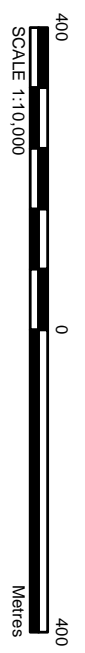


LEGEND

- PROPOSED**
- PROPOSED INFORMATION SIGN
- PROPOSED NEW FOOTBRIDGE
- PROPOSED TRAILHEAD
- PARKING**
- PARKING LOT (OPTION 1)
- PARKING LOT (OPTION 2)
- PRIMARY ROUTES**
- PROPOSED NEW/UPGRADED
- EXISTING
- OUTSIDE PARK BOUNDARY
- EXISTING**
- FOOTBRIDGE
- AMMONITE FALLS
- EXISTING GATE
- CLEARING
- VIEWPOINT
- EXISTING PARKING
- EXISTING INFORMATION SIGN
- ROAD**
- WATERCOURSE
- 20m. CONTOUR
- 100m. CONTOUR
- LEASE BOUNDARY
- PARK BOUNDARY
- PROPERTY BOUNDARY

REFERENCE

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 Benson Creek Falls Park
 Nanaimo, BC

PARK CONCEPT PLAN

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MAP: 5



RDN REPORT		AAA
CAO APPROVAL		
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COW		
NOV 26 2013		
RHD		
BOARD		
R P T S C		

MEMORANDUM

TO: Wendy Marshall
Manager of Parks Services

DATE: November 26, 2013

FROM: Margaret Paridaen
Parks Planner

FILE:

SUBJECT: RDN Parks and Trails Guidelines

PURPOSE

To review and approve the new RDN Parks and Trails Guidelines.

BACKGROUND

In February, 2012, the Board approved the development of a Parks and Trails Guidelines document for both Regional and Community Parks as a Community Works Fund project.

Regional and Community parks and trails provide diverse and memorable recreation experiences for residents and visitors. With the development and management of existing parks and trails and the acquisition of new parkland, there has been a growing need to develop clear and consistent planning and design guidelines.

The RDN Parks and Trails Guidelines is a tool that provides consistent direction for the planning and design of Community and Regional parks and trails and associated staging areas (e.g. entrances) and amenities. Having guidelines will assist staff, contractors, developers, and the community in the provision of the highest quality parks and trail amenities; will help with siting appropriate amenities for the community; make efficient use of limited resources; provide a consistent RDN park look; and, will help to ensure minimal environmental impacts in park and trail development.

The Guidelines document contains an overview of the RDN Parks and Trails system; a trail classification system with description of the three types of RDN trails, along with trail cross-sections and concept details and direction regarding design elements, amenities, staging areas and maintenance levels; best management practices for trail planning, design and construction; and description, examples and guidelines for staging areas, standard facilities and amenities.

This document will be used in the planning stage of Regional and Community parks and trails development and when undertaking park and trail improvements and upgrading. The document can also be provided to developers and community groups who are developing parks amenities on behalf of the RDN.

ALTERNATIVES

1. That the RDN Parks and Trails Guidelines be approved and adopted as a guide for parks and trail development and operations.
2. That the RDN Parks and Trails Guidelines not be approved and alternative direction be provided.

FINANCIAL IMPLICATIONS

The Guidelines will help to save money and resources through efficient and sustainable design, and innovative and low tech solutions. Standard designs for amenities can allow for bulk savings and the use of qualified contractors and consultants that are familiar with RDN standards.

The Guidelines are also a tool for decision making by providing the options for level of development for trail types, staging and signage which can be used to determine the costing of developing a project.

STRATEGIC PLAN IMPLICATIONS

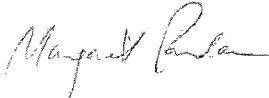
The RDN Parks and Trails Guidelines is aligned with the 2013 – 2015 Board Strategic Plan Actions of ensuring that park development meets conservation objectives as well as recreation objectives; ensuring the park system and amenities are developed to high standards for local low-emissions transportation alternatives; for accessibility where possible; for enhanced recreation opportunities for the region's diverse population; and, for the development of high quality tourism assets in the RDN.

SUMMARY

The RDN Parks and Trails Guidelines is a sourcebook of current best practices and industry standards for sustainable park and trail planning and development. It is organized into a succinct and user-friendly toolkit for staff, contractors, consultants, developers and the community for the planning, design and development of exceptional parks and trails in the RDN.

RECOMMENDATION

That the RDN Parks and Trails Guidelines be approved and adopted as a guide for parks and trail development and operations.



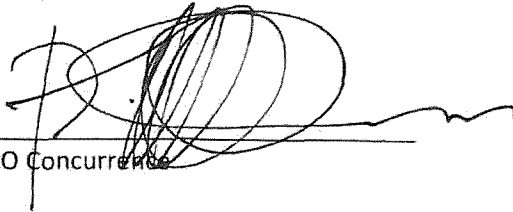
Report Writer



General Manager Concurrence



Manager Concurrence



CAO Concurrence

Appendix I:
RDN Parks and Trails Guidelines

Regional District of Nanaimo Parks and Trails Guidelines



January | 2014



This document was prepared by Stantec Consulting Ltd. in collaboration with the Regional District of Nanaimo.

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1 INTRODUCTION

The Regional District of Nanaimo (RDN) is a popular recreation and tourism destination. The RDN is responsible for managing a comprehensive system of [regional](#) and [community](#) parks and [trails](#). There are 12 regional parks encompassing 2,061 hectares of land, 60 kilometres of developed regional trail, and over 180 community parks in 7 electoral areas.

Regional and community parks and trails provide diverse and memorable recreation and tourism experiences for residents and tourists alike. The RDN purposefully plans, designs and manages its parks and trails system to protect sensitive ecosystems, provide quality visitor experiences and actively manage the environmental and social impacts of visitation. Easy access to quality parks and trails also enhances community involvement, individual health, early childhood development, environmental awareness and overall quality of life.

Providing consistent park and trail design guidance to staff, contractors, developers, and the community is an important foundation in ensuring the delivery of the highest quality visitor experiences in a manner that avoids or effectively mitigates environmental impacts.

1.1 Purpose

The intent of this document is to provide consistent direction for the planning and design of community and regional parks and trails and associated staging areas (e.g. entrances) and amenities. The guidelines also address the process of developing and maintaining parks and trails for the RDN. Design guidelines for trails and staging areas are provided based on clearly articulated classification systems. This document should be referred to to support the conceptual planning stage of regional and community parks and trails while directly incorporated into all detailed design processes.

This document provides planning and design guidance for:

- Conceptual park and trail planning and design process,
- Trails,
- Staging areas,
- Park and trail Signage,
- Site structures and
- Site furnishings.

These guidelines outlined are not intended to be static. Recreation demands, park conditions, technologies, and political interests evolve; and can necessitate changes to priorities and how we view, use and therefore design our parks and trails system. Periodic reviews of these guidelines will be undertaken to ensure they remain relevant to the priorities of the RDN and the visitors who enjoy the parks and trails.

The diagrams and details contained in this document are intended as guidelines only. Further contract specifications will be required for construction.



Mount Benson Regional Park trailhead



Descanso Bay Regional Park campground

2 OVERVIEW OF RDN REGIONAL AND COMMUNITY PARKS AND TRAILS

This document provides guidance for both community and regional parks and trails.

- Community Parks and Trails** serve neighborhoods and residents locally and are typically acquired through new development. Local taxes in each Electoral Area support the development of community parks and trails within that Electoral Area. Community parks tend to be smaller parcels of land. Community trails link parks and amenities at the neighbourhood level.
- Regional Parks and Trails** are intended to serve residents from the entire region and visitors from outside the region. They tend to be larger areas of land outside urban zones. They have an emphasis on environmental protection and outdoor recreation. Regional parks and trails are funded by the entire Regional District. Regional trails provide connections throughout the region linking parks to parks, communities and the RDN to other regions.

2.1 Parks Classification and Zoning System

Regional and community parks are further separated into park classes, providing clear management direction for each site (see tables 1–3). Recognizing the size and complexity of some regional parks, a park zoning system is also utilized to spatially communicate management direction within a single regional park site. In designing and planning for amenities and trails within RDN parks, consideration should be made of the park and trail type, classification and park zoning.

Park and trail design guidelines within this manual have been prepared with the park and trail type, classification and zoning in mind. Guidelines also consider the intended target markets and the desired visitor experience to be provided by each park and trail.

Table 1 RDN Community Park Classification

COMMUNITY PARK CLASSIFICATION	PRIMARY FOCUS
Neighbourhood Park	Providing active recreation facilities (e.g. playground, sport court, washroom). Secondary uses may include protection of natural areas and provision of trails.
Natural Park	Protection of a significant cultural/heritage/environmental feature or function. Providing local ‘greenspace’ for aesthetics and nature appreciation is also important.
Linear Park	Connectivity to community destinations through active transportation (non-vehicle). Access to nature is secondary. Can also provide emergency access/egress.
Water Access	Providing public access to ocean, river or lake frontage. Secondary uses include natural area protection and viewing opportunities.
Surplus	Lands acquired in past without any Environmentally Sensitive Area (ESA) or active park value or potential



Table 2 Regional Park Classifications

REGIONAL PARK CLASSIFICATION	PRIMARY FUNCTION
Regional Conservation Area	Protection of the natural environment. Limited, low impact outdoor activities permitted but may be restricted to specific areas. Environmental interpretive facilities permitted provided they have minimal impact.
Regional Natural Area	Protect the natural environment and provide opportunities for range of appropriate outdoor experiences and activities. These areas protect key natural areas that are significant to the environmental character of the region. They are not as ecologically sensitive as RCA's but may contain some sensitive ecosystems.
Regional Recreation Area	Provide opportunities for a wide range of outdoor experiences, adventure activities and events; managed to accommodate a relatively high number of visitors.
Regional Trail	Connect regional parks to other parks and trails, key points of interest (natural and cultural) and communities. In or near urban areas, to encourage non-vehicular modes of transportation.

Zoning is a tool used by park managers to spatially communicate management objectives for defined areas within a park. Regional Park Management Plans employ park use zones to define areas having different levels of protection and public use, to protect the ecological integrity and special environmental and cultural features of a park, and to reduce conflicts between protection and public use. When developing park infrastructure and trails, it is essential to consider how those developments align with the particular park zone where the development is to occur. RDN's park zones include:

- Intensive Recreation
- Natural Environment
- Conservation

The management intents of these zones mirror the management intents of the park classifications.

2.2 Trail Classification System

Trail classification allows for consistent design of facilities; improved visitor safety and experience; and environmental sustainability of trails within the RDN. Trails within the RDN are classified into one of three classes (Table 3):

- Type 1
- Type 2
- Type 3

Table 3 Trail Classification System

CLASSIFICATION	PRIMARY FOCUS	TYPICAL VISITORS & ACTIVITIES
Type 1	<ul style="list-style-type: none"> » Universally accessible two way path » Connects communities to parks and to other communities » Typically provides a front-country recreation experience » Offers most amenities » Opportunity for a wide range of human-powered outdoor activities » Designed to accommodate a high number of users 	<ul style="list-style-type: none"> » Active transportation, tourism, and recreational users » Typical user activities include walking and cycling » Suitable for strollers and mobility impaired individuals
Type 2	<ul style="list-style-type: none"> » Slightly narrower than trail type 1, and provides fewer amenities » Typically provides a mid-country and front-country recreation experience » Designed for a variety of trail activities and users » May be universally accessible if suitable conditions and demand exist 	<ul style="list-style-type: none"> » Recreational and tourism users » Primarily accessed by local residents » Accommodates a variety of activities including hiking, walking, cycling, and mountain biking » Moderate level of use » May be universally accessible if suitable conditions and demand exist
Type 3	<ul style="list-style-type: none"> » Limited access trail, which is not universally accessible due to slope and surface treatment » Provides a mid-country and back-country recreational experience » Offers few amenities 	<ul style="list-style-type: none"> » Recreational and tourism users » Accessed by local residents and tourists » Opportunity for hiking, walking, equestrian, and mountain biking » Moderate to low level of use

2.2.1 Trail Design Guideline Matrix

The following section provides design guidelines for each trail type. In addition to cross sections and typical construction details, the design guideline matrix also provides direction regarding design elements, amenities, staging areas and maintenance levels. It is important to recognize that flexibility in design is necessary given local constraints and unique situations.



Arrowsmith CPR Regional Trail



Table 4 RDN Trail Design Guidelines Matrix

Trail Type 1

TYPE 1 - HARD /COMPACTED SURFACE TRAIL (HIGHEST LEVEL OF DEVELOPMENT)			
DESCRIPTION	EXAMPLES	RELATIVE LEVEL OF USE	MAINTENANCE
<ul style="list-style-type: none"> » Urban or Rural » Active transportation corridor » Accessed by local residents and visitors » Recreational Use » Several amenities 	Lighthouse Country Regional Trail	High	High

DESIGN ELEMENTS						
SURFACING	SLOPE	TRAIL WIDTH (M)	CLEARING WIDTH ON EACH SIDE OF TRAIL (M)	CLEARING HEIGHT (M)	CROSS SLOPE	SIGHT LINES (M)
Paved / Compacted Gravel	Gentle (0 - 5%) Max. 10%	2-4	1	3	1 - 2%	10 - 20

TYPICAL USERS					
HIKING	WALKING	EQUESTRIAN	MOUNTAIN BIKING	CYCLING	UNIVERSAL ACCESS

AMENITIES						
FURNISHINGS	GARBAGE RECEPTACLES	KIOSK	REST AREAS	TOILETS	BICYCLE PARKING	VEHICLE PARKING

Trail Type 2

TYPE 2 - SOFT SURFACE TRAIL (MEDIUM DEVELOPMENT)			
DESCRIPTION	EXAMPLES	RELATIVE LEVEL OF USE	MAINTENANCE
<ul style="list-style-type: none"> » Accessed primarily by local residents » Recreational Use » Fewer amenities 	Englishman River Regional Park	Moderate	Medium

DESIGN ELEMENTS						
SURFACING	SLOPE	TRAIL WIDTH (M)	CLEARING WIDTH ON EACH SIDE OF TRAIL (M)	CLEARING HEIGHT (M)	CROSS SLOPE	SIGHT LINES (M)
Crushed Gravel or Natural Surface	Up to 30%	1-1.5	1	3	1-2%	Provide safe sight lines

