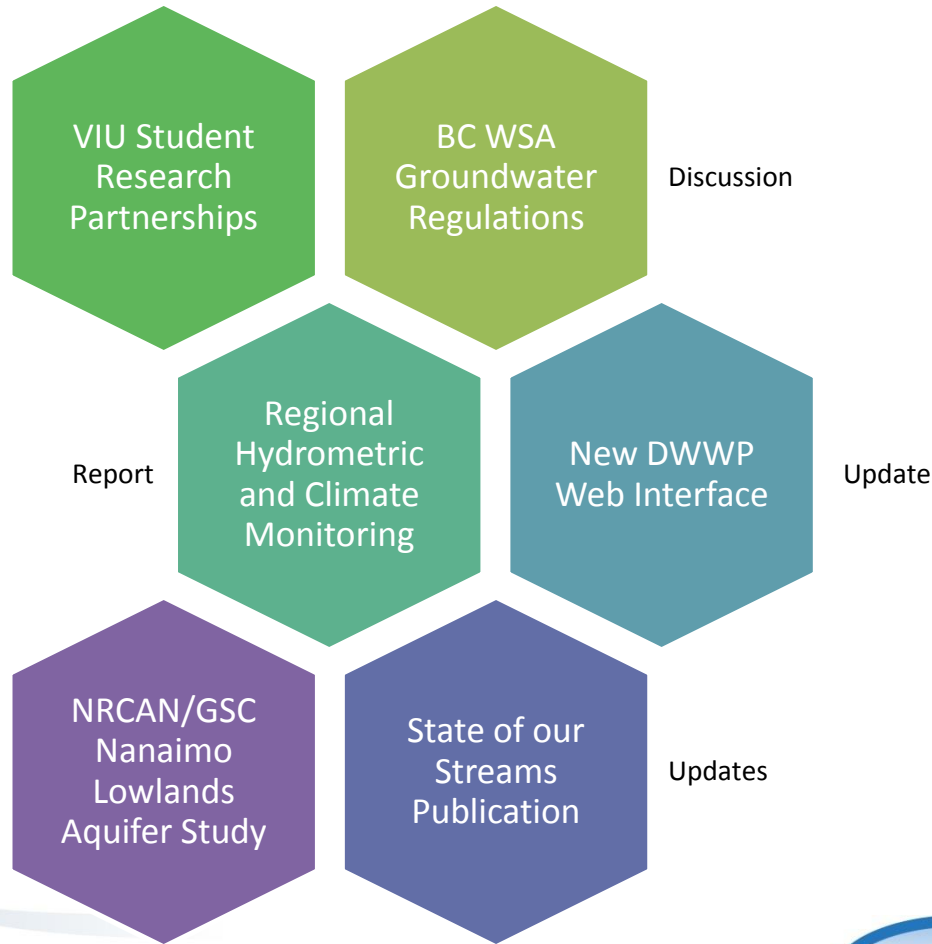


# Drinking Water and Watershed Protection – Technical Advisory Committee Meeting April 14, 2015





VANCOUVER ISLAND  
UNIVERSITY

VIU Student  
Research  
Partnerships



## Introduction to the Mt. Arrowsmith Biosphere Reserve Research Institute at VIU

Linda Brooymans, Research Coordinator

# PRESENTATION



# The Mount Arrowsmith Biosphere Reserve Research Institute



# What is a Biosphere Reserve Designation?

Once designated, UNESCO requires that biosphere reserves serve their region and the world as ***sites of excellence that demonstrate improved ways to resolve human/environment conflicts through local community efforts and sound science.***

The MABR Research Institute intends  
to support this goal by

*Advancing a program of inquiry that develops  
from student-focused and community-based  
participatory research, involving all  
stakeholders in meaningful explorations on  
issues of local relevance.*

# How?

- Research can be carried out in a variety of ways, depending on the scale and scope of proposed projects:
  - Integration in course-based curriculum
  - Projects headed by faculty and assisted by student research teams
  - Graduate student projects
  - A combination of these, managed collaboratively between Faculty and Research Institute staff

# VIU Programs and Departments relevant to the DWWP program

- Masters program in Community Planning
- Masters program in Geographic Information Systems Applications
- Resource Management Officer Technology program
- Departments: Forestry, Fisheries, Geography, Biology, Earth Science, Chemistry

A green hexagon with a white shadow underneath, containing the text "VIU Student Research Partnerships" in white.

VIU Student  
Research  
Partnerships

## Ideas!

- Wetland Mapping
- Ecosystem Services Valuation
- Lake Monitoring
- Others? Please share 😊

# DISCUSSION





New DWWP  
Web Interface

## Concept:

To have information on the region's watersheds and project initiatives under the DWWP program (incl. partners) be displayed in an interactive map format.




