

REGIONAL DISTRICT OF NANAIMO
SUSTAINABILITY SELECT COMMITTEE
TUESDAY, SEPTEMBER 15, 2015
1:00 PM

(RDN Committee Room)

A G E N D A

PAGES

CALL TO ORDER

MINUTES

- 2- 3 Minutes of the Sustainability Select Committee meeting held on Thursday July 16, 2015.
- 4 - 6 Minutes of the Drinking Water and Watershed Protection Technical Advisory Committee held on Thursday July 23, 2015.

BUSINESS ARISING FROM THE MINUTES

COMMUNICATIONS/CORRESPONDENCE

- 7 - 9 Oil to Heat Pump Incentive Program.

UNFINISHED BUSINESS

REPORTS

- 10 - 21 Release of Corporate Climate Action Reserve Funds.
- 22 - 30 Sustainability Review of Regional District of Nanaimo Official Community Plans.
New DWWP Interactive Website <http://www.rdn.bc.ca/cms.asp?wpID=3471> .
- 31 - 38 State of our Streams Publication.
- 39 - 42 Regional Drought Response Publication (inserted in the State of our Streams mail out).

ADDENDUM

BUSINESS ARISING FROM DELEGATIONS OR COMMUNICATIONS

NEW BUSINESS

ADJOURNMENT

Distribution: J. Stanhope (Chair), A. McPherson, H. Houle, M. Young, B. Veenhof, C. Haime, J. Kipp, W. Pratt, M. Lefebvre, T. Westbroek, P. Thorkelsson, G. Garbutt, R. Alexander, C. Midgley, T. Pan, M. Donnelly, P. Thompson, J. Pisani, N. Hewitt

J. Fell, B. Rogers

For information only: B. McKay, B. Bestwick, J. Hong, I. Thorpe, B. Yoachim, D. Sailland, B. McRae, F. Manson, T. Swabey, J. Hill, C. Golding, M. O'Halloran

REGIONAL DISTRICT OF NANAIMO

**MINUTES OF THE SUSTAINABILITY SELECT COMMITTEE
MEETING HELD ON THURSDAY, JULY 16, 2015 AT 2:00 PM
IN THE RDN COMMITTEE ROOM**

Present:

Director J. Stanhope	Chairperson
Director A. McPherson	Electoral Area A
Director H. Houle	Electoral Area B
Director M. Young	Electoral Area C
Director M. Lefebvre	City of Parksville
Director T. Westbroek	Town of Qualicum Beach
Director W. Pratt	City of Nanaimo

Also in Attendance:

Director B. Rogers	Electoral Area E
P. Thorkelsson	Chief Administrative Officer
G. Garbutt	General Manager, Strategic & Community Development
C. Midgley	Manager, Energy & Sustainability
M. Donnelly	Manager, Water & Utility Services
P. Thompson	Manager, Long Range Planning
C. Simpson	Senior Planner, Long Range Planning
N. Hewitt	Recording Secretary

Regrets:

Director B. Veenhof	Electoral Area H
Director C. Haime	District of Lantzville
Director J. Kipp	City of Nanaimo
R. Alexander	General Manager, Regional & Community Utilities
T. Pan	Sustainability Coordinator
J. Pisani	Drinking Water & Watershed Protection Coordinator

CALL TO ORDER

The meeting was called to order at 2:00 p.m. by the Chair.

MINUTES

MOVED Director Westbroek, SECONDED Director Lefebvre, that the minutes of the Sustainability Select Committee meeting held on Tuesday March 17, 2015, be adopted.

CARRIED

Drinking Water and Watershed Protection Technical Advisory Committee.

MOVED Director Lefebvre, SECONDED Director Westbroek, that the minutes of the Drinking Water and Watershed Protection Technical Advisory Committee held on Tuesday April 14, 2015, be received.

CARRIED

REPORTS

Declarations Respecting Rights to a Healthy Environment.

That delegates to the Union of British Columbia Municipalities Convention and Annual General Meeting from the Regional District of Nanaimo Board of Directors consider supporting resolutions regarding the declaration of the right to a healthy environment at the 2015 Convention.

CARRIED

Natural Gas Fireplace Rebate.

MOVED Director Lefebvre, SECONDED Director Houle, that the Regional District of Nanaimo not create a new Green Building Incentive Program rebate for natural gas inserts.

CARRIED

2015 Green Building Series.

MOVED Director Lefebvre, SECONDED Director Houle, that the presentation be received for information.

CARRIED

Regional Growth and Long Range Planning Program Overview.

MOVED Director Lefebvre, SECONDED Director McPherson, that the presentation be received for information.

CARRIED

Regional Hydrometric and Climate Monitoring Scoping Study.

MOVED Director Lefebvre, SECONDED Director McPherson, that the Sustainability Select Committee receive this report for information.

CARRIED

ADJOURNMENT

MOVED Director McPherson, SECONDED Director Pratt, that this meeting be adjourned.

CARRIED

Time 3:37 p.m.

CHAIRPERSON



**MINUTES OF THE REGULAR MEETING OF THE
DRINKING WATER AND WATERSHED PROTECTION
TECHNICAL ADVISORY COMMITTEE
HELD ON THURSDAY, JULY 23 2015 AT 12:30 PM**

Present:

Mike Donnelly, CHAIR	Manager, Water & Utility Services, RDN
Neil Goeller	Ministry of Forests, Lands and Natural Resource Operations
Faye Smith	Environment Community Representative
Chris Cole	Forest Industry Representative, TimberWest
Kate Miller	Manager, Environmental Initiatives, CVRD
Leon Cake	Water Purveyors' Representative
Bob Weir	Director of Engineering, Town of Qualicum Beach
Ken Epps.....	Forest Industry Representative, Island Timberlands
Fred Spears.....	Director of Public Works, District of Lantzville
Peter Law	General Public Representative (North)
Heather Florence	Island Health
Mike Squire	City of Parksville / Program Manager, Arrowsmith Water Service

Regrets:

Pat Lapcevic.....	Ministry of Forests, Lands and Natural Resource Operations
Bill Sims.....	Manager, Water Resources, City of Nanaimo
Gilles Wendling	General Public Representative (South)
Kirsten Fagervik	Ministry of Transportation and Infrastructure
David Vincent	Hydrologist Representative (Northwest Hydraulic Consultants)
Deb Epps	Registered Professional Biologist Representative
Oliver Brandes.....	Academic Community Representative
Lynne Magee.....	Island Health
Aleksandra Brzozowski.....	Planner, Islands Trust

Also In attendance:

Julie Pisani	Drinking Water and Watershed Protection Coordinator, RDN
Lauren Fegan.....	Special Projects Assistant, RDN
Deanna McGillivray	Special Projects Assistant, RDN
Randy Alexander	General Manager, Regional & Community Utilities, RDN

CALL TO ORDER

M. Donnelly called the meeting to order at 12:03 pm.

MINUTES

MOVED Ken Epps, SECONDED Fred Spears, that the minutes from the regular meeting of the Drinking Water and Watershed Protection Advisory Committee held April 14, 2015 be adopted.

CARRIED

BUSINESS ARISING FROM MINUTES

COMMUNICATIONS/CORRESPONDENCE

Chair Stanhope welcomed the committee and offered thanks for the dedication and efforts of all members, who serve to guide the implementation of the important work under the Drinking Water and Watershed Protection Program Action Plan.

The committee received, for information, an email correspondence of July 22, 2015 intended for the committee from Mr. Laurie Gourlay of the Vancouver Island and Coast Conservation Society, re: Water & Watershed Initiatives.

UNFINISHED BUSINESS

MUNICIPAL UPDATES

Updates were given from City of Parksville, Town of Qualicum Beach, District of Lantzville and Regional District of Nanaimo on drought response and watering restrictions.

ADDITIONAL UPDATES

N. Goeller provided a brief verbal update from the Province on drought response measures including agricultural water conservation and drought monitoring in streams of interest.

H. Florence indicated that there is a recent survey for water purveyors put together by Island Health re: water supply security and supporting neighbouring communities.

P. Law brought comments forward regarding the drought response on behalf of residents of RDN area north. Good support for the Level 4 Restrictions, concern with some land development and potential impacts.

PRESENTATIONS

J. Pisani provided a visual walk-thru of the new DWWP web interface that is map-based and structured by water region, which is currently under development. Launch is targeted for September and committee members will be sent the link of the website for review and comment, prior.

L. Fegan gave a brief presentation on the State of our Streams publication, which will be mailed out in September as a user-friendly report on the Community Watershed Monitoring Network, profiling creeks and streams of interest, based on the past three years of water quality sampling.

J. Pisani presented a brief update on Nanoose Water Monitoring in the Parker Road area.

VERBAL REPORTS

J. Pisani gave an update on the Regional Hydrometric & Climate Monitoring Scoping Study – actions taken to date to implement priority monitoring sites at Mt. Arrowsmith and in Nanoose.

D. McGillivray updated the committee on the BC Water Use Reporting Centre and the latest implementation of this tool with smaller water purveyors in our region, the improvement districts and Epcor.

L. Fegan spoke briefly about the continuing work of the Community Watershed Monitoring Network, whose sampling of water quality commences for 2015 on August 4th.

FEEDBACK ACTIVITY

Committee members were given sticky notes to provide ideas on two topics: 1) VIU Student Research Partnerships and 2) New projects for 2016. The results of this exercise will be compiled to assist DWWP staff in work planning.

ADDENDUM

NEW BUSINESS

BUSINESS ARISING FROM COMMUNICATIONS

ADJOURNMENT

The meeting was adjourned at 3:00 pm.

Mike Donnelly, Chair

Hewitt, Nicole

Subject: FW: MEDIA RELEASE: New Oil to Heat Pump Incentive Program for B.C. Homeowners

From: Oil to Heat Pump Incentive Program [<mailto:info@oiltoheatpump.ca>]

Sent: Wednesday, September 02, 2015 10:55 AM

To: Pan, Ting

Subject: MEDIA RELEASE: New Oil to Heat Pump Incentive Program for B.C. Homeowners

MEDIA RELEASE

New Oil to Heat Pump Incentive Program for B.C. Homeowners

2 Sept 2015, Victoria, BC - Up to \$1,700 per home is available to help British Columbians upgrade from oil heating to efficient electric air source heat pumps through the Oil to Heat Pump Incentive Program.