TYPICAL USERS					
HIKING	WALKING	EQUESTRIAN	MOUNTAIN BIKING	CYCLING	UNIVERSAL ACCESS

AMENITIES						
FURNISHINGS	GARBAGE RECEPTACLES	KIOSK	REST AREAS	TOILETS	BICYCLE PARKING	VEHICLE PARKING

Trail Type 3

TYPE 3 - NATURAL SURFACE (MINIMUM DEVELOPMENT)			
DESCRIPTION	EXAMPLES	RELATIVE LEVEL OF USE	MAINTENANCE
<ul style="list-style-type: none"> » Rural or backcountry » Recreational Use » Few or no amenities 	Mount Benson Regional Park	Low	Low

DESIGN ELEMENTS						
SURFACING	SLOPE	TRAIL WIDTH (M)	CLEARING WIDTH ON EACH SIDE OF TRAIL (M)	CLEARING HEIGHT (M)	CROSS SLOPE	SIGHT LINES (M)
Natural Surface/ gravel added where needed	Up to 30%	0.5-1	0.5	2.5	2-4%	Provide safe sight lines

TYPICAL USERS					
HIKING	WALKING	EQUESTRIAN	MOUNTAIN BIKING	CYCLING	UNIVERSAL ACCESS

AMENITIES						
FURNISHINGS	GARBAGE RECEPTACLES	KIOSK	REST AREAS	TOILETS	BICYCLE PARKING	VEHICLE PARKING

TYPICALLY PROVIDED

OCCASIONALLY PROVIDED

Table 5 Trail Type 1

TRAIL TYPE 1 - HARD/COMPACTED SURFACE		
DESCRIPTION	RELATIVE LEVEL OF USE	MAINTENANCE
Well-developed, supporting high number of users. Surfaced with asphalt or compacted gravel, wide enough for two-way travel. Universally accessible where possible. Provides many amenities. Typically provides front-country recreation experience. Designed for a variety of trail activities and users. Examples: Lighthouse Country Regional Trail, Meadow Drive Community Park.	High	High

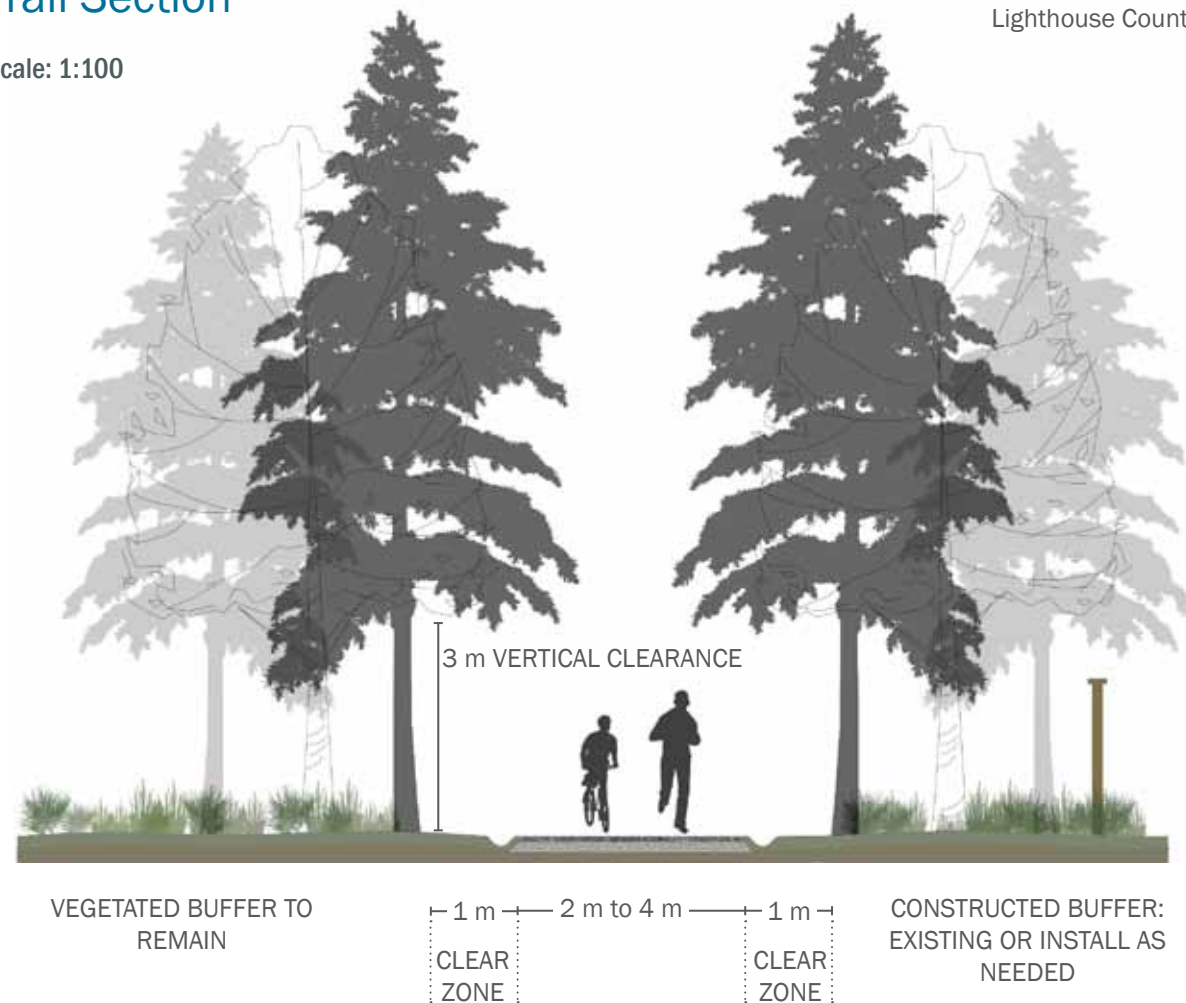
Sample Image



Lighthouse Country Regional Trail

Trail Section

Scale: 1:100



DESIGN ELEMENTS						
SURFACING	SLOPE	TRAIL WIDTH (M)	CLEARING WIDTH ON EACH SIDE OF TRAIL (M)	CLEARING HEIGHT (M)	CROSS SLOPE	SIGHT LINES (M)
Paved / Compacted Gravel	Gentle (0-5%) Max. 10%	2-4	1	3	1-2%	10-20

TYPICAL USERS					
HIKING	WALKING	EQUESTRIAN	MOUNTAIN BIKING	CYCLING	UNIVERSAL ACCESS

AMENITIES						
FURNISHINGS	GARBAGE RECEPTACLES	KIOSK	REST AREAS	TOILETS	BICYCLE PARKING	VEHICLE PARKING

TYPICALLY PROVIDED

OCCASIONALLY PROVIDED

Concept Detail

Scale: 1:50

OPTION: SURFACE TO BE 50 mm ASPHALT OR 75 mm DEPTH OF 9 mm (3/8") MINUS AGGREGATE COMPACTED TO 95% PROCTOR DENSITY WHEN SPECIFIED.

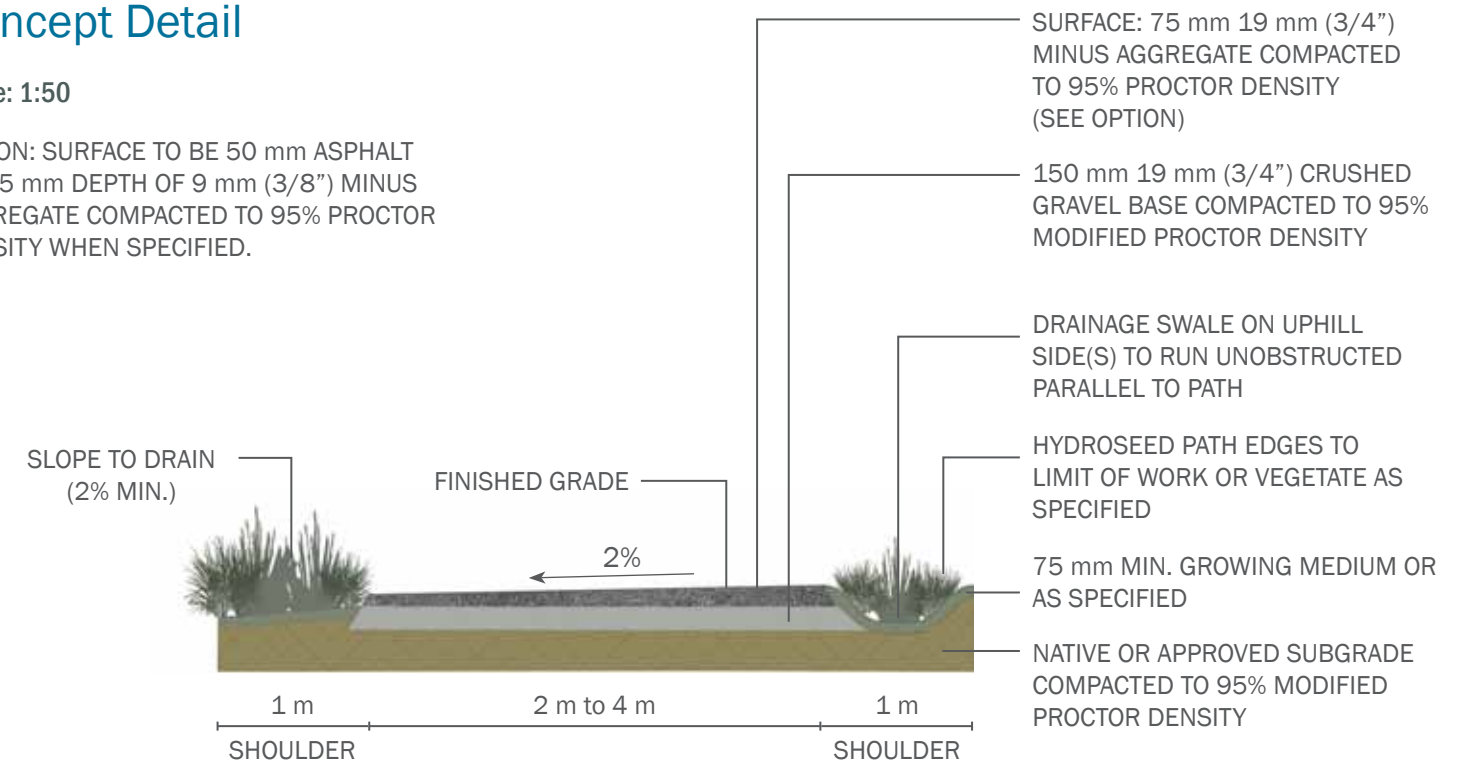
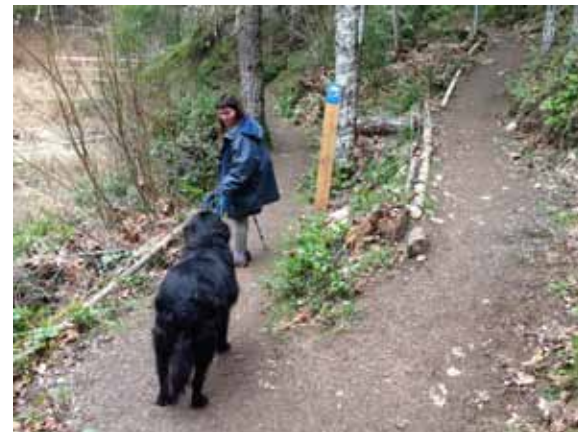


Table 6 Trail Type 2

TRAIL TYPE 2 - SOFT SURFACE		
DESCRIPTION	RELATIVE LEVEL OF USE	MAINTENANCE
Typically provides a mid-country and neighbourhood level recreational experience, fewer amenities. Soft surface, over more varied terrain. Not typically accessible to mobility impaired. Supports most other user groups. Example: 707 Community Park, Englishman River Regional Park	Moderate	Medium

DESIGN ELEMENTS						
SURFACING	SLOPE	TRAIL WIDTH (M)	CLEARING WIDTH ON EACH SIDE OF TRAIL (M)	CLEARING HEIGHT (M)	CROSS SLOPE	SIGHT LINES (M)
Crushed Gravel or Natural Surface	Up to 30%	1-1.5	1	3	1-2%	Provide safe sight lines

Sample Image



Englishman River Regional Park

TYPICAL USERS					
HIKING	WALKING	EQUESTRIAN	MOUNTAIN BIKING	CYCLING	UNIVERSAL ACCESS

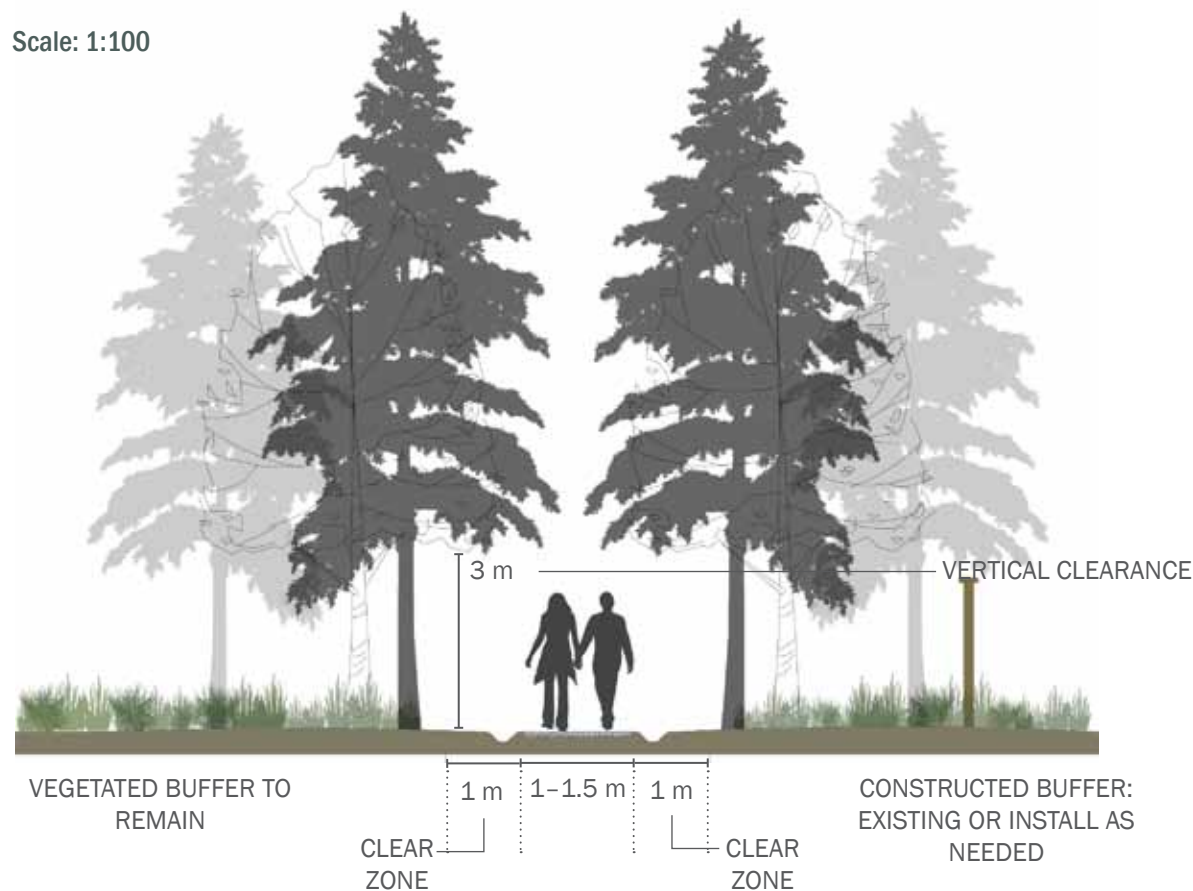
AMENITIES						
FURNISHINGS	GARBAGE RECEPTACLES	KIOSK	REST AREAS	TOILETS	BICYCLE PARKING	VEHICLE PARKING