# DISCUSSION



# Our Watersheds



 **Quick Stats**

Water kdf lkjdfklj lkdsjf kljdsflkj l d  
Stream kdf lkjdfklj lkdsjf kljdsflkj l d  
Lake kdf lkjdfklj lkdsjf kljdsflkj l d

**Region-wide reports**

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sdkljf lkjdf lkadsflkj dsflkjdsf sdlfj lsdflkj  
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kljdsfjklksdfk kj lkdsflkj kj kljdsflkj lk  
lkdsflkj jklkdf lkjsdfj klsdlf kjllakdfj

**Action Plan**

**Technical Advisory Committee**

**GIS Water Maps**

# Water Region 1 – Big Qualicum



**Quick Facts**

- Fourth largest water region, approx 292 km<sup>2</sup> in area
- Fourth largest water region, approx 292 km<sup>2</sup> in area
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[Water Budget Report](#)

[Team WaterSmart](#)

[Get Involved](#)

- Reports
- Projects
- Cultural Site
- Workshops
- Monitoring

**Streams and Water Bodies**

**Aquifers and Wells**

**First Nations Significance**

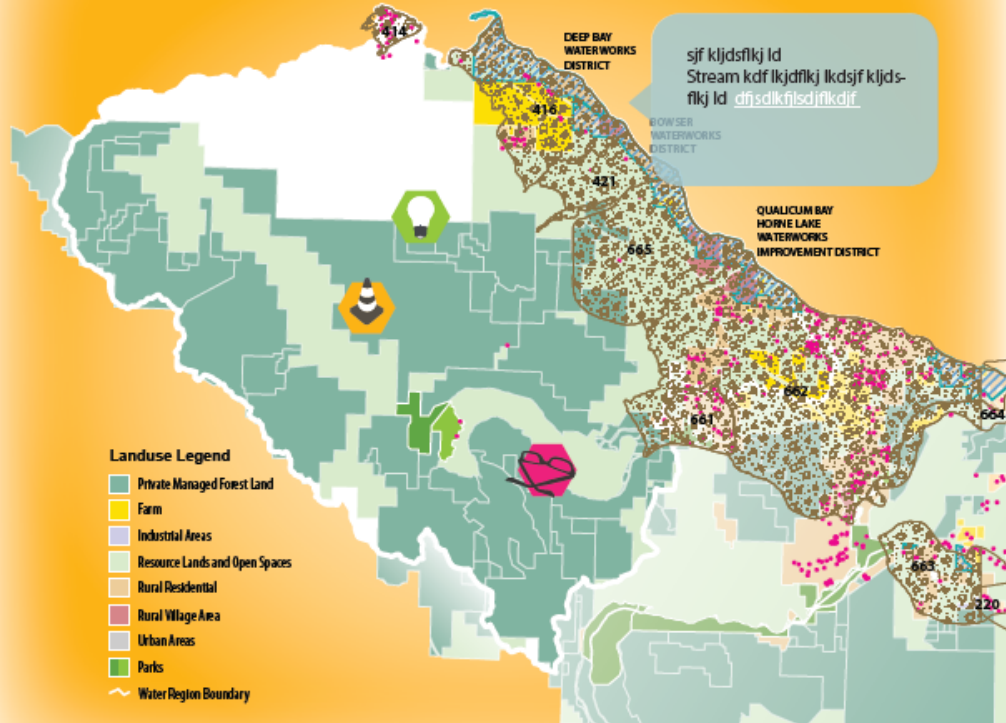
**Water Supply**

**Land Use**

**Community Programs**

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# Water Region 1 – Big Qualicum



- Landuse Legend**
- Private Managed Forest Land
  - Farm
  - Industrial Areas
  - Resource Lands and Open Spaces
  - Rural Residential
  - Rural Village Area
  - Urban Areas
  - Parks
  - Water Region Boundary

## Quick Facts

Fourth largest water region, approx 292 km<sup>2</sup> in area  
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[Water Budget Report](#)

[Be WaterSmart!](#)

[Get Involved](#)

[GIS Water Maps](#)



- Streams and Water Bodies
- Aquifers and Wells**
- First Nations Significance
- Water Supply**
- Land Use**
- Community Programs

3 MAP LAYERS AVAILABLE AT A TIME

Aquifers and Well s kdf lkjdfklj lkdsjf kljdsfklj ldStream kdf lkjdfklj lkdsjf kljdsfklj ldStream kdf lkjdfklj lkdsjf kldfisdjfljlkdf.  
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[Water Budget Report](#)

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 Reports  
  Projects  
  Cultural Site  
 Workshops  
  Monitoring