The program is funded by the B.C. Ministry of Energy and Mines' Innovative Clean Energy (ICE) Fund and administered by City Green Solutions, a non-profit energy efficiency organization.

"With the cooler weather of fall and winter approaching this is an excellent time for homeowners to think about investing in energy efficient heating solutions. Incentives of up to \$1,700 to upgrade from oil heat to electric heat pumps will make it easier for British Columbians to lower their heating bills and reduce household greenhouse gas emissions," says Bill Bennett, Minister of Energy and Mines.

"An oil to heat pump upgrade is one of the most important things we can do to reduce greenhouse gas emissions from existing homes. Participating homes' typical carbon reductions will be better than taking a car off the road for 15 years," explains Glenys Verhulst, Oil to Heat Pump Program Manager.

"Heat pumps are very efficient home heating systems because they use only a small amount of electricity to move a large amount of heat, to provide comfortable temperatures in the home year-round. An oil to heat pump upgrade will reduce a typical home's energy bills by \$1,300 to \$2,700 every year, and will eliminate the risk of costly damage to air, soil, and waterways from home heating oil leaks," adds Verhulst.

To qualify, homeowners must install a qualifying central or mini-split heat pump and remove their oil tank and oil heating system. Incentives are available on a first-come, first-served basis while funds last.

The Innovative Clean Energy (ICE) Fund is designed to support the B.C. government's energy, economic, environmental, and greenhouse gas reduction priorities and advance B.C.'s clean energy sector.

To learn more, or to register for the Oil to Heat Pump Incentive Program, visit www.oiltoheatpump.ca or call 1.877.545.6247.

- 30 -

Media Contact

Glenys Verhulst
Oil to Heat Pump Incentive Program Manager
info@oiltoheatpump.ca
1.877.545.6247

Background

- A heat pump system typically pays for itself in energy savings quickly and can deliver a return on investment of 20 - 39%.
- Cleanup costs from home heating oil spills typically range from \$65,000 to \$118,000, are the responsibility of the homeowner, and are generally not covered by home insurance.
- Heating oil spills can be environmentally damaging. Oil can contaminate soil and water; harm or kill fish, pets, and other animals; and pollute air in the neighbourhood.
- Heat pumps provide comfortable, clean, and affordable heating and cooling year round.

The Oil to Heat Pump Incentive Program is funded by the Ministry of Energy and Mines' Innovative Clean Energy (ICE) Fund, designed to support the B.C. government's energy, economic, environmental, and greenhouse gas reduction priorities and advance B.C.'s clean energy sector. This program is administered by City Green Solutions.

www.oiltoheatpump.ca

Oil to Heat Pump

INCENTIVE PROGRAM



Upgrade from Oil Heating to a Heat Pump

Access Incentives

- » Up to \$1700 rebate per home

Save Energy and Money

- » Shrink bills by \$1000 - \$2700 a year

Great Home Comfort

- » Affordable heating and cooling

Shrink Your Carbon Footprint

- » Better than not driving your car for over 15 years

Safe Operation

- » Eliminate the financial and environmental risks of an oil tank spill

About

The Oil to Heat Pump Incentive Program is funded by the Ministry of Energy and Mines' Innovative Clean Energy (ICE) Fund, designed to support the B.C. government's energy, economic, environmental, and greenhouse gas reduction priorities and advance B.C.'s clean energy sector. This program is administered by City Green Solutions.

What's a Heat Pump?

Heat pumps provide clean and affordable comfort year-round. Heat pumps efficiently and effectively heat your home because they only use a small amount of electricity to move a large amount of heat into your home. They also work in reverse in the summer to provide cooling by removing heat from inside your house.



Get Started Today, Contact Us!

oiltoheatpump.ca
1.877.545.6247
info@oiltoheatpump.ca

Published August 27, 2015
Terms and Conditions apply
Visit program website for details



TO: Geoff Garbutt
General Manager
Strategic and Community Development

DATE: September 8, 2015

MEETING: SSC - September 15, 2015

FROM: Chris Midgley
Manager, Energy and Sustainability

FILE: 1855-03-CARIP

SUBJECT: Release of Corporate Climate Action Reserve Funds – September 2015

RECOMMENDATIONS

1. That up to \$25,000 be released from the Corporate Climate Action Reserve Fund for a heat recovery system at the Oceanside Place arena.
2. That up to \$15,000 be released from the Corporate Climate Action Reserve Fund for a comprehensive energy assessment of the Ravensong Aquatic Centre.
3. That up to \$90,000 be released from the Corporate Climate Action Reserve Fund for up to nine energy assessments and follow-up improvements at each rural fire hall owned by the Regional District of Nanaimo.
4. That up to \$8,000 be released from the Corporate Climate Action Reserve Fund to support the purchase of a gas-electric hybrid vehicle for the Building Inspection Service.

PURPOSE

To request that up to \$138,000 be released from the Corporate Climate Action Reserve Fund for investment in four projects that will contribute to corporate energy conservation, emissions reductions and ongoing operational savings.

BACKGROUND

The Corporate Climate Action Reserve Fund was established by bylaw at the Regular Board Meeting held November 22, 2011. The fund is intended to support capital investment in vehicles, equipment, infrastructure and initiatives that result in corporate energy conservation, emissions reductions and operational savings.

The source of revenue for the Corporate Climate Action Reserve Fund is the Provincial *Climate Action Revenue Incentive Program* (CARIP), which provides an annual grant to the Regional District of Nanaimo (RDN) in an amount equal to what is paid by the RDN in the Provincial Carbon Tax. This grant is available to the RDN for signing the Climate Action Charter. In 2015, the CARIP grant was \$93,732 and at present, the total amount available for projects is approximately \$360,600.

2015 NEW PROJECTS

For 2015, four new projects have been identified for funding:

1. Recovery of waste heat from refrigeration to pre-heat domestic water supply at the Oceanside Place Arena (up to \$25,000);
2. A comprehensive energy assessment of the Ravensong Aquatic Centre (up to \$15,000);
3. Energy assessments and follow up improvements for nine RDN owned fire Halls (up to \$90,000); and
4. Purchase of a gas-electric hybrid vehicle for the Building Inspection Service (up to \$8,000).

Oceanside Place Arena (OP) – Heat Recovery for Domestic Hot Water (up to \$25,000)

In 2014, two boilers were replaced at Oceanside Place (OP) arena. During that project, the mechanical appurtenances to incorporate a heat recovery system to pre-heat the domestic hot water supply were also installed. This was done to facilitate further investment in energy efficiency in 2016, as per the 5-year capital plan for the facility. The total project cost is estimated between \$60,000 and \$70,000.

The estimated savings from the heat recovery project are 921 gigajoules of natural gas per year. Based on current costs, this equals approximately \$8,700 per year in energy savings and a reduction of 45 tonnes of CO₂e¹ per year. A more detailed description of the project is provided as Appendix 1.

In April 2015, the Provincial government announced the *Community Energy Leadership Program* (CELP), an application based program that offers up to one-third of eligible costs for Local Government energy efficiency projects that can be completed by March 21, 2016. Considering that the heat-recovery project was essentially 'shovel-ready', staff opted to apply for financial support through the CELP program to reduce the overall cost burden of the project, and to begin realizing operational savings as soon as possible.

The RDN application was successful, with the Province awarding \$20,000 to the project. To initiate the project in 2015, up to \$25,000 is requested from the Corporate Climate Action Reserve Fund. The remaining amount will come from the 2016 operational budget for Oceanside Place Arena. Without the contribution from the Corporate Climate Action Fund, the project cannot be completed prior to the March 21, 2016 deadline, and the funding from the Province will not be available. The use of the reserve fund for this project is directly aligned to its purpose, which is to support investment in efficient equipment and infrastructure that results in operational savings over time.

Ravensong Aquatic Centre – Comprehensive Energy Assessment (up to \$15,000)

The Ravensong Aquatic Centre (RAC) completed a major renovation in 2010. The renovation included remediation of the building envelope; change in water treatment method; a significant overhaul of the heating, ventilation and air conditioning system; and the installation of a solar hot water system. In the years since the renovation, the system has not achieved the anticipated energy performance. To identify sources of inefficiency and propose cost-effective solutions, it is necessary to complete a comprehensive energy assessment by a dedicated, qualified consultant. Given the size of the facility, the level of use, and the number and range of systems at the pool (boilers, heat exchangers, heat recovery ventilation, solar hot water system), the assessment is relatively complex, typically in the \$15,000 - \$20,000 range.

¹ CO₂e, or carbon dioxide equivalent is the standard unit of measure for greenhouse gas emissions.

After evaluating proposals received in response to a Request for Quotes (RFQ, attached as Appendix 2), the services offered by DAS Systems, at a cost of \$19,720, provide the best value to the Regional District of Nanaimo. Upon completion of the project, staff will have the ability to make informed decisions about capital investment over a recommended timeframe, as well as a document to use when seeking senior government partnership funding for capital projects. The 2015 RAC budget includes \$5,000 to be put toward an energy assessment. The remaining \$14,720 is requested from the Corporate Climate Action Fund.

Energy Assessments for RDN owned Fire Halls (up to \$90,000, or \$10,000 per Fire Hall)

The Regional District of Nanaimo provides for the operations and capital improvement requirements of ten rural fire service areas within its boundaries. Of those ten service areas, seven have fire halls that are directly owned by the RDN. Only halls that are owned by the Regional District of Nanaimo are considered eligible recipients of funding from the Corporate Climate Action Reserve Fund. Table 1 below lists fire halls owned by the RDN, by service area, and identifies the contracted operator and location for each hall. Only halls directly owned by the RDN are listed. Halls that are leased, or owned by an Improvement District are not included.