TYPICALLY PROVIDED

OCCASIONALLY PROVIDED

Trail Section

Scale: 1:100



Concept Detail

Scale: 1:50

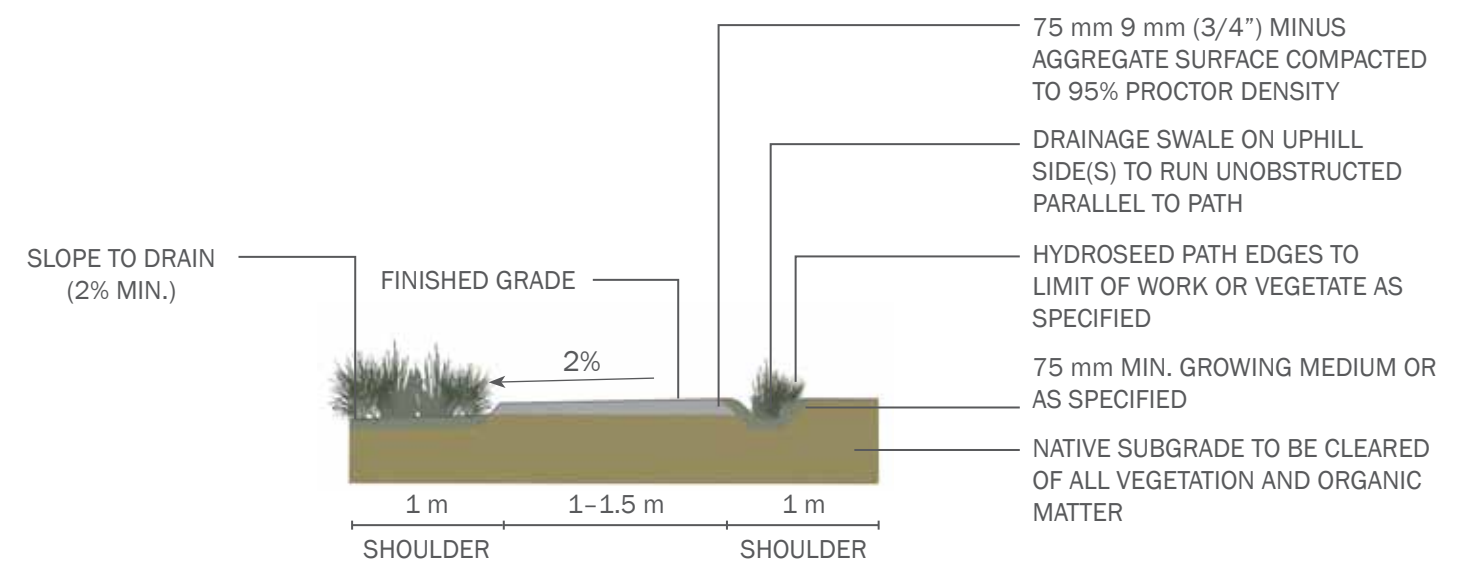


Table 7 Trail Type 3

TRAIL TYPE 3 - NATURAL SURFACE		
DESCRIPTION	RELATIVE LEVEL OF USE	MAINTENANCE
Single-track trail, typically not universally accessible due to surfacing and terrain. Provides a back-country recreation experience and very few amenities. The narrow natural surface trail has fewer environmental impacts, protects sensitive ecosystems, and enhances user experience.	Low	Low
Trail examples: Arrowsmith CPR Trail, Mount Benson Regional Park		

Sample Image



Benson Creek Falls Regional Park

DESIGN ELEMENTS						
SURFACING	SLOPE	TRAIL WIDTH (M)	CLEARING WIDTH ON EACH SIDE OF TRAIL (M)	CLEARING HEIGHT (M)	CROSS SLOPE	SIGHT LINES (M)
Natural Surface/ gravel added where needed	Up to 30%	0.5-1	0.5	2.5	2-4%	Provide safe sight lines

TYPICAL USERS					
HIKING	WALKING	EQUESTRIAN	MOUNTAIN BIKING	CYCLING	UNIVERSAL ACCESS

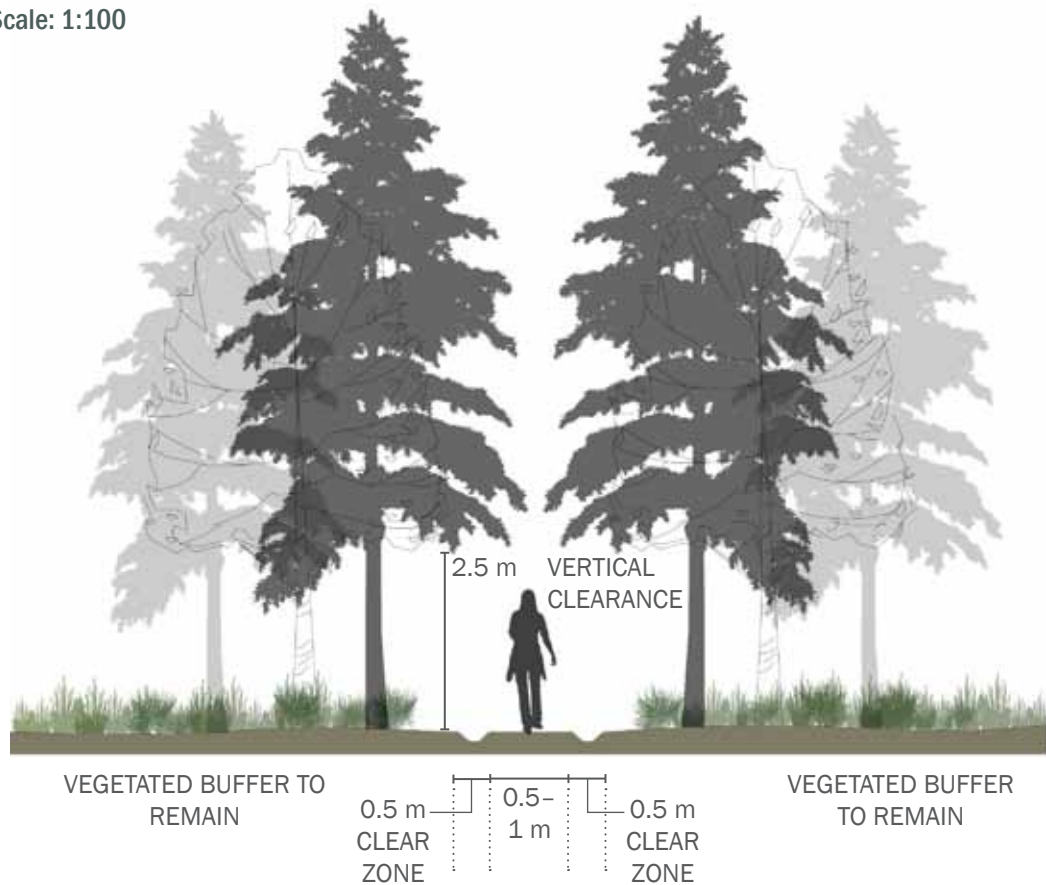
AMENITIES						
FURNISHINGS	GARBAGE RECEPTACLES	KIOSK	REST AREAS	TOILETS	BICYCLE PARKING	VEHICLE PARKING

TYPICALLY PROVIDED

OCCASIONALLY PROVIDED

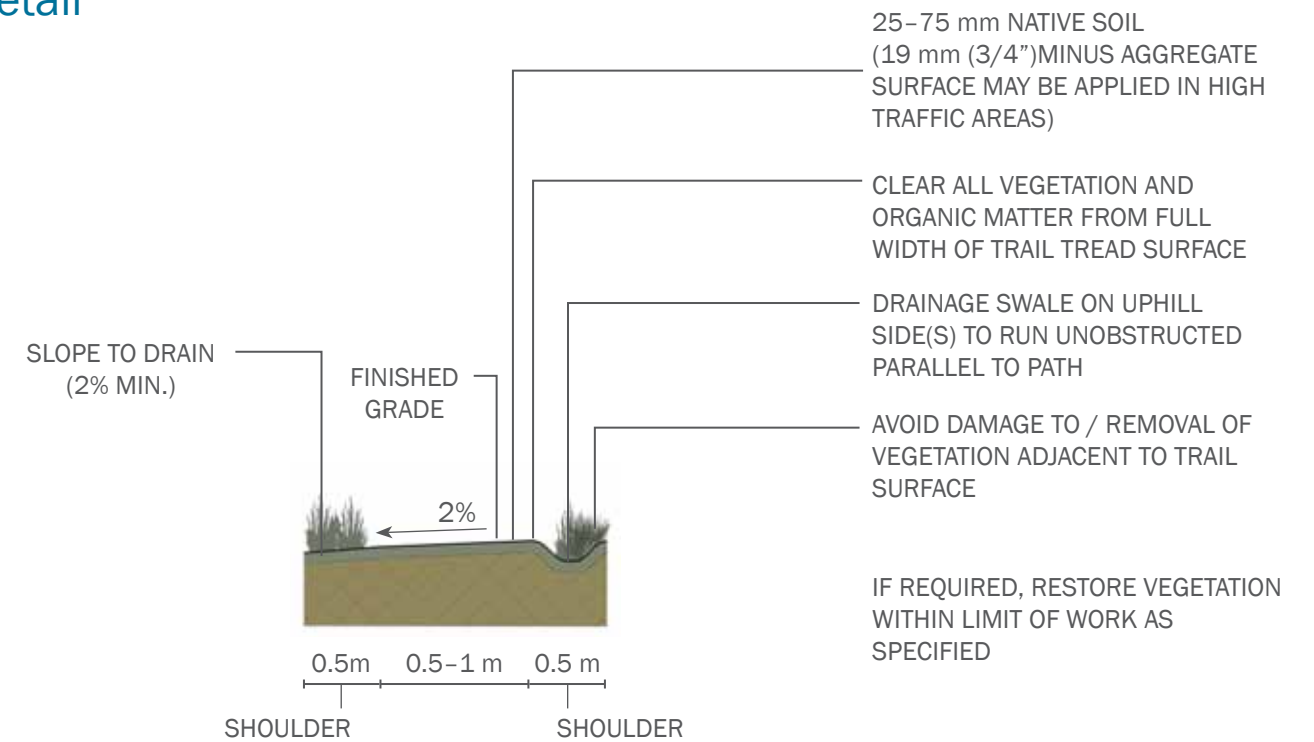
Trail Section

Scale: 1:100



Concept Detail

Scale: 1:50



2.2.2 Trail Type Compatibility




When determining which trail is appropriate in a regional or community park, it is important to consider compatibility with the park type and classification. The following compatibility matrix identifies which trails are most appropriate in each of the regional and community park categories and park zones used within regional parks.

In addition, it is also important to consider the desired recreational experience when evaluating which trail is most appropriate for a particular site. A single park or trail cannot meet the recreation desires of every visitor. Trails and parks infrastructure should be appropriate to the recreation setting managers are looking to provide. For example, more developed trails with greater comfort amenities are less appropriate in parks, or park zones, where the RDN is working to provide more remote backcountry recreation experiences. Recreation settings can be generally classified as 1) Backcountry, 2) Mid-country or 3) Front-country.

- **Backcountry** – generally un-modified natural landscapes with minimal recreation infrastructure and limited evidence and interaction with other visitors. The area is typically not easily accessed by vehicles. Visitors experience solitude, closeness to nature, risk and personal challenge.
- **Mid-country** – mostly natural appearing landscape where human modifications exist but harmonize with the surroundings. Recreation and tourism infrastructure and management controls are obvious and desired. Evidence and interaction with other visitors exist, and may be common. Visitors can experience some isolation from civilization, interaction with the nature, and a moderate degree of risk and personal challenge.
- **Front-country** – a modified landscape with obvious infrastructure development and resource use. Recreation and tourism infrastructure and management controls are common and desired. Evidence and interaction with other visitors is frequent and desired. The visitor experiences some modern conveniences and a feeling of security from personal risk.

Table 8 Trail Type Compatibility Matrix

TRAIL TYPE	REGIONAL PARK				COMMUNITY PARK				ZONING			RECREATION EXPERIENCE		
	CONSERVATION AREA	NATURAL AREA	RECREATION AREA	REGIONAL TRAIL	NEIGHBOURHOOD PARK	NATURAL PARK	LINEAR PARK	WATER ACCESS	INTENSIVE RECREATION	NATURAL ENVIRONMENT	CONSERVATION	BACKCOUNTRY	MID-COUNTRY	FRONT-COUNTRY
Type 1	NO	MAYBE	YES	YES	MAYBE	NO	MAYBE	MAYBE	YES	MAYBE	NO	NO	MAYBE	YES
Type 2	YES	YES	YES	YES	YES	YES	YES	YES	YES	MAYBE	MAYBE	MAYBE	YES	YES
Type 3	YES	YES	YES	NO	YES	YES	MAYBE	YES	MAYBE	YES	YES	YES	MAYBE	NO

 Compatible
  Possibly compatible, but generally not
  Incompatible



2.3 Other Unique RDN Trail Types

Roadside Trail Network – Roadside trails are built along existing roads within the Ministry of Transportation and Infrastructure (MOTI) road allowance. The purpose of this trail is active transportation with quick connection as the main theme. The roadside network may link into a nature trail network. The design guidelines for roadside trail are determined in consultation with MOTI.

2.3.1 Rail with Trail

Rail with trail are trails developed within the rail ROW, adjacent to the rail line.

On Vancouver Island, the Esquimalt and Nanaimo Railway (E&N) runs through many regional districts, including the RDN. Several municipalities and regional districts (City of Nanaimo, District of Lantzville, Cowichan Valley Regional District and in the Capital Regional District) have already developed E&N rail with trail in their jurisdictions. The development of rail with trail in the RDN should refer to the 2009 document: “Vancouver Island Rail Corridor Rail-with-Trail Design Guidelines.”