Service Area	Electoral Area	Contracted Operator	Fire Halls	Ownership
Cassidy-Waterloo	A & C	Cranberry Fire Protection District	Hallberg Road Fire Hall (3500 Hallberg Road)	RDN
Extension	C	Extension & District Volunteer Fire Department Society	Extension Fire Hall (2201 Bramley Road)	RDN
Nanoose Bay	E & G	Nanoose Fire Protection Society	Nanoose Bay Fire Department (2471 Nanoose Road)	RDN
Errington	F	Errington & District Volunteer Fire Department	Errington #1 Fire Hall (960 Errington Road)	RDN
			Errington #2 Fire Hall (1930 Errington Road)	RDN
Coombs-Hilliers	F	Coombs-Hilliers Volunteer Fire Department	Coombs-Hilliers #2 Fire Hall (3241 Alberni Highway)	RDN
Dashwood/Meadowood	F, G & H	Dashwood Volunteer Fire Department	Station 61 – Dashwood (230 Hobbs Road)	RDN
			Station 62 – Meadowood (1800 Galvin Place)	RDN
Bow Horn Bay	H	Bow Horn Bay Volunteer Fire Department	Bow Horn Bay Fire Hall (220 Lion's Way)	RDN

Typically, the annual operational budgets for these halls are determined by the contracted operator. The RDN requisitions the monies from participating taxpayers and contributes the necessary funds. Due to this arm-length relationship, the RDN has limited knowledge of discrete operational costs including energy costs at each hall. Knowing the age and general condition of each of the halls, it is anticipated that all halls owned by the RDN could realize operational cost savings through investment in efficiency upgrades.

In order to verify opportunities to save energy and operational costs at the fire halls, it is necessary to have a certified energy advisor conduct assessments of each hall. Typically, such assessments cost approximately \$5,000. For this project, up to \$10,000 per hall is requested from the Corporate Climate Action Reserve Fund to cover the costs of energy assessments, as well as up to \$5,000 for immediate follow-up improvements. These assessments will also provide a sound understanding of the condition of each hall, enabling well-informed capital planning and prioritized investment in improvements over the short- to medium term.

Staff are very aware that the Fire Chiefs are busy with high priority responsibilities, and that facility assessments could be an inconvenience. To minimize impact on the operations of the fire halls, the request for Corporate Climate Action Reserve Funds is for nine regional halls with no specified timeline to complete the work. If approved, this will allow the chiefs to notify RDN staff of an ideal time to undertake the assessment, and staff will have the resources available to act. This proposal has been presented to all the affected Fire Chiefs, and all those who have responded are keen to participate. If a Chief opts to not participate, the funds for that hall will not be taken from the reserve fund.

Hybrid Vehicle Purchase for Building Inspection Service (up to \$8,000)

The Building Inspection service has budgeted for the purchase of a new vehicle in 2015. In 2014, gasoline accounted for approximately \$10,000 of the Building Inspection budget, and the Manager responsible has expressed an interest in purchasing a gas-electric hybrid model. Included among the requirements for the Building Inspection vehicle is a four-wheel drivetrain. This limits the available options for hybrid electric vehicles. The conventional vehicle that would be considered is the Jeep Compass, at \$25,000 with a fuel efficiency rating of 10.2 litres per 100 km.

Two gas-electric hybrid alternatives that are likely to meet the needs of the department are the Subaru Crosstrek Hybrid, which has a combined efficiency rating of 7.5 litres per 100 km, costing \$33,000; and the Honda CR-V LX, costing \$30,000 with a combined efficiency of 8.3 litres per 100 km. There may be other alternatives to consider, but the two mentioned here are the highest efficiency four-wheel drive alternatives rated by Natural Resources Canada that are not also luxury models. Most hybrid vehicles in the sport-utility class have been ruled out as they have a significantly higher price-point yet do not offer significant fuel savings over the Jeep Compass.

If it is determined by the Manager responsible that a gas-electric hybrid model will meet the needs of the department, access of up to \$8,000 from the Corporate Climate Action Reserve Fund will enable the purchase of an efficient hybrid vehicle costing up to \$33,000, without a corresponding impact on the operational budget. In addition, the service will benefit from long-term fuel savings. If after test-driving hybrid vehicles the conventional alternative is preferred, no funds will be taken from the Fund.

ALTERNATIVES

1. That up to \$25,000 be released from the Corporate Climate Action Reserve Fund for a heat recovery system at Oceanside Place arena.
2. That up to \$15,000 be released from the Corporate Climate Action Reserve Fund for a comprehensive energy assessment at Ravensong Aquatic Centre.
3. That up to \$90,000 be released from the Corporate Climate Action Reserve Fund for up to nine energy assessments and follow-up improvements at each rural fire hall owned by the RDN.
4. That up to \$8,000 be released from the Corporate Climate Action Reserve Fund to support the purchase of a gas-electric hybrid vehicle for the Building Inspection Service.
5. That alternate direction be given to staff.

FINANCIAL IMPLICATIONS

For Alternative 1, accessing up to \$25,000 from the Corporate Climate Action Reserve Fund for a heat recovery system at Oceanside Place Arena will allow the Recreation service to initiate an efficiency project to earlier than planned, resulting in immediate savings approaching \$8,700 per year, and enabling access to \$20,000 provided the Province through its new CELP program. The \$70,000 allocated to the project in 2016 will be reduced to \$25,000, significantly reducing the cost burden on participating taxpayers, as identified in the 5-year Capital Plan.

For Alternative 2, accessing up to \$15,000 from the Corporate Climate Action Reserve Fund for a comprehensive energy assessment of Ravensong Aquatic Centre will identify possible sources of inefficiency that prevent the facility from realizing its anticipated performance levels. This will lay the foundation to plan and implement a series of cost effective capital investments that will result in operational savings over the coming years.

For Alternative 3, accessing up to \$90,000 from the Corporate Climate Action Fund for energy assessments and follow-up improvements will provide the opportunity to gain a better understanding of energy costs in the context of overall operational costs at nine RDN-owned fire halls, and implement potential cost-saving projects over the immediate term. This will remain an open-ended commitment to the fire halls, to be implemented as requested by the Fire Chiefs. If a chief opts not to participate, resources will not be taken from the Corporate Climate Action Reserve Fund.

For Alternative 4, accessing up to \$8,000 from the Corporate Climate Action Reserve Fund for a gas-electric hybrid for the Building Inspection service will allow the Departmental Manager to purchase a gas electric hybrid with no net impact on the operational budget for the service. A gas-electric hybrid with a four-wheel drivetrain has an incremental additional cost of up to \$8,000 when compared to a conventional alternative, but offers a 25% reduction in gasoline consumption. As such, investment in a hybrid model should correspond to reduced expenditures in gasoline year over year. If the Departmental Manager determines that a hybrid model will not meet the needs of the department, no monies will be taken from the Corporate Climate Action Reserve Fund.

At present, there is approximately \$360,000 held in reserve in the Corporate Climate Action Reserve Fund. If all projects are approved, up to \$138,000 will be taken from the fund, leaving \$222,000 for projects in future years. The amount held in reserve is expected to increase by approximately \$90,000 in March 2016, when the RDN receives its annual Provincial CARIP grant.

STRATEGIC PLAN IMPLICATIONS

The Vision expressed in the RDN Board Strategic Plan emphasizes the importance of reducing emissions over time. Investing in energy efficiency provides an important way that the RDN can demonstrate leadership in reducing emissions from corporate operations.

At the same time, investing in energy efficiency is also a means to ensure ongoing operational savings. Leveraging the Provincial CARIP grant to improve efficiency across the organization and realize ongoing operational cost-savings without a corresponding direct financial impact on departmental budgets advances the Board Value to *Show Fiscal Restraint* as well as the Strategic Priority to ensure *Economic Viability* in decision making.

SUMMARY/CONCLUSIONS

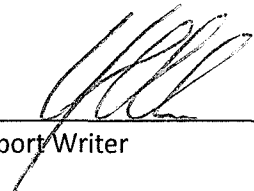
In 2011, the Regional District of Nanaimo established the Corporate Climate Action Reserve Fund. This fund is intended for investment in vehicles, equipment, infrastructure and initiatives that result in corporate energy conservation, emissions reductions and operational savings. The source of revenue for this Fund is the Provincial *Climate Action Revenue Incentive Program* (CARIP), which provides an annual grant equal to what is paid by the RDN in the Provincial Carbon Tax. This grant is available to the RDN for signing the Climate Action Charter. At present, the total amount held in reserve for investment in projects is approximately \$360,600.

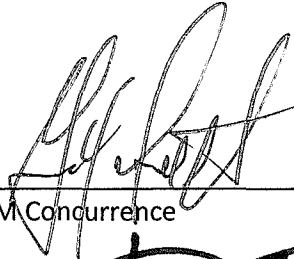
In 2015, up to \$138,000 is requested from the Corporate Climate Action fund to invest in four projects:

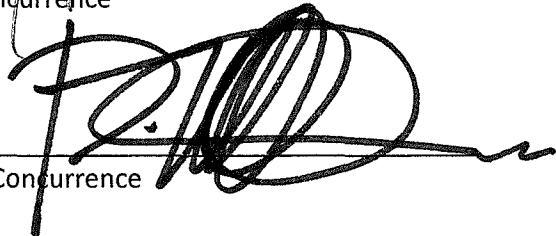
1. Recovery of waste heat from refrigeration to pre-heat domestic water supply at Oceanside Place Arena (up to \$25,000);
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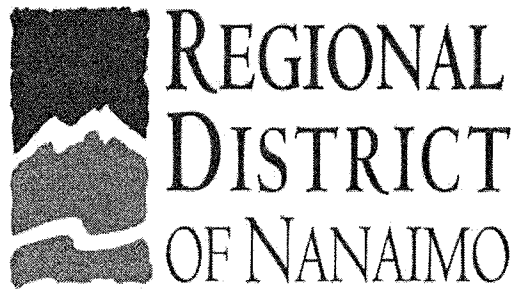
Projects 1 and 4 above will lead to direct savings through reduced energy use, while Projects 2 and 3 provide the foundation for moving forward with efficiency upgrades over time. For the fire halls, up to \$5,000 is available for immediate follow-up improvements in addition to energy assessments. These assessments are useful for identifying projects for the future that could also benefit from senior government partnership funding (typically, assessments themselves are not eligible for partnership funding).

For the fire halls and the hybrid vehicle purchase, the discretion to follow through with the recommended activities remains under the authority of the respective Fire Chiefs, and the Manager responsible for the Building Inspection service respectively. If a chief opts out of the program, the relevant fire hall will not be assessed, though to date the response to the project has been largely positive. Similarly, if after test driving, the Manager responsible for the Building Inspection Service determines that a gas-electric hybrid will not meet the needs of the department, the vehicle will not be purchased. In those cases, the funds will remain available for future projects.

for  _____
Report Writer

 _____
GM Concurrence

 _____
C.A.O. Concurrence



**OCEANSIDE PLACE ARENA
830 WEST ISLAND HIGHWAY, PARKSVILLE, BC**

**REFRIGERATION PLANT HEAT RECOVERY
ENERGY STUDY FOR
DOMESTIC WATER HEATING SYSTEMS**

Prepared For:

**Attention: Mr. John Marcellus – Superintendent of Arena Services
Regional District of Nanaimo – Recreation and Parks
830 West Island Highway
Parksville, BC V9P 2X4**

Prepared By:

Aaron Mullaley, Eng.L., ASCT, LEED® AP BD+C



RPE File 15061-N662
March 2015

INTRODUCTION

Executive Summary

This energy study was conducted to review an option for reclaiming waste heat from the Refrigeration Plant for use in supplementing the Domestic Water Heating system to reduce building energy use and offset carbon production.

Study Methodology

The energy savings calculations included review of the building Refrigeration Plant Operation along with Domestic Hot Water load and usage patterns. This review included detailed review of system operations such as:

- Refrigeration Plant sequence of operation
- Refrigeration Plant operating conditions
- Compressor hours of operation for each of the three compressors
- Heat Rejection pump hours of operation for Snow Melt and Subfloor Brine Heating systems
- Brine pump hours of operation
- Condensor Pump and Fan hours of operation
- Domestic Water Heating system peak load
- Domestic Water Heating system daily profile
- Domestic Water Heating system standby losses

BUILDING MECHANICAL SYSTEMS

Refrigeration Plant Description

The existing refrigeration plant consists of two 71 ton compressors used in lead/lag operation, and one 50 ton compressor for supplemental capacity. The system includes a 220 ton brine chiller serving two large and one smaller rink. Heat Rejection is through a 192 ton evaporative condenser along with a snow melt desuperheater (500 MBH) for two zamboni systems and a subfloor desuperheater (350 MBH). Existing stub-out connections were provided for a future domestic water pre-heating system.

Domestic Water Heating Plant Description

The existing domestic water heating plant consists of three 400 MBH tank type condensing natural gas water heaters providing 160degF hot water for two zamboni systems, and two 250 MBH tank type condensing natural gas water heaters providing 140degF hot water mainly for locker room showers.

ENERGY CONSERVATION MEASURES

Proposed Domestic Water Heat Reclaim system

The thermal heat recovery system which was considered in this review included two 120 gallon storage tanks with a double wall single circuit heat exchange plate designed for ammonia refrigerant (R717). The heat exchanger heats water by transferring refrigerant superheat to water. Hot gas from the compressor is piped through the heat recovery storage tanks on its way to the evaporative condenser. Hot water production depends on the evaporator load (capacity), run time of the compressor and water usage.

The domestic cold water is pre-heated through this system from approximately 40degF to 80degF at a rate of 480 gallons/hour with a heat transfer capacity of 160 MBH. The pre-heated water is supplied to the domestic water heaters to help supplement the domestic water heating load and reduce standby energy losses.

Energy Savings

The energy savings was based upon the average run-time of the lead compressor which was approximately 16 hours/day based on trend logs of the past years operation. There would be a consistent demand on the domestic heating water system from either domestic hot water use or system stand-by losses. Based on a capacity of 160 MBH (0.17 GJ) over a 16 hour period/day and facility operations for about 346 days/year there would be a total of 942 GJ of natural gas energy savings over the year. An additional fractional horsepower pump would need to be added increasing the annual electrical use by approximately 692 Kwh. Energy rates included in review were estimated at a total of \$9.5/GJ of natural gas and \$0.08/kwh of electricity. The summary of results can be found in table #1 below.

Life Cycle Cost Review

A life cycle costing (LCC) exercise was conducted to select the mechanical system. The economic variables used were a discount rate of 5%, and a study length of 20 years. Natural gas and electricity rates were assumed to escalate at 2% per year. The results are included in table #1 below.

ENERGY CONSERVATION MEASURE (ECM) ANALYSIS

ECM #1: Refrigeration Plant Heat Reclaim

Description: Install storage tanks with double wall heat exchanger that will recover heat from the refrigeration plant heat rejection for use in pre-heating domestic cold water being supplied to the domestic water heating plant.

Capital cost is estimated at \$60,000.

Refer to Table #1 below for breakdown of energy use, cost, and life cycle payback.

Table # 1: ECM#1 Cost Analysis

Energy Conservation Measure	Annual Savings					Capital Cost	Life Expectancy	Payback		NPV	IRR
	kWh	kW	GJ or L	\$	Maint \$			Simple	Discounted		
1. Refrigeration Heat Reclaim (For DHW)	(692)	-	924	\$ 8,702	\$ 250	\$ 60,000	20	6.7	8.2	\$ 52,495	16.1%

Discussion: Installing this heat recovery system at a cost of \$60,000 is cost effective based on a simple payback of approximately 7 years considering the estimated useful service life of this system of 20 years.

Greenhouse Gas Reduction: The total greenhouse gas reduction if this ECM is implemented is 45.7 tCO₂e. (tonnes of carbon dioxide equivalent - Based on 0.0495 tCO₂e per GJ of natural gas)

Disclaimer of Liability

The material in this report reflects our professional opinion based on information available to us, a site investigation, visual observations of the mechanical systems/equipment with no physical testing, and building operators comments. Any use which a third party makes of this report or reliance on decisions made based on it, are the responsibilities of such third parties. Rocky Point Engineering Ltd. accepts no responsibility for damages, if any suffered by any third party as a result of decisions made or actions based on this report.

Results from the energy simulations are not predictions of actual energy consumption or operating costs of the proposed efficiency measures after installation as they were based on operating conditions from the past year. Actual energy usage will differ from these calculations due to a number of variables. These variables may include variations in occupancy, building operations schedules, weather, energy use for equipment not included in the simulations or not covered by the applicable energy code, and changes in energy costs from the design of the energy conservation measure to completion of construction.

If you have any further questions of require clarification on the info provided in this report please contact me.

Prepared By,



Aaron Mullaley, Eng.L., ASCT, LEED AP BD+C
Rocky Point Engineering Ltd.
aaron.mullaley@rpeng.ca
Ph. (250) 585-0222

Appendix 2

Request for Quotation

The Regional District of Nanaimo is requesting quotations for the assessment and recommendation of mechanical/operational upgrades to maximize energy efficiencies and reduce energy consumption at the Ravensong Aquatic Centre.

The successful proponent will assess current mechanical equipment and its existing operational usage, make recommendations for future equipment replacement and operating efficiencies for the existing facility and in consideration of future facility expansion. A key component of this assessment will be ongoing consultation with the Ravensong Aquatic Centre Superintendent throughout the process to deliver a strategic energy plan that is congruent with budgetary and operational service levels.

The desired outcome is to provide RDN a comprehensive strategic energy plan that includes:

- Recommendations for performance improvement (behaviors, procedures)
- Recommended equipment upgrades (Motors, AHU's, Dehumidification, Solar, Heat Reclaim)
- Recommended Operational upgrades.(Re-commissioning, Boiler vs Heat Pumps for DHW/ Space/Pool Heating, improved efficiencies from existing solar system)
- Equipment purchase and installation cost estimates.
- Estimated energy savings and return on investment.
- A time table or suggested sequence that provides the best economic scenario for upgrades over a 5 year period.

The RDN reserves the right to select or reject quotations at its discretion.

Responses will be accepted up until July 24, 2015 at 4pm.

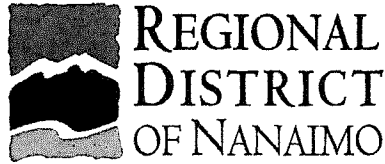
Responses may be mailed to:

737 Jones St. Qualicum Beach, BC V9K 1S4 Attention Mike Chestnut, Superintendent of Aquatic Services

or emailed to:

mchestnut@rdn.bc.ca

If proponents require additional information they may contact Mike Chestnut, Superintendent of Aquatic Services at the above email or at 250-752-5014



RDN REPORT		###
CAO APPROVAL		
EAP		
COW		
SEP 04 2015		
RHD		
BOARD		
<i>CSL - MEET 15/2015</i>		

STAFF REPORT

TO: Chris Midgley
 Manager, Energy and Sustainability

DATE: September 2, 2015

FROM: Ting Pan
 Sustainability Coordinator

MEETING: SSC – September 15, 2015

FILE: 6480-01

SUBJECT: Sustainability Review of Regional District of Nanaimo Official Community Plans

RECOMMENDATION

That the report on the sustainability review of Regional District of Nanaimo (RDN) Official Community Plans (OCPs) be received for information.

PURPOSE

To identify opportunities to better support green building, sustainable land use planning practices and renewable energy generation in current RDN Official Community Plans.

BACKGROUND

In April 2015, staff initiated a collaborative project involving Long Range Planning, Current Planning, and Energy and Sustainability to review Official Community Plans in six Electoral Areas (A, C, E, F, G and H). The area-by-area review focused on green building and sustainable land use planning practices as well as renewable energy generation, with the objective to identify opportunities to strengthen support for these specific practices. The review deliberately excluded the following considerations:

1. Density - this will require extensive public consultation.
2. Alternative forms of rural development - Long Range Planning completed a study on this in 2012.
3. Sea level rise - Long Range Planning has planned a mapping project in the 2015 work plan to lay the foundation for future work related to sea level rise.

The OCP review was identified in the 2015 work plan for Energy and Sustainability division as a logical step following the implementation of the Green Building Bylaw Amendment project completed in early 2015.