Parksville Qualicum Links Trail



E&N Rail trail in CVRD

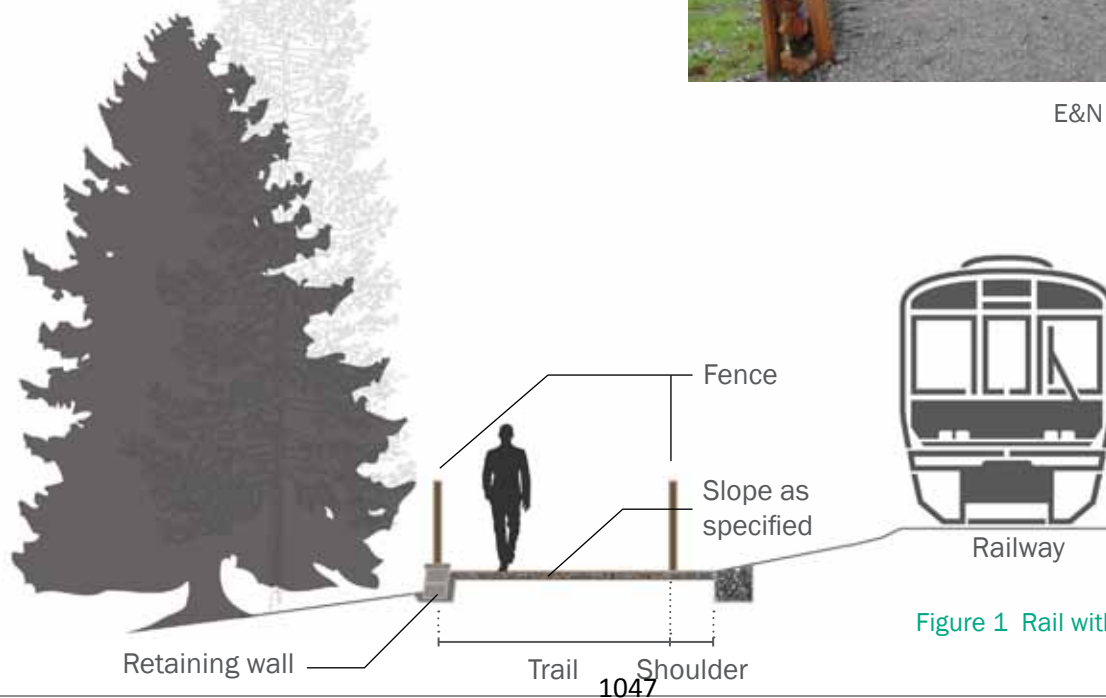


Figure 1 Rail with Trail

3 PARKS AND TRAILS PLANNING AND DESIGN PROCESS

Park and trail development projects are to follow a consistent planning and design process (see Figure 2). Where public engagement is anticipated in park and trail planning, the protocols and practices under the RDN Policy A1.23 for Public Consultation/Communication Framework are to be followed.

Figure 2 Planning and Design Process Flow Chart



3.1 Project Planning

The project planning stage includes forming the ideas, purpose, goals, and vision of the project. Community consultation is used to help clarify and establish the project aims, objectives and opportunities and constraints and to determine the user type, accessibility, and recreational activities for the site. This stage is a broad overview of what the site will be used for, who will use it, and where the amenities will be located. The locations of potential activities and amenities in the site are determined through site inventory and analysis.

3.2 Community Engagement

According to RDN Policy A1-23 for Public Consultation, consistent and effective methods of public engagement should be used that are appropriate to the park project and the community.

Some key principles of public engagement include:

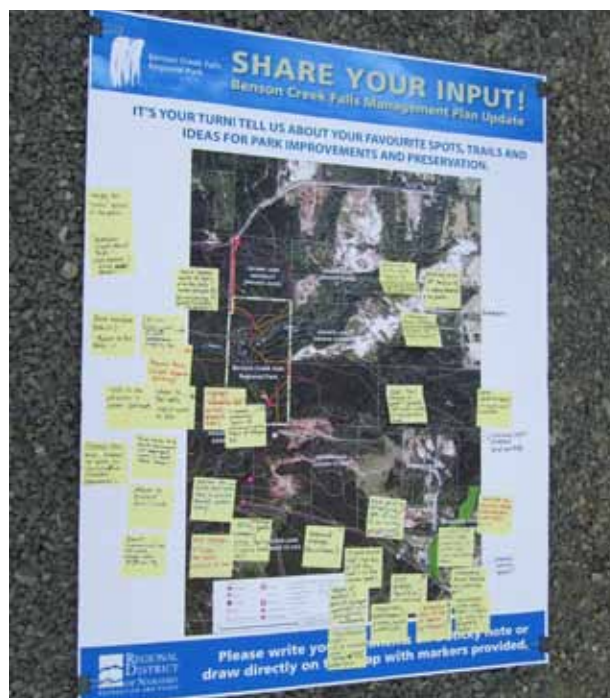
- 1) Have a clear objective of what we are asking the public, i.e. focused message, effective and appropriate tools for effective public input in the project planning.
- 2) Communication with the public should begin at the earliest stages of the project.
- 3) All those likely to be affected by a decision should have opportunities for input into that decision, therefore avenues of communication should be inclusive as well as targeted.
- 4) The consultation process shall allow for a meaningful level of involvement, making it clear to the public, that, while all positions and input received will be considered, not all input can and will be accommodated.





Hosting an open house near the park

- 5) The process shall recognize and take into account the different characteristics and abilities of the community, e.g. providing accessible open house venues.
- 6) The integrity of broad public involvement must be paramount to the process and must not be superseded by any individual or interest group.
- 7) The RDN shall provide feedback, in a timely manner, about how public input has been utilized in Board decisions, and how the public will be affected.
- 8) The public should be kept informed through a range of effective and avenues of communication that are appropriate to the project, such as:
 - a) Advertising and Public Service Announcements in newspapers, radio, community newsletters; press releases
 - b) The Regional Perspectives Newsletter and Electoral Area Updates
 - c) Mall/library/community centre displays
 - d) Post updated project information and public engagement opportunities on the RDN events calendar and specific parks webpage
 - e) On-line and web-based networking and input tools such as on-line surveys;
 - f) Promotions and dialogue through the RDN social media calendar
 - g) On-line photo pages/displays
 - h) Town hall or community meetings, workshops, open houses (held in communities as appropriate)



Public engagement materials

3.3 Project Fundamentals

The project fundamentals include the details required for the project to happen, such as land use planning, permits and regulations affecting the property. Any environmentally sensitive areas must be noted, as this may impact the trail or park design. The site must be reviewed for any culturally sensitive areas (e.g. the Provincial RAAD system). If any of these sites are identified in the area then an archeological assessment must take place and any required First Nations consultations undertaken. Any land regulations or planning procedures also need to be followed. A budget for the project will be determined, and funding arrangements need to be in place.

3.4 Site Inventory and Analysis

Thorough inventory and analysis of the site is to be completed before the design stage can start. Taking inventory of the existing site can reveal important site elements such as, commonly used access points (i.e. ‘desire lines’), bodies of water, slopes, special features (both natural and cultural), use patterns, adjacent property features, ownership and land use. Information from reference books, maps, on-site investigations, photographs, field surveys and discussion with locals can be used for site inventory.

An opportunities and constraints report created from the site inventory information will document the conclusions from the assessment. Inventory and analysis should result in a general idea of where the amenities could be located, and provide insight on any problems which should be avoided during the design stage.

3.5 Design

During design, the layout pattern of the site is to be determined. The first step in this process is to produce a base map of the site at an appropriate scale that includes current physical features, infrastructure, amenities, contours/elevations, micro climates, sightlines and design constraints. It may be helpful to get a basic survey done at this point or at least GPS coordinates of basic elements of the site. A second site conditions map can be created which notes the constraints and opportunities for this project.

The base map should be taken out to the field for evaluation and on-site observation as a preliminary design concept begins to formulate. Walking and observing the planned route or area allows for the best layout conditions and alignment to be found. For example, during the on-site observation changes and improvements to the route or staging areas may occur, management and maintenance issues noted. The preliminary design concept is evolved with these insights.

Once a draft concept plan is created, public consultation should occur. At this stage an opinion of probable cost budget can be created based on the amenities in the draft concept plan. After the plan is finalized, detailed design should be undertaken and approved. Following detailed design approval, construction plans and tender documents are prepared. A development plan indicates the final trail alignment, areas where structures will be built, environmentally sensitive areas, and routes for construction vehicles and equipment to take during the construction stage and maintenance issues.



3.6 Construction

Construction includes the building of the project, the staging areas, and any structures. Placement of the amenities and signage is also included. Care should be taken to have the minimum development footprint needed and to retain as much natural area as possible as well as protecting trees and root zones during the construction period.

There are a variety of trail building machines which can reduce trail building costs, such as trail dozers or mini excavators. Operator experience is important to ensure that construction is safe, efficient and environmentally responsible. It is important to construct parks and trails with future maintenance in mind to limit future problems.

3.7 Maintenance and Management

Consideration of routine maintenance and management for new parks and facilities is a mandatory component to design and planning. After the park or trail is fully developed and construction has ended, clean up, risk management, structure maintenance, and walk-through inspections and assessments should take place on an established schedule. Findings from inspections should be documented in an asset management system as should the results of any maintenance or corrective actions that are undertaken to address deficiencies. Routine maintenance will be ongoing and continue to ensure safe, quality and enjoyable visitor experiences.

See section 10 of this document for design considerations that affect park and trail maintenance.



Ballenas School students help build a split rail fence at Moorecroft Regional Park



4 PARKS AND TRAILS DESIGN PRINCIPLES

Visitors to the RDN's regional and community parks and trails seek a diversity of recreation experiences. Some prefer interacting with nature in its most natural state, with limited facilities and few encounters with others along the way. Others prefer more developed settings with greater public interaction and comfort and convenience amenities.

Regardless of the park or trail type, classification or desired visitor experience, there are a number of fundamental design principles that should be considered in all RDN park and trail development, redevelopment and management initiatives.

4.1 Design and Construct with the Environment in Mind

Protection of ecosystems and sensitive features are the primary goals of conservation-focused parks, and natural settings add to the appeal of recreation-focused parks. Increased visitation to parks and trails can lead to degradation of natural values, conflicts between visitors or user groups and a diminishing of the visitor experience. Designing with nature, rather than imposing upon it, can avoid or mitigate undesirable impacts.

When designing parks and trails, emphasis needs to be placed on preserving the natural environment and sensitive ecosystems. Special design considerations and strategies are to be applied when constructing parks or trails around sensitive areas, such as wetlands, riparian areas and rare plant and animal habitats. During the design process the location, activity, and classification of a trail or park must be decided with potential environmental impacts in mind.

Natural and non-toxic materials should be incorporated and native plantings should be utilized to enhance habitat, minimize water consumption and reduce the spread of non-native invasive species. The ultimate goal is for the park or trail to protect environmentally significant areas and provide opportunities for visitors to experience a truly natural region. Where possible, parks and trails should work with the landscape (such as natural landforms and topography) with minimal interference to natural features.



Sign to indicate habitat protection area



Kiosk at Mount Benson Regional Park trailhead

4.2 Design with the Recreation Experience in Mind

The desired recreation experience of a park or trail should determine the design approach, nature of the development and amenity provision. A recreation experience is commonly described as the “ability for a person to engage in a preferred activity within a preferred setting to obtain a desired experience” (Clark & Stankey 1979; USDA For. Serv.1982). A recreation setting is the “combination of physical, biological, social and managerial conditions that give value to a place for recreation purposes” (Clark & Stankey, 1979).

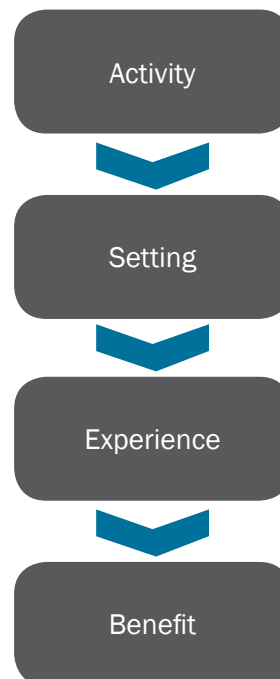
An individual’s choice to participate in a recreational activity is largely determined by setting. People generally search for settings which will give them a desired recreation experience. A quality recreation opportunity is as much dependent on the activity as it is on the setting. As both aspects are critical in the design and development, it is necessary to match the desired recreation experience with the design of the amenity and the degree of development.

Figure 3 Factors in a Recreation Opportunity

RECREATION OPPORTUNITY						
ACTIVITY	+	SETTING	=	EXPERIENCE	»	BENEFITS
Many activities		Biophysical attributes, social conditions, managerial conditions		» Many dimensions » Multiple senses		» Individual » Community » Economic » Environmental
Managers manage				Recreationists consume		Society gains

Specific environmental conditions can influence the appeal of the site and quality of the visitor experience. When planning and designing parks, trails and park infrastructure, consider the implications of:

- Aspect (shade, shelter and sun exposure)
- Elevation
- Site slope and drainage
- Local wind patterns
- Flood plains and high water lines
- Quality of views
- Current use patterns of the area



4.3 Design for Visitor Safety and Crime Prevention

RDN’s regional and community parks and trails provide memorable visitor experiences; however, there are inherent, and at times uncontrollable, risks when recreating in natural settings. The use of best practices for the planning and design of parks and trails and sharing of information with visitors can limit the potential risks to park and trail users by:

- Controlling the type and speed of users
- Conducting regular inspections
- Maintaining an enforcement presence
- Undertaking prompt responses to safety concerns
- Conducting regular maintenance
- Providing visitors with effective education and communications about known safety risks and preparedness.

Crime is a possibility in any park, trail or recreation area. However, well-considered design can help to minimize the potential for transient, illegal or potentially threatening activities in regional and community parks and trails. As such, **Crime Prevention through Environmental Design (CPTED)** practices are to be applied, where appropriate, in all RDN regional and community parks and trails design and development projects. Careful design must be applied to ensure safety objectives are met while retaining the character of the site and its recreational appeal.

Some practices to help minimize crime:

- Post signs informing users of any safety hazards and rules at trailheads and key locations, and provide RDN contact information
- Minimize concealed and isolated routes
- Provide clear trail site lines and visibility on trails by limbing up trees; not planting dense hedging; providing openings in the plantings
- Provide clear separation between private property and public parks and trails through boundary markers, signs, fencing (appropriate to the site character)
- Clearly mark the hours the park is open to the public and ensure park gate closure schedules are maintained
- Remove or repair vandalism and graffiti as soon as possible



Clear sight lines on trails

4.4 Design for Inclusivity and Accessibility

The regional and community parks and trail system aims to ensure recreation opportunities for everyone, regardless of ability, income or ethnicity. The design of parks and trails can have a profound effect on visitor accessibility and inclusivity. In general, parks and trails should be designed to accommodate a variety of needs and abilities, and efforts should be made to minimize mobility barriers where it is consistent with the park type, classification and intended visitor experience.

Community parks and trails should be “barrier free” where possible. Due to diverse and rugged terrain in regional parks and trails, it is not always possible or appropriate to design for accessibility. All projects in regional parks and trails should evaluate whether a barrier free design is possible and appropriate based on regional park class, trail type and intended visitor experience.

Where barrier-free areas and facilities are intended, current universal accessibility standards must be applied, and local accessibility groups should be consulted at the appropriate stages of the project.

Some accessibility guidelines:

- If a trail or park is accessible it should have no barriers along the whole route, ensuring that people are not stranded, i.e. bring person from vehicle to trail to table.
- Accessibility requires solid level surfaces (e.g. asphalt, compacted gravel, concrete)
- Ensure there are no lips or edges, higher than 1.3 cm, (e.g. at toilet, on bridges, boardwalks, parking lot transitions),
- Accessible toilets, and the fronts of all amenities should provide 1.5 m of maneuvering space,
- There should be less than 5% grade overall, with landings at intervals
- Interpretive signs should be at wheelchair height (1 m max.),
- Ensure adequate turning radius around baffles, bollards and other vehicle controls,
- Ensure there are siderails on boardwalks and taprails on trails (e.g. Lighthouse Country Regional Trail (LCRT)).



Accessible trail



Accessible parking at Lighthouse Country Regional Trail portable toilet facility



Lighthouse Country Regional Trail is a fully accessible trail



5 GENERAL TRAIL DESIGN GUIDELINES

In order to be enjoyable and enduring over the long-term, with low maintenance costs, trails must be designed and built using high quality standards. The following design guidelines describe typical trail design, recognizing that in some situations, design flexibility may be required.

5.1 Trail Siting

Careful route selection is essential to the creation of enjoyable and sustainable trails. Many factors influence the siting and placement of trails, including trail connectivity, current site use and 'desire lines', site conditions, soil types, environmental sensitivity, biophysical conditions, hillside slopes, vegetation, drainage patterns and adjacent land use.

The siting of trails in the RDN will:

- Be designed to complement and respect the surrounding ecology and landscape,
- Route of the trail following the natural contours of the land as much as possible,
- Be designed in consultation with users, neighbours and stakeholders,
- Seek opportunities to utilize existing routes and corridors if they can be sustainable and provide a quality visitor experience,
- Minimize impacts to environmentally sensitive areas and wildlife corridors,
- Avoid riparian areas, wet areas and wetlands, or utilize appropriate infrastructure to mitigate impacts to these areas,
- Avoid steep or unstable slopes and erodible soils, or utilize appropriate infrastructure to mitigate impacts to these areas,
- Create connections and convenient access between existing trails, parks and community destinations,
- Allow users to experience interesting, unique and appealing natural and built features,
- Integrate effectively with adjacent land uses.





Turns make trails interesting

5.2 Turns and Curves Make Trails Interesting

Depending on the trail type, incorporating turns and curves into trails make them more interesting. Turns add an element of mystery and intrigue. Users are left wondering and anticipating what is around the next corner. Meanwhile, straight trails leave little to the users' imagination; however, they do enable speed and efficient travel.

Depending on the trail type and desired function, turns should be incorporated into trails where it can be done safely, while retaining the sight lines appropriate for the type and speed of users. Turns are less appropriate on trails with a primary purpose of active transportation (i.e. need for efficient travel and direct routes).



Culvert under trail

5.3 Grading and Drainage

Trail grading and drainage is the most important sustainability consideration in trail design. If not addressed properly, erosion and standing water will be an ongoing management challenge. When implemented effectively, good drainage improves trail lifespan by enabling water to move off of or under the trail (both surface and subsurface water movement) with no to little impact to the trail.

In some cases, trails will require additional structures to ensure appropriate drainage such as waterbars, swales and culverts.

Trail siting should:

- Follow the lay of the land as much as possible to minimize cut and fill and steep grades and cross slopes,
- Avoid tree fall lines (or the shortest route down a hill)
- Provide appropriate gradients for users by establishing generous switchbacks.
- Maximize the retention of native vegetation

Grading principles:

- Implement effective drainage patterns
- The grade of the trail and the surrounding terrain will dictate both water and user movement.
- Optimal grades, as determined by the trail type, should be applied. Trail treads should be built up and incorporate slight undulations and cross slopes to avoid standing water.
- These practices will help to retain natural drainage patterns, promote the natural flow of water off of the trail and minimize the potential for problematic erosion.



Bioswale



Culvert under parking area

5.3.1 Waterbars

A water bar or interceptor dike is a trail structure that is used to prevent erosion on sloping trails by reducing flow length. It is a diagonal channel cut (and reinforced) across the trail surface that collects and diverts surface water that would otherwise flow down the middle of the trail causing erosion and ultimately, trail washouts. Waterbars are constructed from rocks, logs, perforated pipe or a dug channel in stable substrate. By constructing a series of waterbars at intervals along a trail, the volume of erosive water flowing down the road is reduced, and flooding, washouts, and trail degradation is prevented. Waterbars should be inspected regularly to ensure that they are free of obstructions and functioning properly.

5.3.2 Bioswales

Bioswales are shallow-sided ditches that are designed to catch and infiltrate water before it can flow over trail surfaces. The drainage course is constructed on the uphill slope of the trail, and has gently sloped sides (less than six percent) typically lined with native vegetation, woody debris and/or riprap. The water's flow path, along with the wide and shallow ditch, is designed to maximize the time water spends in the swale allow natural infiltration, sediment control and pollutant sequestration.

5.3.3 Culverts

Should be used in very wet areas or when trails cross small water courses where bridges or boardwalks are not necessary.

- Culverts should be sized for seasonal water flows and PVC plastic or corrugated galvanized metal.
- Set culvert at a level that will facilitate drainage.
- Design culverts to Canadian best practice engineering standards, for appropriate seasonal water flows, erosion protection and appropriate surface for trails or vehicles.
- Protrusion of the culvert beyond the trail tread should be avoided. Ends can be cut at 45 degree angle to conceal the culvert. The area or 'apron' around the culvert should be sloped enough to prevent erosion. Rocks, grass seeding or native planting the 'apron' can help stabilize the area around the culvert and further screen the structure.
- Use appropriate geotextiles and/or natural stone or vegetation.

Where culverts are not appropriate due to the volume of water, environmental sensitivities (e.g. fish bearing streams) or other site constraints, boardwalks and bridges should be considered in order to retain trail connectivity (see section 6.2 Bridges and section 6.3 Boardwalks).

5.4 Trail Intersections

The location where a trail crosses a road is a critical safety site for both trail users and vehicles. While it is best practice to avoid placing vehicle routes across trails, there are different crossing treatments which will promote user safety on road/trail crossings and minimize vehicle conflicts. The type of crossing depends on the road design, traffic volume, and trail type. Intersection design will be completed in conjunction with the MOTI, and is subject to MOTI approval.

Signed crossings are typically used when trails intersect roads with low traffic volumes. Signs and crosswalk markings should be used to clearly indicate the crossing to trail users and vehicles. For higher speed roads additional features may be added to increase safety levels. For example, advanced warnings, raised medians, and curb extensions can be used at trail intersection points. For high volume trails “yield to pedestrian” signs/flashers can be used to alert vehicles of the trail crossing.

Trail crossings should be perpendicular to the roadway to increase safety and visibility. Where possible, trail crossings should be located at intersections and mid-block sites. Trail intersections should be well marked for trail users and vehicles. Barriers, such as baffles or posts, can be used at road intersections of trails to prevent vehicle access. See section 6.6 Fences, Barriers and Gates for more information.

Crossing of the rail line may be required as part of the Rail Trail system. The type of crossing and engineered design must be approved by the Rail authority.



Top Bridge Regional Trail





Privacy fence as buffer

5.5 Trail Buffers

Adequate buffering separates parks and trails from adjacent land uses, so that the quality of the trail experience is not impaired by undesirable sights or sounds. Buffering also makes sure that neighboring land owners are not disrupted by the actions or sounds of trail users. Trails within parks generally do not require buffering. However, buffering trails that are located outside of parks should be considered particularly when they are adjacent to road and rail right of ways, residential, industrial and commercial uses. Buffers and/or landscaping should be used to separate the public and private realms.

Using vegetation as natural buffering can enhance the environmental quality and function of the park or trail. Existing forests, planting trees and shrubs, and placement of woody debris, rocks or boulders are examples of natural buffering. In areas where it is important to manage public access, buffers can be an effective, and appealing way of limiting access and can deter users from going off the trail. On roadside trails and rail trails there should be an open space that separates the trail from the road or rail line.

Buffers for trails within provincial road right-of-way should be determined through consultation the BC MoTI. In all cases, buffering design should consider Crime Prevention Through Environmental Design (CPTED) guidelines (see section 4.3).

The width and composition of the buffer is dependent on each situation.

Buffers should:

- Maintain the quality of the visitor experience
- Screen the trail users from undesirable views, sounds and other factors that may detract from the visitor experience
- Fit with the character of the surrounding landscape
- Minimize conflicts between trail users and adjacent land owners and land uses
- Improve or maintain public safety
- Enhance environmental values and ecosystem function.



Trail surface of gravel and bark mixture

5.6 Sight Lines

To ensure visibility and safety on trails, adequate sight lines must be provided and be based on the trail type and users. For all trail types, curve radii and sight lines should be adequate to serve two-way travel. Safe sighting distances should be provided wherever possible. Signage should be used to indicate to users that they are approaching an area with limited sight lines. Specific sight line guidelines are provided in the design guideline for each trail type.

5.7 Trail Tread Surface

Trail surfacing has a significant impact on trail use, accessibility and maintenance. The material used for trail tread surfacing varies depending on the trail type, user activities, usage level and desired level of accessibility.

Natural materials complement the existing park environment, and reduce cost. Hard surfacing is typically used for flat, wide trails which are multi-use. Examples of hard surfacing are crushed aggregate and hard packed gravel. Hard surfacing is best for activities such as cycling, and for individuals in wheelchairs or pushing strollers. High traffic commuter routes usually have hard surfacing so users can travel at a faster speed.

Soft surfacing is best for natural trail settings, as it blends into the surrounding environment. An example of soft surfacing is native soil, mulch/gravel mix, bark mulch. Traffic is typically slower on soft surfacing trails and upgrades and maintenance are required more often than with hard surfaced trails.

When selecting the trail tread surfacing, the following principles should be considered:

- Integrates with the surrounding landscape
- Appropriate for the desired visitor experience and expected visitor activities
- Promotes permeability and water infiltration
- Resists erosion and mucking
- Cost effective, locally sourced if possible, durability and minimal maintenance

For details about specific trail type surfacing see “Table 4 RDN Trail Design Guideline Matrix” on page 7.



Ledges or lips should be no higher than 15mm (.5 in)

5.8 Trail Accessibility

Due to the landscape and topography, universal accessibility on all RDN trails is not possible. The RDN aims for accessibility in parks and on trails where it is feasible to do so. The aim is to provide accessibility within the parks system but not necessarily at every site.

Trail type 1 and type 2 are intended to be used by a wide variety of user and for various recreational activities. These trails are intended to be accessible where possible and require specific consideration in the design, construction and maintenance of the trails. For fully accessible trails, universal accessibility standards are to be followed. Trail type 3 is not fully accessible.

To minimize barriers to mobility on Type 1 trails:

- Maximum slopes should not exceed 5% for long distances. If slopes exceed 5% landings should be provided.
- Cross slope should range from 1–2%.
- Trail tread widths should be large enough to safely accommodate mobility-assisted devices.
- Surfacing should be hard packed and uniform with no obstructions and minimal depressions.
- Parking should include a minimum of one accessible parking stall.
- Curb cuts will be provided where trails cross roads and in transitions from parking lots, where required.
- Rest areas with seating will allow wheelchairs to pull off the trail at regular intervals.
- Signs, light standards, power poles, bus stops, power boxes, and mail boxes can all obstruct the flow of a wheelchair or stroller. Install structures with consideration of their visual and physical impacts.
- If the trail contains any stairs an alternate ramped route must be provided.
- Accessible washroom facilities should be provided at staging areas, where possible.
- Bollards and baffles should be spaced to allow access for wheel chair movement.

5.9 Vegetation and Hazard Trees

5.9.1 Tree Protection

Vegetation and trees add to the aesthetic and environmental value of parks and trails. Where trees do not negatively impact the trail route, safety, or clearance, precaution is to be taken to protect them.

Where possible:

- Trails should be routed around the drip line of significant trees
- Avoid damaging tree roots during construction if the tree is to be preserved
- Changes in drainage patterns should be minimized
- Remove roots below paved surfaces before construction
- Use root barriers to protect trees and trails
- Avoid cuts to tree bark by construction equipment
- Do not post signs on trees.



Preserving wildlife trees

5.9.2 Hazard Trees

When new trails are created in forested areas, it is possible that some existing trees will become a danger to trail users.

- Hazard tree assessments are to be undertaken by qualified personnel to determine if any hazard trees exist and decide on the appropriate actions to be taken.
- When removing or cutting back hazardous trees, it is important to maximize visual aesthetics wherever possible.
- Instead of removal, where possible trim hazard trees into wildlife snags.
- Debris from hazard tree removal should be incorporated into trail or amenity development, such as using parts of a tree as logs to keep users from straying off a trail.
- As appropriate, removed limbs and woody debris should be left on site to maintain biomass.

5.10 Landscaping

As a general rule, the RDN does not install landscaping and gardens at parks and trails, as there is typically no irrigation available. In most natural settings, on-site seed stocks and plants will be allowed to re-establish and re-vegetate disturbed areas.

Planting of vegetation should be considered in the following circumstances:

- With construction of new trails, structures or removal of old structures, vegetation may be required for slope stabilization, prevention of erosion and to help restore the natural setting or native ecosystems.
- Large disturbed areas may need to be replanted or overplanted to prevent invasive species spread (e.g. broom in hydro corridors).
- In natural areas where there is a major invasive problem (e.g. broom), a strategy of overplanting larger native conifers and shrubs will help to shade out invasive species.
- Dedication or donated trees and shrubs will be planted, but will be allowed to establish naturally.
- Where screening or buffering of neighbouring properties is required, a revegetation plan will be prepared, using native species as much as possible.