It is worth noting that a 'Climate Change and Energy' section was introduced to all RDN OCPs in 2010 (except for Electoral Area A OCP which was under review at the time) in response to the provincial requirements to include Greenhouse Gas emissions targets, policies and actions in OCPs. Staff also considered the relevance and applicability of those actions in the context of each OCP.

This report is brought forward to the Sustainability Select Committee (SSC) for information purposes as the project originated out of the Green Building Action Plan. In recognition that the outcome of this review impacts Electoral Areas only, recommendations to advance identified opportunities, as well as more detailed financial implications will be brought forward to the EAPC at the meeting to be held in October 2015.

Through this review process, the greatest barrier identified is a lack of clarity and guidance on future renewable energy development in the region. Secondly, measures to mitigate and adapt to climate change are not always tailored to the unique characteristics of each community. Other relevant gaps or inconsistencies within OCPs are also noted. A summary of review notes is attached as Appendix A. Opportunities to consider are summarized below:

Opportunity 1: Clarify position on commercial and community-scale renewable energy generation.

Barrier	There is no clear indication in the OCPs if commercial or community-scale renewable energy generation is a supported use.
Proposed Action	Explore options and conditions under which commercial or community renewable energy generation can be supported as a permitted use or a home-based business.
Rationale	It is anticipated that there will be an increasing interest in investing in renewable energy production beyond meeting on-site energy demand in the future. Allowing commercial or community-scale renewable energy production presents an opportunity to create clean energy locally and generate revenue for property owners.

Opportunity 2: Establish clear criteria for evaluating community impacts of renewable energy systems.

Barrier	There are no clear criteria to evaluate community impacts of renewable energy systems.
Proposed Action	Establish a Board policy that outlines criteria to evaluate community impacts of renewable energy systems, including but not limited to issues related to safety, aesthetics, acoustics, public health and neighbourhood character.
Rationale	Developing criteria to evaluate the community impacts of renewable energy systems will provide guidance to interested residents and organizations when the Board makes decisions related to renewable energy generation projects. It will also reduce concerns about potential negative impacts associated with renewable energy technologies.

Opportunity 3: Complete a renewable energy capacity analysis for the region.

Barrier	There is a lack of information on renewable energy production potential within the region.
Proposed Action	Consider a study to identify areas of high renewable energy generation potential, including wind, solar and biomass energy systems.
Rationale	Identification of high-potential areas will facilitate discussions on how to respond to, or prioritize large-scale renewable energy projects in a proactive manner, test reception within RDN communities of such projects on specific sites and help the Board make informed decisions.

Opportunity 4: Incorporate area-specific climate change mitigation and adaptation measures into OCPs.

Barrier	The existing Climate Change and Energy sections do not include considerations relating to climate adaptation. Since the sections are the same for all OCPs except for the Electoral Area A OCP, unique opportunities that exist in particular communities are not addressed.
Proposed Action	Incorporate climate mitigation and adaptation measures in consideration of each area’s characteristics and priorities.
Rationale	Having mitigation and adaptation measures tailored to each area is important to capture unique and appropriate opportunities. Specific suggestions can be found in Appendix A, which are intended to be considered when individual OCPs are reviewed.

ALTERNATIVES

There are no alternatives. This report is provided for information purposes.

FINANCIAL IMPLICATIONS

Acting on each of the opportunities listed above will require resources. Clarifying the RDN position on commercial and community-scale renewable energy systems, as well as establishing evaluation criteria for the community impacts of renewable energy systems could be completed by dedicating staff time to the projects. As such, this work would be accounted for as staff time within the operational budgets for Current Planning, Long Range Planning and Energy and Sustainability.

Undertaking a renewable energy capacity analysis would require the services of a qualified consultant. An estimated budget for this work and funding alternatives will be presented to the EAPC. The opportunity to incorporate area-specific climate change mitigation and adaptation measures into OCPs should be incorporated into the general OCP review cycle. This would minimize additional demands on staff resources.

STRATEGIC PLAN IMPLICATIONS

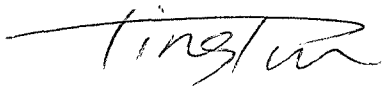
The opportunities for actions advance the strategic priorities of *Self-Sufficiency* and *Economic Viability* in the 2013-2015 Board Strategic Plan, and fulfill the objective ‘promote initiatives and policies that contribute to regional sustainability and community resilience’. Providing clear guidance on renewable energy production in the region encourages the development of clean energy sources to meet our own needs for energy, and unlocks potential economic opportunities associated with the design and installation of these systems as well as the potential long-term revenues for local businesses and homeowners. Incorporating mitigation and adaptation considerations in each community will help identify unique opportunities and vulnerabilities as well as appropriate strategies to enhance the community’s adaptability to change.

SUMMARY/CONCLUSIONS

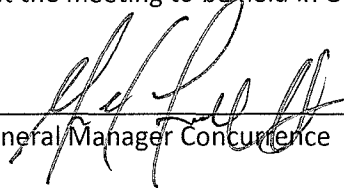
Staff have conducted an area-by-area review of RDN Official Community Plans to identify potential opportunities to better support regional sustainability in terms of green building, sustainable land use practices and renewable energy generation. Opportunities identified include:

1. Explore options and conditions under which commercial or community-scale renewable energy generation can be supported as a permitted use;
2. Establish a Board policy that outlines criteria to evaluate community impacts of renewable energy systems;
3. Consider a study to identify high-potential areas for renewable energy production;
4. Incorporate climate change mitigation and adaptation measures in consideration of each area's unique characteristics and priorities in future OCP review processes.

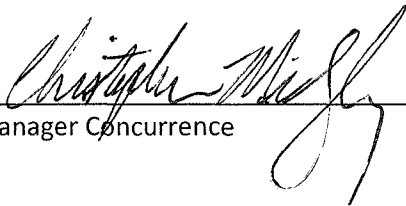
This report has been brought forward to the SSC for information as the project originated out of the Green Building Action Plan. Recommendations to advance identified opportunities, and more detailed financial implications will be brought forward to the EAPC at the meeting to be held in October 2015.



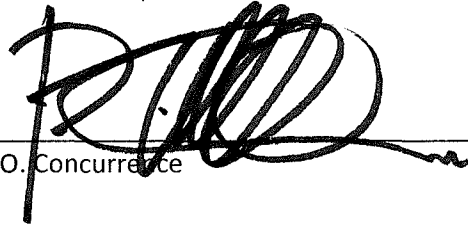
Report Writer



General Manager Concurrence



Manager Concurrence



C.A.O. Concurrence

Appendix A
Sustainability Review of RDN Official Community Plans (OCPs)
Summary of Notes

Overall Observations and Recommendations

The following items directly relate to OCP content for all Electoral Areas:

- Currently commercial or community renewable energy production is not explicitly supported in the OCPs. Explore options to support such renewable energy production either as a permitted use or a home-based business. Clarification of commercial and community renewable energy systems is needed.
- Climate adaptation issues such as those related to sea level rise, prolonged drought, and severe and frequent weather events are largely not considered in the current OCPs. Consider incorporating climate adaptation measures into OCPs as building community resilience becomes an important priority across the region.
- Many actions in the Climate Change and Energy section have been implemented. This section should be updated and incorporated into relevant sections throughout the OCPs when they are ready for a full review.

Below are items complementary to OCPs:

- There are no clear criteria to assess renewable energy systems' impacts. Zoning bylaws regulate renewable systems in terms of size, height and setback. OCPs provide high-level directions on whether and how such use can be supported. When the Board has to make decisions on development variances or project proposals related to renewable energy systems, a Board Policy that outlines clear criteria to assess renewable energy systems' impacts will be a useful complement to the other policy tools.
- There is a lack of information on renewable energy production potential within the region. Consider a study to identify high-potential areas for renewable energy production such as wind, solar and biomass energy systems. This will enable the communities to discuss how to respond to or prioritize energy project proposals and help the Board make informed decisions.

Area Specific Comments and Recommendations

Potential barriers and opportunities, and gaps or inconsistencies relating to sustainability are noted below for each area.

1. Electoral Area H - OCP Review

Date of Staff Review Meeting: April 30, 2015

- Community Values Statement (Section 1.2, pg. 3) - Since this OCP predates policy consideration on energy and emissions, there is no language here to encourage low-energy, high-performance buildings, District Energy System for Village Centres, renewable energy systems, etc.

- Development Guideline Criteria (Section 5.1, pg. 1) – Consider adaptability to climate change as one of the criteria.
- Village Centres DPA (A2 Page 4) – Consider adding buildings that meet third party performance standards such as Built Green, LEED, Passive House, Energy Star; infrastructure that supports alternative transportation and clean vehicles, secure bike storage, EV charging stations, bus shelters and priority parking to Guidelines. Bowser Village Centre Plan provides a very useful precedent.

2. Electoral Area G - OCP Review

Date of Staff Review Meeting: May 21, 2015

- Section 2.8 and 2.9 (pg. 27) both address Sustainable Development and Climate Change, they can be consolidated.
- Address climate impacts on waterfront properties in either Coastal Zone Management section (pg. 17) or Natural Hazard Areas Management section (pg. 21).
- Climate Change and Energy (Section 2.9, pg. 31) - Consider supporting infrastructure for alternative clean transportation, e.g. EV charging station, bike racks/storage; support car-share program; relax parking requirement in exchange for energy and emissions reduction efforts. This is more relevant in Area G, as it is in close proximity to urban centres and has higher density compared to other EAs.
- Protecting Rural Integrity (Section 5.1, pg. 44) – Consider supporting on-site renewable energy generation and food production.
- Multi Residential, Intensive Residential, Industrial, and Commercial Form and Character (Section 10.6, pg. 106) - Ideas to consider:
 - 1) Shared amenities
 - 2) Permeable site surfaces to allow for stormwater infiltration
 - 3) Reflective building surfaces to reduce heat absorption
 - 4) Building performance certifications
 - 5) District Energy System

3. Electoral Area E - OCP Review

Date of Staff Review Meeting: June 4, 2015

- Coastal Zone (Section 2.2, pg. 3) - Consider impacts such as sea level rise and storm surge on coastal areas
- Water Management (Section 2.3, pg. 4)- Encourage rainwater collection
- Coast Residential (Section 3.1, pg. 1)- Address climate impacts on residential waterfront properties
- Community Centres (Section 4.2, pg. 2) - Treatment of shoreline and seawall in consideration of climate impacts should be considered in neighborhood centres; Neighborhood layout and design that optimizes future buildings' solar access should be encouraged.