Where planting is required, the following guidelines should be followed:

- All landscape work and maintenance practices should conform to the BCSLA/ BCLNA Landscape Standards.
- As RDN parks do not have irrigation, plant material selection will be drought tolerant, low maintenance and preferably native selections.
- No trees or shrubs shall be planted within the vertical or horizontal clearances as specified in the Trail Standards.
- Plants and plant groupings will not be planted where they impede visibility along the trail.
- Ensure that adequate silt control measures and other best practices are used during construction.
- Where trails are close to residential properties, plantings will be used for privacy screening, trail softening and aesthetics, however, tall and dense plantings will be avoided for safety and security reasons (see Section 4.3).
- Use reputable sources for plant and seed stock (e.g. NALT Natural Abundance Nursery; Streamside Native Plants in Bowser)



Natural vegetation along a trail

5.11 Construction Protocols

During trail construction, or the installation of other park amenities, care should be taken to minimize additional impacts to the site. The Contractor should follow detailed specifications, provided by the landscape designer or engineer.

The Master Municipal Construction Documents is one source that includes detailed specifications for works relevant to park and trail development including, but not limited to:

- Clearing and Grubbing
- Tree Preservation
- Erosion and Sediment Control
- Topsoil
- Hydroseeding



Restoration planting at Moorecroft Regional Park



Accessible toilet surround construction



Regular trail inspection



6 PARKS AND TRAIL STRUCTURES

6.1 General Guidelines

Structures are built forms that provide a safe and enjoyable park and trail experience. The following guidelines describe typical structure design. When designing and constructing any structures, the RDN Bylaws and the British Columbia Building Code must be followed; consideration should be made if the structure needs any professional services (e.g. engineering, geotechnical); and time should be allowed for any permits or referrals.

General guidelines related to structures include:

- All imported lumber should be dimensional cedar or pressure treated lumber.
- Wood surfacing used for walking should be rough sawn to reduce slipping.
- Place wood decking perpendicular to the direction of travel, with 10–15 mm spacing between boards for drainage and to maintain life of the structure.
- Place boards with rings in convex direction to avoid cupping.
- The top wood member of guardrails and handrails should be sanded and beveled for user comfort and for an aesthetic finish.
- All metal used for fences, bollards and baffles should be of welded construction and with a powder coated finish.
- All metal fasteners should be hot dipped galvanized.
- Ensure the fasteners are placed to avoid sharp edges, potential snagging of clothing or trip hazards.
- All posts for fences, barriers, bollard and baffles should be set in concrete footings.



Stairs constructed with stringers from demolition project





Steel bridge at the Lighthouse Regional Country Trail



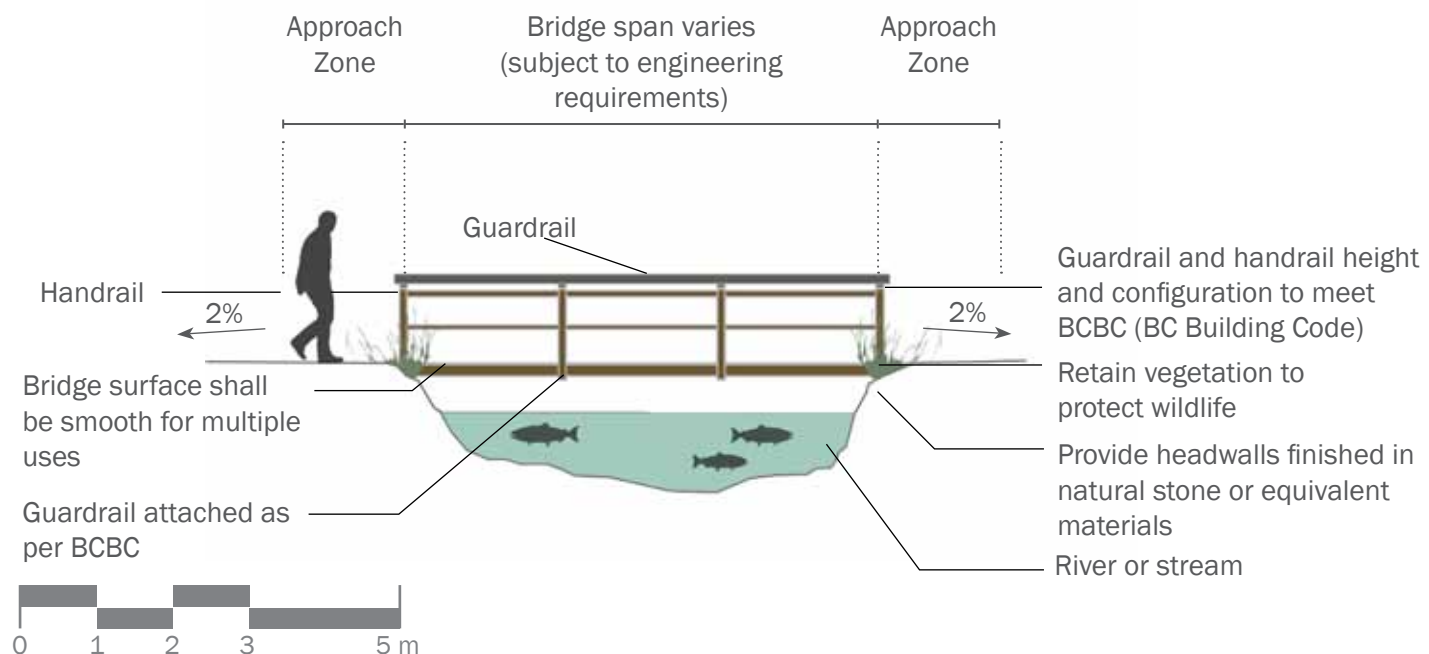
Steel bridge at the Top Bridge Regional Trail

6.2 Bridges

Bridges are to be used in the trail network to provide access over larger watercourses, and to function as landmarks and viewing platforms. The bridge design will depend on trail width, size of environmentally sensitive areas, recreational uses and the load expected on the bridge. Before going very far in the design process, the proper authorities should be consulted for permissions/considerations (Provincial Ministries of environment, transportation, engineering, RDN Planning and bylaw).

Bridge deck width needs to be wide enough to safely accommodate the type of activities occurring of the trail. The deck must include an expanded metal section to prevent slippage in wet weather. Guardrails with handrails are always required when the bridge is raised more than 0.6 m above the ground. Bridges should be aligned along the path to avoid sharp turns at the end of the bridge. Clear indication of the intersection between the bridge and trail is required. Bridge designs should be reviewed and approved by relevant professionals.

Figure 4 Bridge Conceptual Cross Section



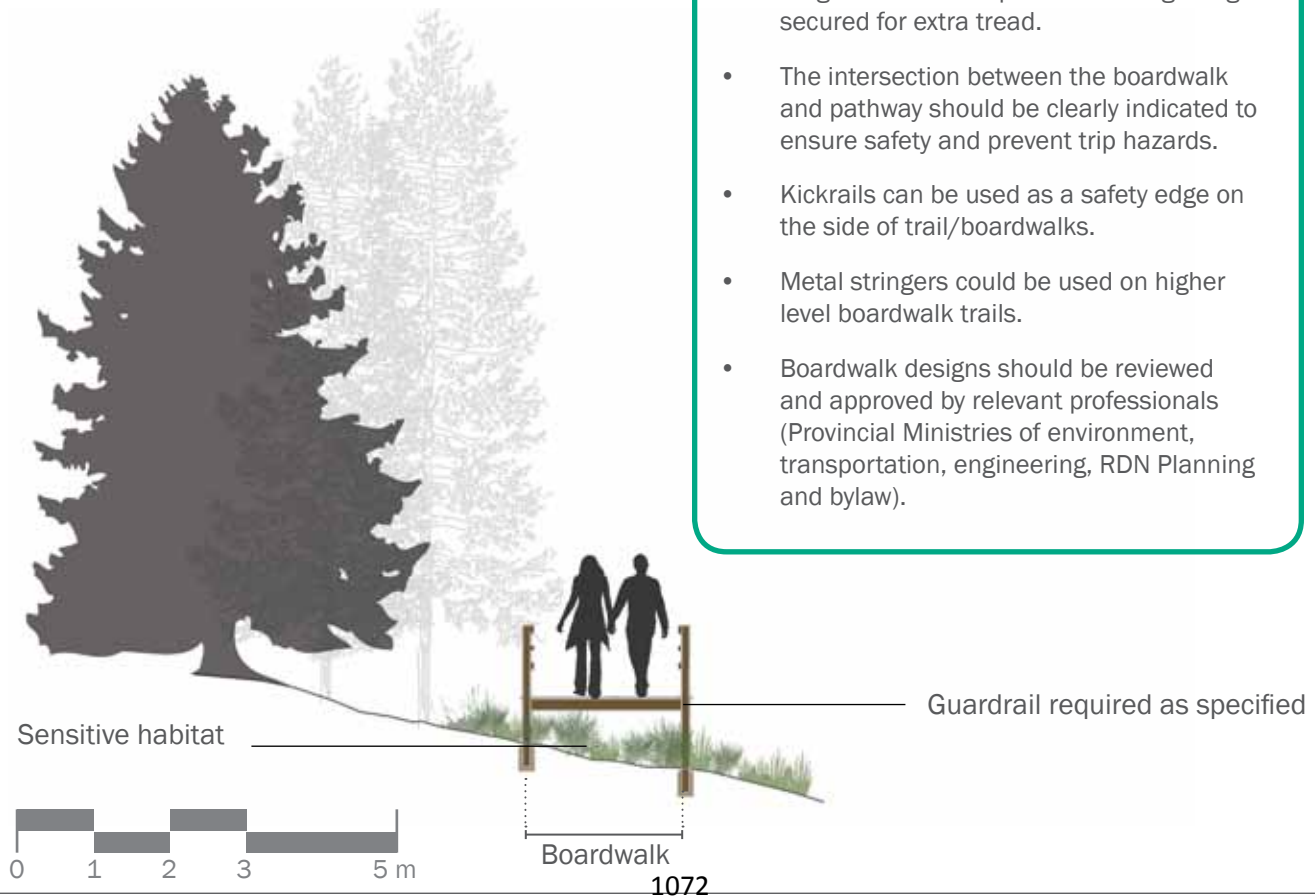
6.3 Boardwalks

Boardwalks should be incorporated in the trail system in order to protect environmentally sensitive areas, to cross wet areas and to discourage walking off the trail. They also provide opportunity for nature appreciation. Trail width, size of environmentally sensitive areas, and the carrying capacity will determine the boardwalk design. Boardwalks are used when trails cross smaller watercourses, wetlands, and sensitive vegetation.



Floating boardwalk at Witchcraft Lake Regional Trail

- They are low in height and span slow moving water. Boardwalk deck width needs to be wide enough to safely accommodate the type of activities occurring on the trail.
- Boardwalks range from 1 to 3 m wide with a raised edge or railing if more than 0.6 m above finished grade.
- The deck of the boardwalk is typically rough cedar with expanded metal grating secured for extra tread.
- The intersection between the boardwalk and pathway should be clearly indicated to ensure safety and prevent trip hazards.
- Kickrails can be used as a safety edge on the side of trail/boardwalks.
- Metal stringers could be used on higher level boardwalk trails.
- Boardwalk designs should be reviewed and approved by relevant professionals (Provincial Ministries of environment, transportation, engineering, RDN Planning and bylaw).



6.4 Decks

Decks can add visual appeal, functional use, and recreational activities to parks and trails. For instance, a deck may be used as a viewing or rest area off a bridge or boardwalk. When designing a deck which is connected to, or is a part of a bridge or boardwalk, the bridge or boardwalk guidelines apply. Decks may also be used at beach accesses to provide a safe viewpoint while protecting the surrounding environment. Deck designs should be reviewed and approved by all relevant professionals.

6.5 Stairs

Considering the rugged topography of the RDN, stairs are often required to take visitors to a viewpoint, gain access to recreational areas or maintain trail connectivity. Some stair systems are simple while others can be very complex.



Engineered stairs to beach area

Quick Idea

On trails with cycling use, consider installation of a bike channel to facilitate walking a bicycle up or down the stairway. The channel is intended to guide a variety of bicycle tires without binding or causing damage. Cross-section shapes vary, but can be flat, rectangular or V- or U-shaped. Depth is typically 2 to 6 cm and width 6 to 13 cm. Channel can be constructed of wood or metal.

General design guidelines include:

- Stairs should be used for steep sections of trail for safety and to prevent further erosion of banks.
- Step construction and material depends on the site's drainage and soil or rock substrate. Unstable slopes or poorly drained soils may require specialized footings for stairs.
- Standard rise measurement is critical, and should be consistent unless separated by landings and should comply with local building codes. The step tread ratio is to be 2:1.
- Landings should be provided between flights of 12 steps or more.
- Handrails should be provided on at least one side of the stair case if the flight is long or steep.
- To prevent slips and falls, expanded metal should be used on landings and stair treads.
- On shallow grades, box steps should be used. These are secured log or timber frames filled with compacted earth or gravel. The length of the box step is dependent on the grade, but minimum rise/run ratios should be followed.
- In some sites, such as wet environments or beach accesses, concrete steps with metal construction may be a more durable and safe solution.
- In areas of high winter tides or water flows consideration will be given to removable non-corrosive metal stairs at the base. Stair designs should be reviewed and approved by all relevant professionals. Some situations may require geotechnical studies and engineered stair design.

6.6 Fences, Barriers and Gates

Fences, barriers and gates are used to direct pedestrian movement, prevent vehicle access on trails and in places where barriers are needed on park boundaries (to protect private property). On the trails that are universally accessible, wheelchair access must be ensured. Barriers must be removable for emergency and service vehicles, and parks equipment access. Ensure that emergency services and park staff have keys to all locking apparatus.

6.6.1 Bollards

Bollards, posts, or sleeves are common removable barriers, and should be located at trail heads where there is a need to control vehicle access.

- In areas with equestrian and cyclist access, ensure barriers are of appropriate height.
- Sleeve barriers can be used to prevent vehicle access.
- Barrier posts are typically installed in odd numbers so that the center post is positioned in the center of the trail.
- A bollard with sign combines barrier with a sign, and is useful to relay information such as, 'emergency access only', 'no parking'

6.6.2 Baffles

Baffle gates may be used to control cyclist speeds. Where used to control speeds, signage and notifications should be provided in advance of the barrier to warn trail users. Baffle gates, rather than bollards, may be used where bicycles are prohibited. On accessible trails, ensure width between baffles is adequate for rolling traffic, e.g. wheelchairs, medi-scooters, strollers.



Removable bollard with sign



Boulders provide a natural form of bollard



Accessible railroad baffles



A stile fence insert prevents motorized traffic but allows pedestrians



Split rail fence for conservation

6.6.3 Gates

Gate type is determined by the site needs. Where ATV trespass is an issue, lockable, ram-resistant steel gates are needed. In areas with low trespass issues, a lockable steel farm gate may be adequate.

To allow pedestrian access beside a locked gate, a stile can be incorporated.

6.6.4 Fences

Fences are used in RDN parks and trails to protect environmentally sensitive areas, to direct visitors flows, as a safety barrier, and to separate parks and trails from adjacent land uses. Examples of the type of fences used in RDN parks include split rail, cedar, cement board, chain link, solid board, and page wire on post. Fencing is expensive, requires regular maintenance and can detract from a natural setting. Therefore fencing should be installed judiciously and conservatively.

- Split rail fence will be used in natural settings, either 2-rail or 3-rail.
- Dimensioned lumber or concrete rail fences will be used in parks with a more urban design.
- Low wood rail fences may be used at viewpoints.
- Black chain link safety fencing should be provided along steep sloping trails, cliffs and other areas with fall hazards. Safety fencing must be at least 0.5 m from the edge of the pathway, must be built according to the BC Building Code and should display appropriate caution signage. Black chain link fencing will also be used where wood vandalism incidents are high.

- In sites needing privacy screening and to deter trespass, consider a vegetation screen (conifer), solid board fencing or split rail cedar fencing.

6.7 Retaining Walls

Avoid the use of retaining walls where possible through strategic trail siting and grading. Steep or unstable slopes, as well as erodible soils, should be avoided when designing trails. If the side slope cannot be avoided, retaining walls may be required to prevent side slopes from collapsing onto trails or boardwalks. Where retaining walls are required in natural areas, use cedar timbers or natural stone.

- Where walls must be installed, proper drainage and anchoring must be in place.
- Retaining walls higher than 1.2 m should be designed and approved by a professional engineer registered in BC, and retaining walls over 1.2 m tall on a trail, require a railing.
- Consider other methods of retaining banks such as bio-engineering which uses live staking of quick rooting native species such as willow on steep slopes.
- Professional services such as geotechnical engineering may be required to ensure slope stability and proper design and construction method.

7 STAGING AREAS, DAY USE AREAS, AND FURNISHINGS

7.1 Staging/Parking Areas

Staging areas are situated at the entrance of certain parks and trails. Staging areas create a first impression and set the tone for the recreation experience. Staging areas vary, based on the type of park or trail, location, usage level, demand, and space provided. Considering the diversity of conditions through the RDN, staging areas are grouped into three distinct classes each with unique design guidelines and amenities.



Mount Benson Regional Park staging area

The following matrix outlines the three different types of staging areas:

Table 9 RDN Staging Area Classification

STAGING TYPE	VEHICLE PARKING	HANDICAP PARKING	BICYCLE PARKING	TOILETS	GARBAGE RECEPTACLES	MAP KIOSK DIRECTIONAL	SEATING
1 High Use							
2 Medium/Low Use							
3 Access Point							

 REQUIRED

 OPTIONAL

¹ Minimum of 10 stalls

² Minimum of 5 stalls

³ If trail is universally accessible



Type 1 staging area



Type 2 staging area

7.1.1 Type 1 Staging Area – High Use

The high use staging area is designed for large multi or single use trails or popular parks with a high demand and substantial traffic flow.

- The parking area should have a minimum of 10 parking stalls, and must include a minimum of one accessible parking space, if the trail is universally accessible (indicated by designated wheelstops/signs).
- If space allows and there is a high level of equestrian use, then the design should include space for horse trailers as well as hitching rails and/or corrals.
- Design of the staging area must consider the needs of emergency vehicles and should also consider the need for bus access.
- Bicycle parking should be provided.
- Toilet facilities, mainly portable toilets, should be provided.
- Garbage receptacles should be provided and should be animal proof, with an option for recyclables.
- A map kiosk of the park or trail is required. Information should include orientation signage which shows the user’s current location, rules and regulations of the park or trail, permitted uses, and potential hazards, RDN contact information and hours of operation.
- At least one picnic table or bench should be provided for seating.

7.1.2 Type 2 Staging Area – Medium/Low Use

The medium use staging area is designed for multi or single use trails and parks and trails with intermediate demand level, and less traffic flow than the high use staging area.

- The parking area should have a minimum of 5 parking stalls, and must include an accessible parking space if the trail is universally accessible (indicated by designated wheelstops/signs).
- Design of the staging area must consider the needs of emergency vehicles and also have trailhead barriers for ATVs (e.g. bollards).
- Bicycle parking, washrooms, and seating are typically not provided, except in certain situations.
- A map kiosk of the park or trail is required. Information should include orientation signage which shows the user’s current location, rules and regulations of the park or trail, permitted uses, and potential hazards, RDN contact information and hours of operation.





Type 3 staging area



Rest area at Nile Road Community Park

7.1.3 Type 3 Staging Area – Access Point

The Access Point staging area is designed for trails or parks with a low traffic flow and demand level. This trailhead may also be used at a secondary access point of a higher demand trail, or as an access point to a trail where no parking is required, such as a small trail in a community neighborhood.

- There are no parking spaces, and bicycle parking and washrooms are not provided.
- Barriers (e.g. bollards, boulders) are included to restrict motorized access.
- Garbage receptacles are not required.
- Generally no kiosk is provided, but directional signage and maps showing the user’s location, rules and regulations of the trail, trail uses, and potential hazards should be included.

7.2 Rest Areas

Rest areas add to the user experience of a park or trail. They are located at appropriate intervals and ideally, at picturesque settings or park features. Rest stops are necessary for type 1 and type 2 trails, especially those that are universally accessible, as young children, older adults, and those with disabilities will need to rest more frequently than others.

General guidelines include:

- Rest areas should be level spots on the side of a trail, wide enough to provide users a place to rest.
- Rest areas should be sited to avoid disruption of trail traffic by allowing visitors to get off of the trail tread.
- For heavily used trails, such as type 1 and possibly type 2, some form of seating should be provided at a maximum of every kilometer, and should be considered more frequently, taking available resources and visitor needs into consideration.
- Rest areas could include a bench or natural seating such as flat boulders or logs, and a garbage receptacle if feasible.



Enjoying the view at Vesper Point, Moorecroft Regional Park



Bicycle Parking

7.2.1 Lookouts and Viewpoints

Lookouts or points of interest add visual appeal to a trail, and make a trail more exciting and interesting for the user. A viewing area may be to the side of a bridge or boardwalk, in the form of a deck, or simply at the side of a trail. Often, rest areas and lookouts can be combined, making the rest and lookout area a more pleasant experience.

- Lookouts should avoid disruption of trail traffic by allowing visitors to get off of the trail tread.
- Lookouts should provide a bench or natural seating to rest, and a map for users to determine their location.
- A garbage receptacle may also be provided on heavily used trails, such as type 1 and 2.
- Interpretive signs are often located at lookouts to inform users about natural, historical, and cultural facts of the area.

7.3 Furnishings & Convenience Amenities

Regional and community parks and trails provide a wide range of furnishings and convenience amenities. These amenities help to enhance the visitor experience but need to be purposefully located and appropriately designed to fit the site context, desired recreational experience, while ensuring sustainability and functionality. Design guidelines for site furnishing and amenities are essential to ensuring a consistent level of service and brand to the RDN. Guidelines for common furnishing and convenience amenities are outlined for the most common elements in regional and community parks and trails.

7.3.1 Bicycle Parking

Bicycle parking at park features, staging areas, campsites, and beach accesses is suggested. If a trail has sections with different allowed uses, bicycle parking may be required. For instance, a multi-use trail connecting to a pedestrian-only trail would require bicycle parking at the junction point, so users could continue on the trail network.





Portable toilet with surround



Animal proof garbage receptacle

7.3.2 Toilets

Due to the rural nature of the RDN parks system, portable toilets or pit toilets will be used. Washrooms will be typically be installed at type 1 and 2 staging areas, high use regional parks, high use community parks, high use beach accesses and playgrounds. Flush toilets would only be considered in Type 1 staging areas and campgrounds where there is a water and sewage system in place. In level terrain with low water tables, pump out vault pit toilets can be considered. In all cases washrooms should be sensitively incorporated into the surrounding context through appropriate materials and screening (e.g. vegetation).

- Portable toilets will be enclosed by a surround built of wood or concrete.
- In siting a portable toilet, consider that the toilet needs to be reached by toilet cleaning service vehicles. Typically cleaning hoses reach 15 m from the service vehicle. It is important to check with the service provider when planning pump-out toilets.
- For accessible sites, a universally-accessible toilet and associated amenities should be provided (i.e. hard, level surface trail, parking close by). At water accesses, a universally accessible toilet allows more room for changing into swimming gear.
- Ensure all toilets are cleaned and stocked regularly and more often in high season and in high use sites, (e.g. swimming areas, popular trails).

7.3.3 Garbage Receptacles

Garbage receptacles with regularly scheduled garbage removal should be provided at type 1 and 2 staging areas, high use parks and beach accesses, picnic and rest areas and along type 1 and 2 trails if warranted. Garbage receptacles should be vehicle accessible by a contractor. Bear-proof receptacles should be used where foraging animals (e.g. bears and raccoons) are known to be in the area. In high use sites, the deep can are to be used. In other areas the concrete/plastic cover model (McKay Precast) are to be used.

For all garbage receptacle locations, a pickup and maintenance schedule must be established. Where possible, recycling receptacles should be provided.



Concrete bench with cedar slats



Cedar picnic table

7.3.4 Seating

Seating is provided in parks and along trails to accommodate users. In general, the more developed and urban the park or trail setting, the more durable and modern the park or trail furnishings should be. Along trails benches are placed at rest areas and lookouts to provide rest and view spots for trail users. Benches should also be placed along trails and within parks at features of interest, playgrounds and gathering areas.

Suggested bench models:

- Concrete bench (Precast) with and without back, exposed aggregate surface, mounted on concrete pad in areas prone to fire vandalism. Bench slats can be concrete or clear stained cedar. Bench back can receive a dedication plaque (with RDN permission).
- Natural benches can be placed in Type 2–3 trails. Flat boulders and logs are either from the site or transported locally. These benches are meant to be natural, low maintenance, durable park amenities that fit into the park surroundings.

7.3.5 Picnic Tables

In front country areas, pre-cast concrete tables with concrete bases (exposed aggregate, e.g. Precast), wooden seats and tops are used. In areas of high fire vandalism, the table should be all concrete. Tables are precast and mounted on concrete pad.

In Type 1 staging areas that are designated as accessible, a wheelchair accessible table and level compacted surface or poured pad should be used.

Wooden picnic tables are portable, and can be moved around for larger functions. Tables should be anchored if theft is an issue. Varnished cedar picnic tables may be locally supplied.



Accessible table at Meadowood Drive Community Park

8 SPECIALTY AREAS

8.1 Water Accesses

Within the RDN, water access points occur under various forms of tenure. Some parks and trails located near the ocean offer beach access – these may be RDN owned land, or land leased or managed by the RDN, but owned by another organization. For example, Ministry of Transportation and Infrastructure (MOTI) road allowances may dead-end at a lake or the ocean, and could be managed as RDN an park or trail by way of license. In all cases, development of water accesses should have the appropriate permissions (e.g. MOTI Permit to Construct) and should follow the design guidelines outlined in this document, considering classification, users, environment and maintenance objectives.

Any interest in development within the high water mark (e.g. a boat launch) must first be reviewed by the relevant government departments (e.g. Provincial, Federal).

8.2 Campgrounds

The RDN manages two parks offering camping facilities: Descanso Bay Regional Park and Horne Lake Regional Park. These campgrounds are vehicle accessible and attract local residents and visitors from a broad area. The guidelines described in this document apply specifically to the development of Parks and Trails. Guidelines for the design of specific campground amenities are beyond the scope of this document (e.g. potable water, firewood corrals, campsite layout). Any development within Descanso Bay Regional Park and Horne Lake Regional Park outside the camping facilities should refer to this document. Specific guidelines for the design and development of the camping facilities, should reference management plans and concept plans for each park.



Beach access



Entrance to Descanso Bay Regional Park Campground



Playground at Meadow Drive Community Park

8.3 Playgrounds

Depending on the community interests, playgrounds may be desired elements in neighbourhood parks. Playgrounds need to meet strict Canadian Standards Association (CSA) safety design and maintenance requirements. Playgrounds should be very carefully designed to serve the demographics and future growth projection of the area (up to 20 years ahead).

Playgrounds should be located with easy access from main roads, clear site lines for safety, and on level ground with good drainage. The site should be checked for hazard trees, and noxious vegetation such as stinging nettle, brambles.

The types of playgrounds range from very natural play elements using boulders, wood and live vegetation, to very colourful, complex and very expensive structures. The design of the playground should be appropriate to the park setting and the community, and should reference the CSA for playground design as well as emerging best practices such as Design For Play: A guide to creating successful play spaces (Play England, 2008).

8.4 Other Recreation Amenities

There may be community interest in the development of other recreation elements in local parks, for example, pump tracks or skate parks. Park type, environmental setting, budget (including maintenance budget), safety, liability, community demographics should be considered before planning for these facilities.



Henry Morgan Community Park playground

9 PARK AND TRAIL SIGNAGE

9.1 Signage Design Guidelines

Signs are essential to effective trail and park management. They provide valuable information to visitors, allowing them to make informed decisions, enhance their experience and helping them to stay safe.

Too many signs can detract from the visitor experience. Signage should be used sparingly and should be appropriate for the service level and setting of the park or trail. For example, signage in backcountry areas should be limited to the most essential notices, while signage in front-country areas should be concentrated at the parking area, entrance and trail access points.

A standardized system of signs, typefaces and graphics will ensure the successful communication of information to visitors of RDN parks and trails. The consistent use of the RDN logo, colours and typefaces will increase visitor awareness of the RDN's role in land conservation and responsible park management (see RDN Sign Manual for community parks and trails for details).



Approach sign on secondary highway

General guidelines for sign placement:

- Signs should not be placed in a location where they will pose a safety hazard to park or trail users.
- Care should also be taken not to place signs in a location that will obstruct natural viewscapes or lines of sight to a park's aesthetic qualities.
- Signs should not be obstructed by vegetation or other features. Tree branches or other vegetation may need to be trimmed on a regular basis to maintain clear sign views.
- A natural environment should be preserved as much as possible and where practical, the number of signs should be limited. Multiple signs should be grouped in one location or on a single mount as opposed to spread out along a trail's length or throughout the park.
- In most circumstances signs should be placed in a location where maximum viewing can occur, i.e., on posts at eye level, on the right side of the trail facing the anticipated direction of travel.
- Signs should be installed at appropriate heights for the visitor. In some cases, signs may be needed at varying heights (e.g. parks or trails frequented by equestrian users).
- Signs should NOT be secured to trees, but instead securely fastened with tamper proof screws onto minimum 15x15 cm cedar posts.
- No signs should be placed on private or crown property unless the proper permissions, agreements or permits are in place.