4. Electoral Area F - OCP Review

Date of Staff Review Meeting: June 18, 2015

- No coastal zone, therefore no direct concerns related to sea level rise, storm surges, etc.
- Area F is composed of many large rural lots on which there are minimum barriers to solar access and renewable energy generation.
- Currently, the two Development Permit Areas are somewhat redundant. The Watercourse Protection and the Fish Habitat Protection DPAs could be consolidated.
- There is a unique opportunity to allow commercial or community renewable energy production in Area F because
 - 1) There are large lots that make it possible to produce more energy than on-site energy demand.
 - 2) Area F has its own zoning bylaw which makes it easier to establish new definitions and supporting policies.
 - 3) There is a strong emphasis on self-sufficiency within the community already.
- There is also an opportunity to practice forest/trees retention for carbon sequestration. Currently there is general language in the Climate Change section to support such a program. No need to be any more specific in the OCP. No particular barrier to the implementation is identified. The program will offer multiple co-benefits such as habitat protection, stormwater management, and additional financial incentive to alternative forms of rural development. The Energy and Sustainability Section has a Rural Residential Carbon Reserve project to explore implementation options in its work plan.
- Infrastructure, Transportation & Utilities (Section 7, pg. 1) – Consider supporting infrastructure to accommodate clean vehicles and alternative transportation modes.

5. Electoral Area C - OCP Review

Date of Staff Review Meeting: July 29, 2015

- No coastal zone, therefore no direct concerns related to sea level rise, storm surges, etc.
- Large areas of Private Managed Forest Land and Agricultural Land Reserve which the RDN has limited jurisdiction over.
- There are very few commercial or multi-unit residential development opportunities, mostly single-family homes. This leads to limited opportunities for encouraging District Energy Systems or shared amenities in the OCPs.
- Potential climate related risk - wildfire close to residential areas. Consider including hazard land policy or a DPA to apply to properties in the interface fire zone. E.g., North Cowichan has such a DPA for new subdivision.
- Language and maps are not updated to reflect current municipal boundaries.

Arrowsmith Benson- Cranberry Bright OCP

- Large amount of resource land presents potential opportunities for wind and solar power generation.
 - 1) The main barrier in the OCP to developing renewable energy systems in resource land is that renewable energy production is not explicitly supported.
 - 2) Note that if the energy generation capacity meets the threshold of an Independent Power Producer (between 100 kW and 15 MW), an energy system will fall under provincial jurisdiction and local governments have limited influence.
 - 3) With spatial information identifying high-potential areas in the region, the RDN will be better able to consult community members and consider renewable energy production as a permitted use in those areas.
 - 4) Consider renewable energy generation projects on rural residential land as home-based businesses.
 - 5) This highlights another barrier: commercial renewable energy production is not defined in Bylaw No. 500.

East Wellington – Pleasant Valley OCP

- There are opportunities for alternative forms of rural development on rural residential land in this area. There is currently some supportive language in the OCP (Section 4 Development Strategy, pg.28) for these forms of development to be implemented.
- Note that alternative forms of rural development only apply to rural residential, not resource land.
- Currently there are two routes to achieve alternative forms of rural development
 1. Density averaging and development variances on greater than 20% reductions in lot sizes. The main benefit to developers is savings on access and servicing. This is the easier option of the two.
 2. Rezoning to change minimum parcel size. This will require going through RGS and OCP amendments. This is a more involved and lengthy process.
- Establish a covenant for protecting green space or including comparable community amenities as a condition of issuing a development variance permit. This should be included in the Board's development variance policy.
- The RDN could encourage brownfields such as former gravel pits to be considered as potential sites for large scale renewable energy production.

6. Electoral Area A - OCP Review

Date of Staff Review Meeting: Aug 20, 2015

- EA A OCP is the latest OCP that has been updated and has fairly comprehensive coverage on energy and emissions reduction measures throughout the document.
- Climate related hazards include interface fires and flooding

- Encouraging Sustainable Development (Section 4.6, pg.40) – Consider incorporating climate adaptation measures.
- The use of forest land to generate carbon offsets is currently not considered.
- The Cedar Main Street Village Plan includes specific language in *Green Buildings and Site Planning Practices* (Section 4.5, pg.47) and *Green Building* sections (Section 6.8.4, pg.63) that can be used as examples for other OCPs.

State ^{OF OUR} Streams 2015

WATER REGION 1

WATER QUALITY EDITION



Nile Creek

The Drinking Water & Watershed Protection (DWWP) Program has been working with community partners, including provincial & local government, environmental stewardship organizations, private forest companies and volunteers to monitor water quality across our region since 2011 with the Community Watershed Monitoring Network. **For more information, please visit: www.dwwp.ca**



DRINKING WATER
WATERSHED
PROTECTION



REGIONAL
DISTRICT
OF NANAIMO

The Community Watershed Monitoring Network

Partnership between local stewardship group volunteers, BC Ministry of Environment, RDN DWWP program and Island Timberlands

Sample water quality in 17 watersheds and 51 sites across the region.

- 5 samples in the low flow (Aug - Sept)
- 5 samples in the fall flush (Oct - Nov)

water quality indicators

TURBIDITY

suspended particles in water; linked to higher levels of contaminants

DISSOLVED OXYGEN

oxygen dissolved in water supports life; DO is lower when flows are lower

TEMPERATURE

affects processes in water and in aquatic life

This DWWP program is linked to Indicator 5 of our Regional Growth Strategy (RGS) monitoring program which measures progress towards achieving Goal 2 of the RGS: to “protect and enhance the environment and minimize ecological damage related to growth and development”. With regard to fresh water, the RGS identifies a strategy to meet this goal, of “protecting the quality and quantity of ground water and surface water”. The RGS seeks to maintain the long term sustainability of these water resources. Please see the Monitoring the RGS website at www.rdn.bc.ca/rgsmonitoring for more information.

WATER REGION 1

Big Qualicum River



- 1 BIG QUALICUM
- 2 LITTLE QUALICUM
- 3 FRENCH CREEK
- 4 ENGLISHMAN RIVER
- 5 SOUTH WELLINGTON TO NANOOSE
- 6 NANAIMO RIVER
- 7 GABRIOLA ISLAND

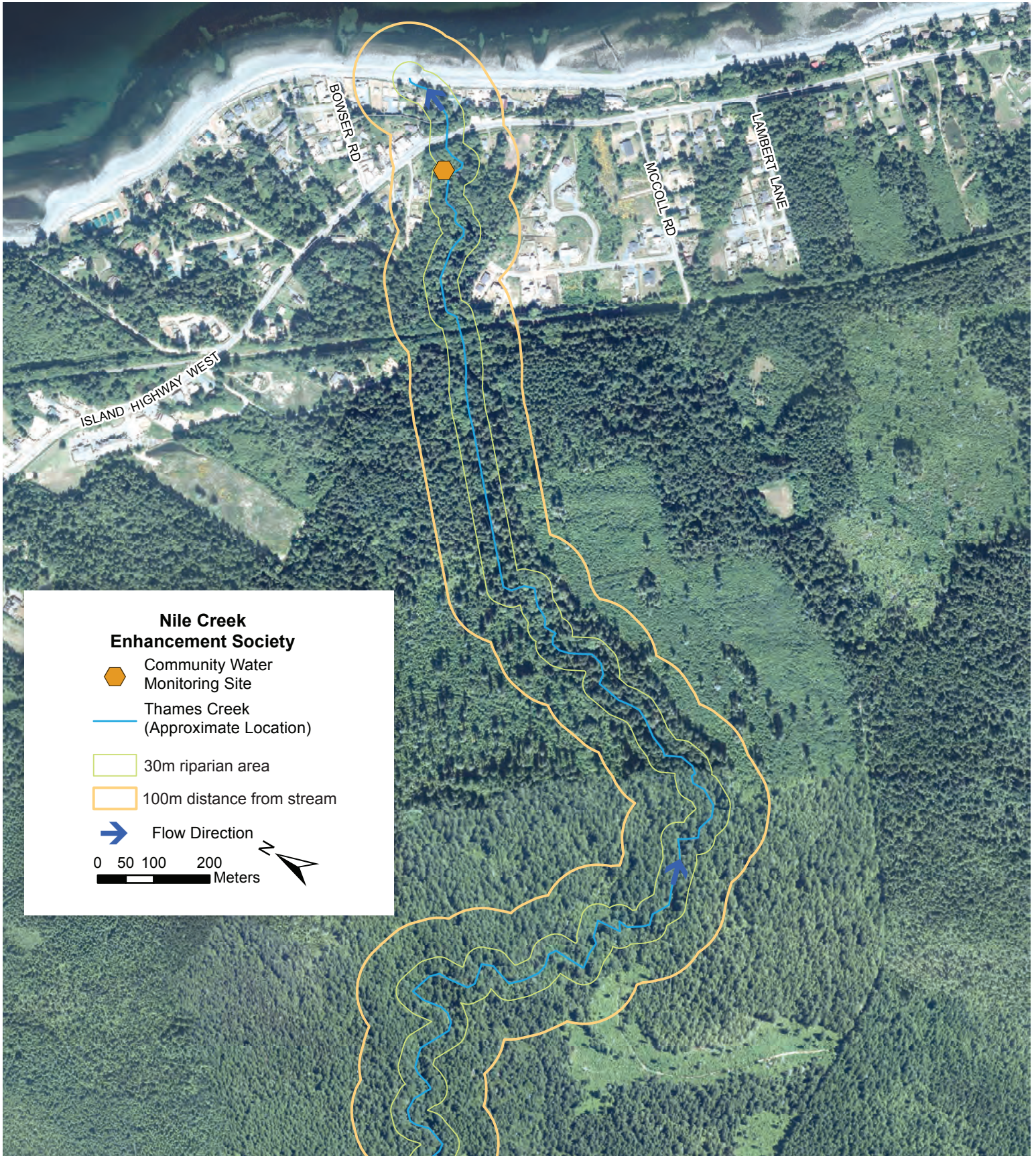
This publication highlights:

Thames Creek & Nile Creek

For more monitoring results and other streams in the region, go to

www.dwwp.ca

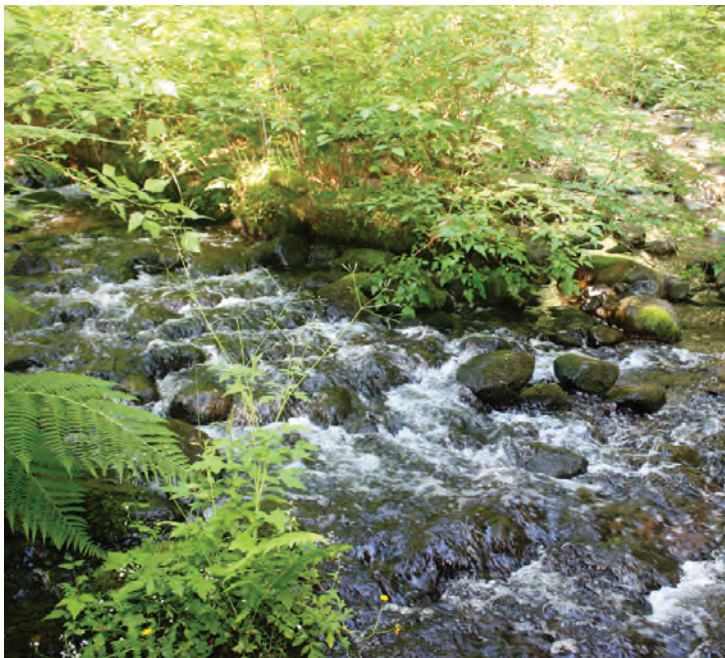
THAMES CREEK





Challenges

In assessments completed between 2000 and 2003, Nile Creek Enhancement Society (NCES) identified several limiting factors of this creek including a lack of large woody debris, a low percentage of wetted area and a high percentage of fine sediments. As is common in our eastern Vancouver Island streams, the lower reaches of Thames Creek experienced periodic increases in water temperature during some of the summer sample dates; however, the average temperature in a sample period did not exceed the provincial guidelines for water quality or coho rearing.



Details

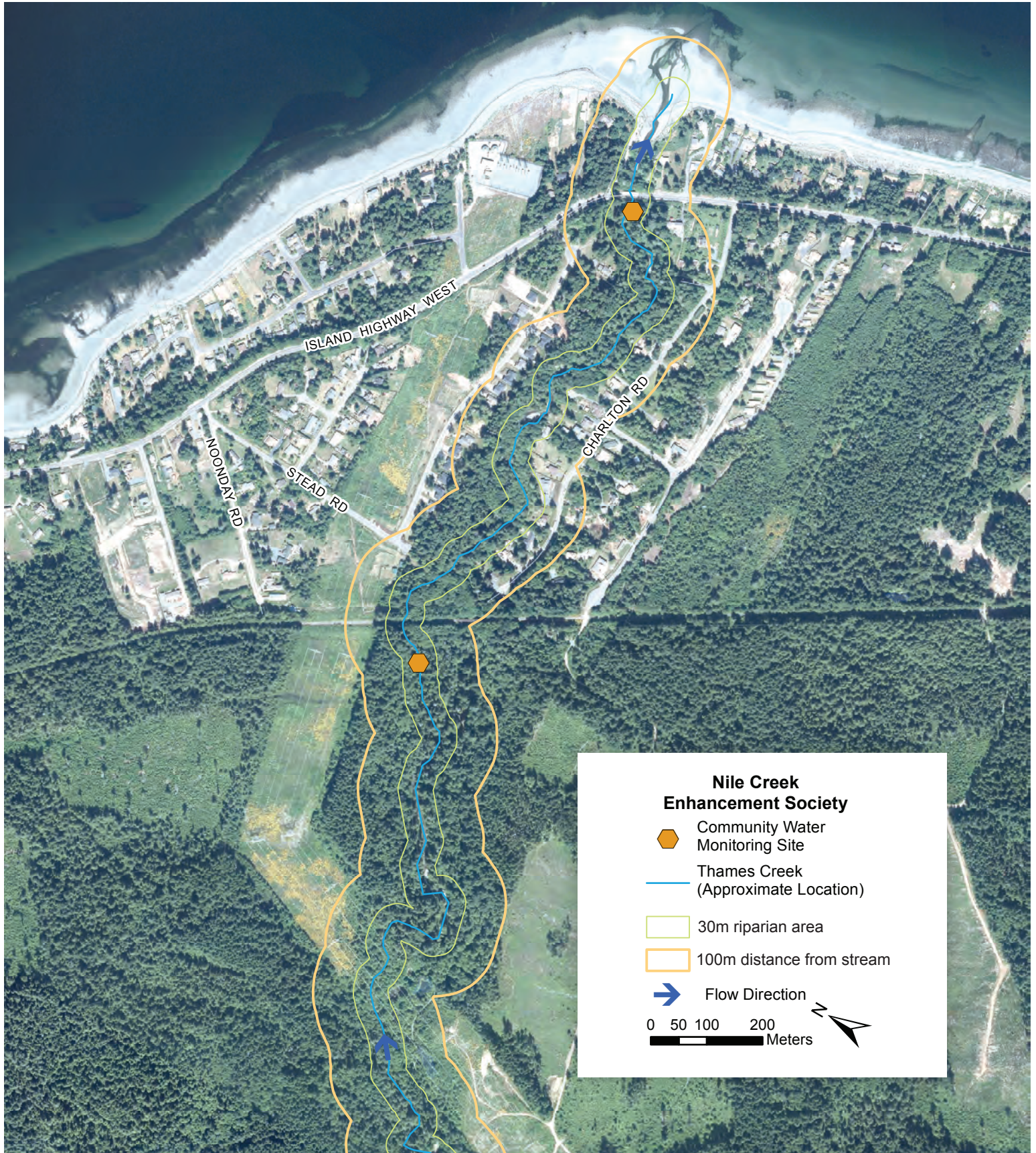
Thames Creek has a drainage area of approximately 8.5 square kilometers. Groundwater contributions are evident, maintaining the cooler summer temperatures and continuous flows in the central and lower reaches. In the summer months the stream typically goes sub-surface 6.8 kilometers upstream from where it enters the Salish Sea. Primarily surrounded by forested crown land, this waterway has displayed good water quality throughout the past four years of monitoring and has been used as a baseline in CWMN program data analysis. In all sample dates, dissolved oxygen levels were well above the provincial guidelines for drinking water, and the only increases in turbidity were minor and correlated with rainfall events.



Opportunities

It has been over 12 years since a physical assessment has been conducted on this waterway to document the current state of the stream another assessment using the Urban Salmon Habitat Program method could be completed. Additional restoration works for the purpose of improving stream health are being completed by the Nile Creek – Qualicum Bay Enhancement Program, a comprehensive habitat restoration and enhancement initiative in Area H. If you would like to get involved in their efforts please contact the NCES nile.creek@shaw.ca.

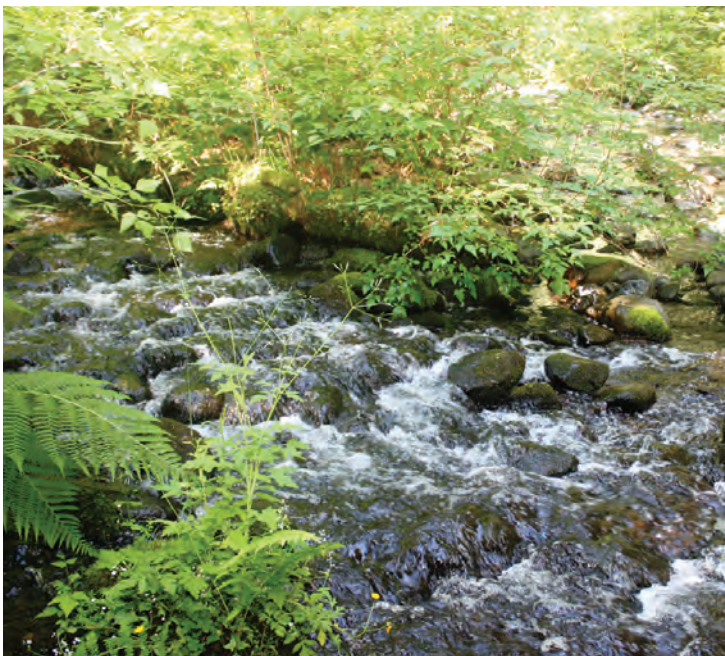
NILE CREEK





Challenges

In 1999 the Steelhead Society Habitat Restoration Corporation completed an assessment of Nile Creek, finding that it experiences flash floods, erosion, severe scouring and gravel shifting. In addition to instream challenges, the estuary area key for anadromous species has several concerns including unnatural modification of shoreline zones and accretion.



Details

Once known locally as the Pink River, due to the historic large pink salmon run, this major watershed has a drainage area of approximately 18.3 square kilometers. Flows and cooler temperatures of Nile Creek are maintained by groundwater influences. Allan Channel, a side channel about one kilometer in length created in 1999 provides shelter and spawning area for salmonids. CWMN samples taken from Nile Creek have indicated good water quality, and as with Thames Creek, data has been used as a healthy baseline in comparison across our region. No exceedences in dissolved oxygen or turbidity have occurred during any of the sample periods in the last four years.



Opportunities

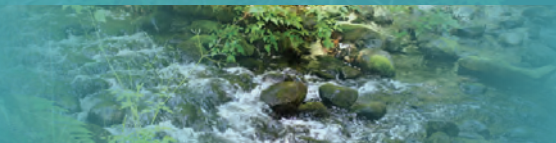
Nile Creek provides essential habitat for trout and salmon. Work by streamkeepers and Nile Creek Hatchery volunteers has ensured that these species have a viable habitat for rearing and spawning. The Hatchery has been in operation since 1998, stocking Pink Salmon each year since then. There are many kilometers of natural trails adjacent to this waterway and it is important that we all work together to keep this area pristine and healthy for human use and aquatic life.