Sign types associated with RDN parks include:

- Approach signs (signs on roads to guide people to the park)
- Entry signs displaying park name
- Orientation Kiosk (with map and park information)
- Wayfinding signs, e.g. directional arrows, 'you are here' maps and distance signs
- Regulatory signs providing park rules and permissible activities
- Information signs including safety, caution, traffic
- Temporary signs (e.g. fire closures, high water, construction)
- Interpretive/Educational signs

9.1.1 Approach Signs

These signs are to guide vehicle or pedestrian traffic to regional parks. Typically, approach signs are not used for community parks, which are meant for neighbourhood use.

- Approach signs will typically be mounted on the side of highways under consultation and permit with MOTI.
- Approach signs will display the name of the park and arrows indicating the direction to travel. They may also contain distance information if required.

9.1.2 Entry Signs

Entry or entrance signs, displaying the park or trail name, inform users that they are in an RDN recreation area.

- Should be placed at the main access point of a park or trail, and at relevant staging areas.
- Should also be placed at the beginning and end of trails, or at connecting points informing users of the trail network.
- Should be simple and large enough to read at a distance.



Approach sign to Descanso Bay Regional Park campground

The RDN maintains five different types of entry signs:

Type 1 – Large Wood Entry Sign

These signs will be placed at the main entrance to regional parks, in Type 1 staging areas.

- Constructed of Cedar or High Density Plastic, typically 91x182 cm in size, and installed on a concrete base with cedar cedar posts.
- Text on the sign face is to be routed into the wood and painted.
- Shall include the name of the park, the RDN logo, contact info and names of any partners.



Type 1 - Large wood entry sign

Type 2 – Small Wood Entry Sign

These are a smaller version of the Type 1 sign are to be used in Type 2 staging areas, and neighbourhood community parks.

- Constructed of cedar and are typically 60x100 cm in size, mounted on a concrete base.
- Includes the park or trail name, the RDN logo and contact information.



Type 2 - Small wood entry sign

Type 3 – Two-post Entrance Sign

This entrance feature is a smaller scale sign, approx. 60x90 cm for use in Type 2 Staging Areas and for regional trails.

- These signs may also be used within a park or along a trail where it is deemed that the type of information provided by a kiosk is needed.
- The signs are mounted on two post supports with the park or trail map and information about the park.



Type 3 - Two-post entrance sign

Type 4 – Small Metal Entry Sign

These are used at access points to community parks or trails, at secondary access points to regional parks and trails.

- Constructed of vinyl-coated aluminum or Dibond and are typically 30x38 cm in size, mounted on 15x15 cm posts.
- Designed with white lettering on a blue background.
- Include the park name, RDN Logo and contact information.



Type 4 - Small Metal Entry Sign

Type 4 – Identity Post

These are smaller post signs (typically 15x15 cm) signs with the park/trail name and possibly an arrow.

- The name of the trail will appear along with other information for the trail user including distance markings, icons and directional arrows.
- In parks with complex trail networks, small maps on posts should be mounted at important trail junctions.



Identity post

Type 5 – Water or beach access (BA) sign

Depending on the location of the water access, the sign can be either the small metal entry sign or similar to the identity post. Water/beach accesses on the road right of way will require the appropriate permissions for development and signage (e.g. MOTI Permit to Construct).



Beach access sign

Specialized Entry Signs

In some parks, community members have created entry signs that have existed for years in some cases, before the RDN took over management of the site and are often important and valued by the community.

- Examples of these signs include Maple Lane CP, Thelma Griffiths CP and Huxley Park.
- When existing entry signs are used, the signs should be modified, or a new panel added to include the RDN logo and contact information.

9.1.3 Orientation Kiosks/Signs

An orientation kiosk informs recreational users about all aspects of a park or trail in one convenient location. The purpose of kiosks is to show the location of the user and familiarize the user with the setting, protocols and safety hazards of the site. General guidelines for kiosks include:

- Should be located at trailheads, key destination points, and main trail junctions.
- Includes the park or trail name, a map with a 'You are here' marker, amenities and the rules and regulations of the park or trail.
- Kiosks in regional facilities also include a map of the regional park system.
- Other significant information may be added if it enhances the visitors' experience, such as hiking tips, information on the park's geological or historical features.

There are different types of kiosks for various park and trail locations.

Type 1 – Large four post kiosk

This kiosk is used at Type 1 staging areas and highly used regional parks.

- The four posts allow for a sheltered space within the kiosk and there is room for a posting board on the ends.
- The sign board consists of two distinct areas; one provides a map and information on the park and the second panel provides a map of the regional parks system.



Specialized entry sign



Type 1 - Large four post kiosk

Type 2A- Two-Post Kiosk

A two-post smaller version of the timber kiosk, with information panels on front and back.

- Front panel includes a map and general information, plus a notice board, and the back panel has the regional map and an additional panel to feature park specific information such as park donor, ecological information, cultural features, etc.



Type 2A - Two-Post Kiosk

Type 2B- Modified Two-Post Kiosk

A two-post smaller version of the timber kiosk, with information panels on front and back.

- Front panel includes a map and general information, plus a notice board, and the back panel has the regional map and an additional panel to feature park specific information such as park donor, ecological information, cultural features, etc.



Type 2B - Modified Two-Post Kiosk

Specialized Kiosks

In some instances, specialized kiosks have been designed to serve a special need or to fit to a particular theme of a park such as the kiosk at Extension Miners Community Park.

- Existing kiosks in RDN campgrounds are unique and do not fit the Type 1 or 2 standard.
- Key RDN information, including park and regional maps, can be inserted into the existing structures to keep the theme of other RDN kiosks.



Specialized kiosk



Directional / wayfinding sign



Witchcraft Lake Regional Trail markers



Totem style regulatory sign

9.1.4 Directional/ Wayfinding Signs

Directional signs are located at regular intervals along the trail for way-finding purposes. These signs inform the user that they are on a network trail, inform the user how far they are from the next junction or destination, and illustrate the route of the trail or road from their point forward.

- Typically these are 15x15 cm signs on cedar post with sign mounted at 1 m height with the trail name, directional arrow RDN logo and contact information. Longer trails may include distance markings.
- In parks with complex trail systems a map with 'you are here' information will be included at important trail junctions.
- For back country trails, where the installation of posts is impractical, small aluminum or durable brightly coloured markers, mounted on trees at regular visual intervals, will aid navigation (e.g. Witchcraft Lake Regional Trail).

9.1.5 Regulatory Signs

All entry points will have posts noting allowable and prohibited activities. Examples of a regulatory sign are "pedestrians only" or "pets must be on leash at all times". This information will be conveyed by the use of icons and the prohibited red slash. These signs will be installed on a 15x15 cm post with the signs mounted in totem fashion onto the post.

Other signs may be needed in parks to relay information that is not included elsewhere such as parks or trail hours, seasonal use information, restoration and ecologically sensitive areas, user etiquette, etc. Some of this information can be included in kiosks but other information, such as park hours, needs to be located in the area where the subject of the sign is.

9.1.6 Park Boundary Signs

It is impossible to sign the boundary of every park property in the RDN due to the size and accessibility. Boundary signs should be placed where trails leave park property, and at locations where there are issues such as ATV trespass, tree cutting, encroachment.

9.1.7 Informational Signs

Informational signs inform users of hazards, safety precautions, and park or trail insight. They are used to notify users of important aspects of the park or trail to benefit their recreation experience. Some examples of information signs includes:

- Hazards/risks
- Park boundary
- Park or trail hours
- Seasonal use
- User etiquette
- Restoration areas

Safety signs are used to alert visitors of possible dangerous conditions or unusual activities within the park or on the trail. Considerable care must be taken to ensure the most effective placement of these signs. Any hazardous or unexpected obstacles, conditions, or natural landscape features must be assessed for risk management to determine if their existence requires the installation of such signage.

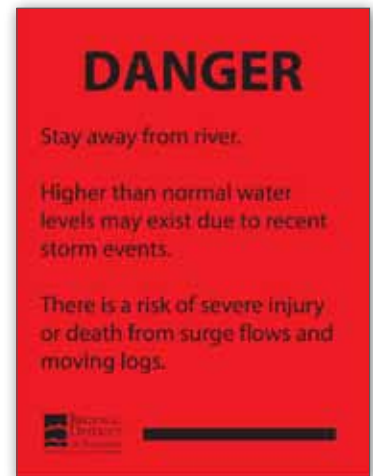
Safety signage is divided into two categories
1) Danger and 2) Caution.

Danger signs are red, display strong messages and are used in situations where the visitor should not proceed or must take a specific course of action.

Caution or warning signs are yellow, alerting visitors to potential hazards and suggest the action to be taken. Safety signs must be concise and use universally recognized iconography wherever possible.



Park boundary sign



Danger sign



Caution sign

9.1.8 Temporary Signs

In some situations it may be necessary to post temporary signage warning of hazardous conditions, as would be the case with construction or development projects in the vicinity of trails or in areas actively used by park visitors. Bridge or trail upgrades, hazard tree falling operations, salmon or creek bank enhancement projects (particularly those involving the use of heavy equipment) are further examples of conditions requiring the use of safety signage.

All temporary signage must be reviewed and approved by the RDN prior to installation. Once the temporary hazard or issue is controlled, all warning signs should be immediately removed.



Temporary sign on a kiosk

9.1.9 Traffic

Parks and campgrounds having vehicle access need signs to inform visitors of the road speed, directions and hazards. MOTI standards are to be used for all traffic signs. Their icons and text are readily recognized by visitors. Details for design and placement of these signs may be found in the MOTI Manual of Standard Traffic Signs and Pavement Markings.



Traffic sign at Horne Lake Regional Park campground



Interpretive sign at Englishman River Regional Park

9.1.10 Interpretive / Education Signs

Interpretive signs are located at main trail/park features that have a story or interesting facts to share with the users. The feature may be natural, historical, or cultural. Interpretive signs should be clear and visual to increase user understanding. Interpretive signs are usually found at lookout areas, areas with a special species or ecosystem, and at trailheads or staging areas to inform users about the area or to help reinforce why people and their pets should stay out of sensitive areas.

- Signs should be placed at a height appropriate for the target user (e.g. higher for adults than those targeting children).
- Given the increased visitation and potential for vegetation trampling and soil compaction, interpretive signs should be located in durable areas or the site should be shielded with appropriate surface to prevent undesirable damage.
- Where possible, interpretive signs should be located to allow visitors to exit the trail tread and prevent conflict with other trail users.

9.2 Donor Recognition

The RDN fosters relationships with the public and agencies through cooperation on park development and maintenance projects. If a group or agency makes a significant contribution to a development or maintenance project, then a method of acknowledgement may be considered. Depending on the park and project, donations can be recognized through a sign, plaque on a structure or mention on a kiosk. Certain grant programs may require a plaque or sign recognizing the funding provided.

The sign or plaque should be tastefully designed, and placed at an appropriate location in the park.

NOTE: The RDN Parks is currently developing its donations policy, therefore at this time, only partner recognition (e.g. funding partner, conservation agency) will take place as needed. No donation benches or plaques can be installed without permission from RDN Parks management.

10 PARK AND TRAIL MAINTENANCE

Once parks and trails are established, ongoing maintenance and management is required to keep the area and surrounding environment in the intended condition. Maintenance activities include a broad range of tasks, varying in budget requirements and frequency, and ultimately aim to ensure environmental sustainability, visitor safety and quality user experiences.

10.1 Design with Maintenance in Mind

When planning and designing parks and trails, attention to maintenance requirements should be considered early in the process. Anticipating potential problems during the design process can reduce maintenance requirements. Many decisions when planning a park or trail will influence maintenance, including material choice and location. Some materials are more durable and will last longer than others. Although more durable materials are usually more costly, they often require less repair and replacement.

Another factor to consider is whether the maintenance needs will be handled by RDN staff or whether private contractor services will be required. This has a direct effect on budget, but can also be a way of establishing longer-term maintenance programs for sites through maintenance contracts.



Footbridge under repair

Specific maintenance requirements vary with the type of park or trail, its location, level of use, and surrounding area. Typical park and trail maintenance activities to consider during design and planning include:

- 1) **Drainage/Erosion** – Proper drainage is essential to the longevity of a trail system. Culverts must be placed across trails as needed and must be kept free of debris. Swales on the uphill sides of trails also need to be built and examined to prevent water from flowing onto trails. Poorly drained areas must be redesigned to minimize trail damage by water.
- 2) **2. Surfacing** – Hard surfaced trails have the potential for cracks, heaving or pull-up of pavers if used, and should be carefully located and constructed to avoid these issues. Soft surfaced trails must be monitored to assess material depths, ruts, and eroded surfaces over time and with increased use. Parking areas and park access roads may also require routing grading or repairs to deal with pot-holes or clearing seasonal debris.



- 3) **3. Vegetation Control** – Trails must be cleared of vegetative material and specified vertical and horizontal clearances must be maintained. Vegetation clearing regimes depend on the weather and trail; maintenance schedules will be followed as per their site specific requirements.
- 4) **Tree Removal** – Dead and unsafe trees in parks and along trails will require periodic monitoring by a Certified Arborist, who will provide recommendations for tree removal based on potential risk. Tree removal greater than 15 cm in diameter requires the services of a certified tree removal company.
- 5) **Boardwalk and Bridge Maintenance** – Boardwalks and water crossings will require periodic inspections to identify potential safety hazards and general maintenance tasks. Depending on the bridge usage and design (whether it's engineered or a simple footbridge) certain bridges will require an engineer inspection with stamp.
- 6) **Signage** – Signs should be planned for the long-term, ensuring information is not time sensitive and remains up-to-date, informative, and correct. Maintenance requirements will include checking for and repairing graffiti or vandalism, and monitoring wood signs and posts for decay or rot.
- 7) **Garbage** – Levels of service vary with seasons and park and trail use. Garbage receptacles should be located for easy access, as well as in a location that makes sense for park users.
- 8) **Toilets** – Levels of service vary with seasons and park and trail use. Toilets should be located for easy access, as well as in a location that makes sense for park users.
- 9) **Obstacles** – Other hazards such as sloughing slopes, loose rocks, fallen trees and exposed tree roots may occur over time and will require immediate and ongoing attention.

10.2 Maintenance Reporting

In addition to routine maintenance of trails, it is important that maintenance issues be dealt with promptly. On-site signage generally displays phone numbers for the Parks Department to allow the public to report safety or maintenance concerns. In addition, Volunteer Park Wardens provide frequent monitoring and notify Parks staff of maintenance issues.



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