WORKING TOGETHER



ACTIONS

- ✓ Keep stream banks naturally vegetated
- ✓ Refrain from chemical use in landscape maintenance
- ✓ Pick up after your dog, ensure dog poop and poop bags stay out of waterways
- ✓ Minimize impervious surfaces – deal with rainwater on site to limit what runs-off into the stream, potentially carrying contaminants, contributing to erosion and flash flooding



ACTIVITIES

- ✓ Continuous monitoring in local waterways helps to promote watershed health awareness in our communities
- ✓ Environmental stewards are trained every year how to monitor our watersheds and collect data to provincial standards
- ✓ Trend reports created from the first three years of data determine which sites would benefit from additional monitoring
- ✓ CWMN results continue to highlight areas for improved watershed management, physical stream assessments, outreach and education,

GET INVOLVED

Departure Creek Streamkeepers
operates under auspices of NALT
volunteer@nalt.bc.ca

Lantzville-Nanosee Streamkeepers
nanoseesteamkeepers.blogspot.ca
cpollak@shaw.ca

Nile Creek Enhancement Society
www.nilecreek.org | nile.creek@shaw.ca

Friends of French Creek Conservation Society
www.ffccs.ca | communications@ffccs.ca

Mid-Vancouver Island Habitat Enhancement Society
www.mvihes.bc.ca | info@mvihes.ca

Qualicum Beach Streamkeepers
www.qbstreamkeepers.ca
info@qbstreamkeepers.ca

Island Waters Fly Fishers
www.iwff1.ca | rschiefke@shaw.ca

Nanaimo & Area Land Trust
www.nalt.bc.ca | volunteer@nalt.bc.ca

VIU - Fisheries & Aquaculture Department
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For trend reports, monitoring sites and program outline please visit
www.rdn.bc.ca/CWMN



**DRINKING WATER
WATERSHED
PROTECTION**

**REGIONAL
DISTRICT
OF NANAIMO**

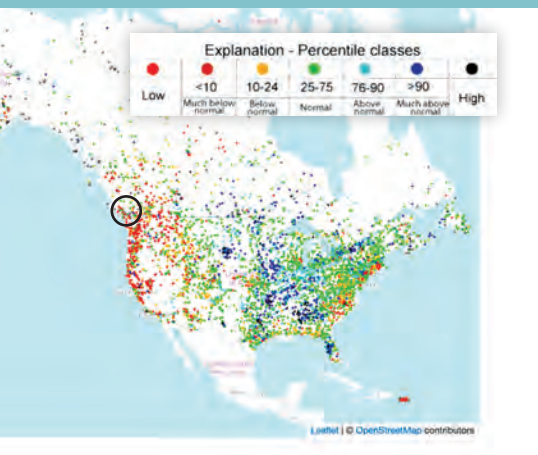


DROUGHT UPDATE

SUMMER/FALL 2015

What Happened:

THE BIG PICTURE



This shows streamflow compared to historical streamflow on Aug 24 2015 in North America
watermonitor.gov/naww/

●● The red dots indicate the driest conditions, as shown on Vancouver Island and the Pacific coast of North America

Mt. Arrowsmith in June; no snowpack. >

This is an update on what our region experienced in terms of the drought over the spring and summer, what the response was locally and provincially, what's in store in terms of the long range forecast and predictions for next summer, and how we can prepare and adapt to be more resilient to drought in our region.

www.rdn.bc.ca/drought2015

Unseasonably warm and dry

Environment Canada has reported a deficit in precipitation since the spring, coupled with above average temperatures. For example, in June Nanaimo saw only 6mm of rain compared with the normal 54.2 mm. The summer period (June-July-August) received only 4% of normal seasonal rainfall.

Lack of snowmelt and low stream flows

Snowpack levels that usually contribute to spring freshet (snowmelt) were only a fraction of normal. This, with the dry and warm summer conditions, resulted in many streams in our region being close to or below minimum recorded levels.

Drought ranking: extremely dry

BC River Forecast Centre ranked Vancouver Island as Level 4: **Extremely Dry Conditions** from July 3rd to September 3rd, to communicate the severity and the appropriate level of response to the drought. This indicated that water supply was insufficient to meet socio-economic and ecosystem needs; voluntary conservation, restrictions and regulatory response were needed for a maximum reduction of water use.

BC Wildfire Management Branch ranked southern Vancouver Island at an "extreme fire danger" between June 17th and September 1st. Two wildfires of note occurred in our region during that time in Cedar and Coombs.



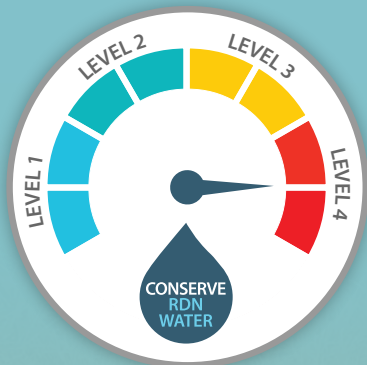
DRINKING WATER
WASTEWATER
PROTECTION



REGIONAL
DISTRICT
OF NANAIMO

www.dwwwp.ca

What was Done:



WE'RE ALL
IN THIS
TOGETHER

Local Response

Over the summer, **local watering restrictions** were implemented in our region. The restrictions vary per community, due to the different capacities and operational nuances of the various systems. The intent is to limit outdoor water use during the dry summer months, **to ensure essential supply for households and fire-fighting** can be maintained. Generally the restrictions target lawn watering and automatic sprinkler systems. Restrictions helped reduce demand on the stressed water supply by 40% in Parksville and Nanoose, for example.

Private wells tap into the aquifers that underlie our region and these water sources are shared with many users. They are not subject to local water service provider watering restrictions. To ensure that this common resource is preserved, **conservation is strongly encouraged of everyone in the region**. Groundwater levels respond less rapidly to rain events, compared with surface waterbodies and take time to recover from drought or over-use. That is why we must be proactive to protect our groundwater supplies. Many communities in our region rely on groundwater. Over-pumping groundwater, when levels are already lower than usual due to lack of recharge from rain and snowmelt, can actually impact local rivers and the aquatic habitats they provide. **Many streams in our region depend on groundwater contributions to keep water flowing during the dry summer and fall.**

Go to [TeamWater Smart.ca](http://TeamWaterSmart.ca) for Water Saving Tips

Provincial Response

The BC Drought Response Plan guides actions taken preceding, during and immediately following a drought to reduce impacts. This covers jurisdictions outside of local government control, including industry and agriculture.

- Communications are increased
- Regulatory Controls under the Fish Protection Act and Water Act can be implemented
- Agricultural water users are asked to reduce demand by:
 - irrigation management
 - soil management
 - crop prioritization

All of these actions were taken in our region.

SAVING WATER

- Golden Lawn
- Collect Rainwater
- Re-use Water
- Mulch Trees & Plants
- Drought Tolerant/ Native Plants

BC
watersmart

Let's all reduce water use!

What's in Store:



Long Range Forecast from Environment Canada indicates that El Nino will be influencing our climate this coming winter, with another warmer than normal and slightly drier than normal season ahead. This means the drought we experienced this summer could very likely be repeated next summer as part of a longer-term trend.

Back to back winters with little to no snowpack means groundwater recharge and stream flow contributions could be facing a deficit in some areas that rely on snowmelt for the local water balance. This potentially impacts our drinking water supply in groundwater dependent areas, water for agriculture, and the viability of fish habitat.

We need to plan ahead for the summer of 2016 which may be a repeat of what we saw this summer.

THE NEW NORMAL

What does a cultural shift to a water smart region look like?

Making Changes Together

A cultural shift towards more efficient and conscious water use habits will help of our communities over the long term. There are actions residents can take in our own homes, yards and businesses, and there are actions at the local government policy level.



Reconsider landscaping priorities.

- choose drought tolerant plants
- simply let the grass go golden in the summer



Value and steward the ecology of our creeks, rivers, lakes and wetlands.

- keep streambanks vegetated
- refrain from chemical use on our landscapes
- keep run-off on-site where possible



Innovate and take pride in water efficiency measures.

- rainwater collection cisterns
- greywater re-use technology
- soil moisture sensors and drip irrigation
- efficient appliances

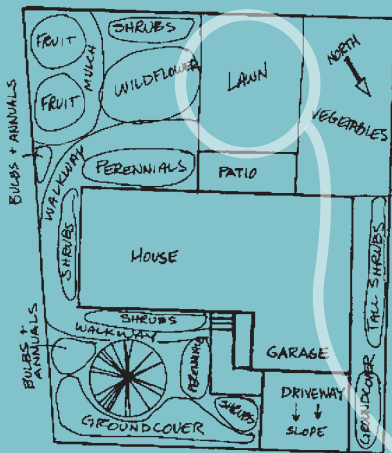


Establish a deep rooted understanding about the connection between our land practices and the health of our water.

- neighbour to neighbour outreach
- dialogue in the public forum
- education for children and adults



Making the Shift:



www.kamloops.ca

- ✓ **Monitor** groundwater and surface water sources to better understand conditions in order to improve planning and response. Continue with initiatives already in place:
 - BC Observation Well Network – expansion to add 16 new wells in our region occurred between 2011-2013.
 - Community Watershed Monitoring – partnership with local stewards and the province to monitor water quality in our creeks and streams; 51 sites across the region.
- ✓ **Update** water requirements for subdivision and development outside of the municipalities.
 - review method of “proving water”
 - keep run-off on-site where possible
- ✓ **Work** to standardize and improve regional drought communication protocols and water restrictions policies.
 - continued effort to reduce confusion in messaging across the region
- ✓ **Collaborate** Collaborate with First Nations and local governments to improve our decision-making process with regards to water protection and management.

How we **value water on a day-to-day basis** is something we should maintain **year-round**, not just during a drought. A cultural shift to a leading water smart region is demonstrated by the choices we make in all seasons to protect and conserve our water.

“Water protection is something all of us are part of. By recognizing changes and impacts on our water resources we are in a better position to deal with them. With your help the region will continue to put water first to ensure a long term, sustainable, resource for the future.”

– Joe Stanhope, RDN Board Chair