**Streams and Water Bodies**

**Aquifers and Wells**

**First Nations Significance**

**Water Supply**

**Land Use**

**Community Programs**

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# New BC Water Sustainability Act



BC WSA  
Groundwater  
Regulations

- Implications for  
Groundwater in the WSA

Pat Lapcevic, MFLNRO

Section Head, Water Protection Hydrogeologist

## PRESENTATION



# ***Water Sustainability Act***

**Regional District of Nanaimo  
Drinking Water and Watershed Protection  
Committee, April 14<sup>th</sup> 2015**

**Pat Lapcevic**

**Water Protection, West Coast Regional Operations  
Ministry of Forests, Lands and Natural Resource  
Operations**



# Outline:

- WSA update
- Water pricing review
- Transition issues
- Next steps





# Current status of WSA



- *Bill 18 - Water Sustainability Act* received Royal Assent on May 29, 2014
- Development of priority regulations underway
- New fee and rental schedule announced – February 5, 2015
- Provincial budget released on February 17, 2015 – \$25M over three years for WSA implementation
- Bring Act into force by regulation in 2016

# WSA implementation

PHASE	OBJECTIVES	TIMING
Phase I	<ul style="list-style-type: none"> <li>Scoping, engagement, development of policy documents</li> </ul>	2009 to 2013
Phase II	<ul style="list-style-type: none"> <li>Development of Bill</li> <li>Royal Assent</li> </ul>	Aug 2013 to May 2014
Phase III	<ul style="list-style-type: none"> <li>Regulation Development</li> <li>Business processes and IM/IT – e.g., Groundwater Licensing System</li> <li>HR planning, recruitment and training</li> <li>Communications and Engagement</li> <li>First Nations Strategy</li> <li>Government approvals</li> </ul>	Apr 2014 to Dec 2015
Phase IV	<ul style="list-style-type: none"> <li>WSA Brought into Force with Initial Set of Regulations</li> <li>GW Licensing</li> </ul>	January 2016
Phase V	<ul style="list-style-type: none"> <li>Complete of Outstanding Regulations</li> <li>Program Review</li> </ul>	Post Implementation

**Current Phase**

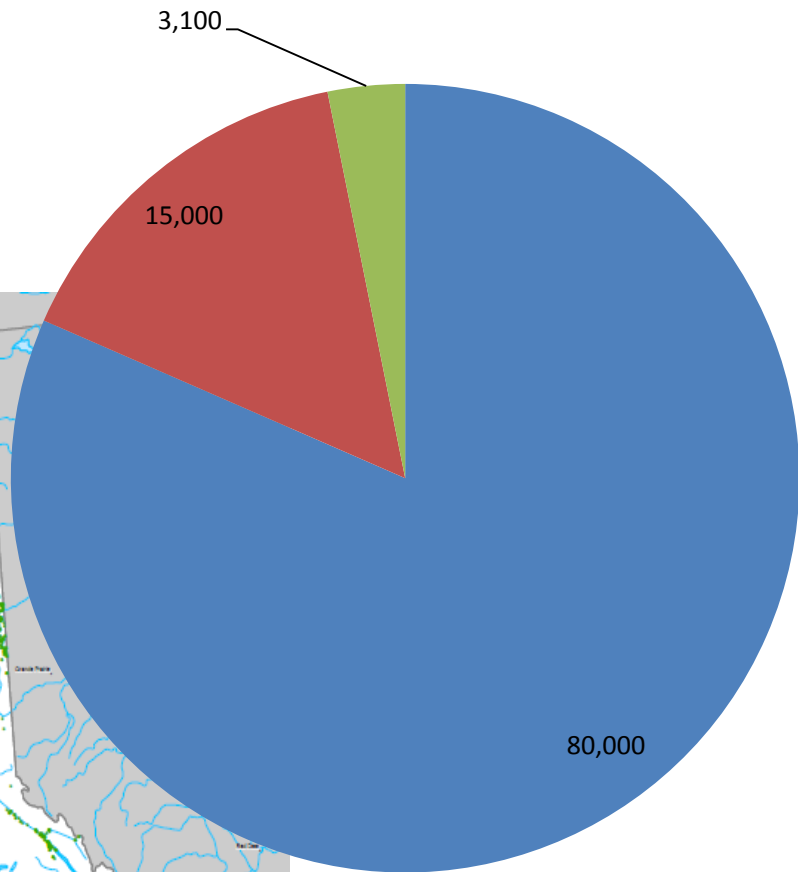
# Regulation development – 2014/2015

- Continue delivery in accordance with current *Water Act* and regulations
- Focus on completing regulations to maintain business continuity including:
  - Water Regulation
  - Fees & Rentals
  - Groundwater Protection Regulation
  - Dam Safety
  - Changes In & About a Stream
  - Violation tickets and fines

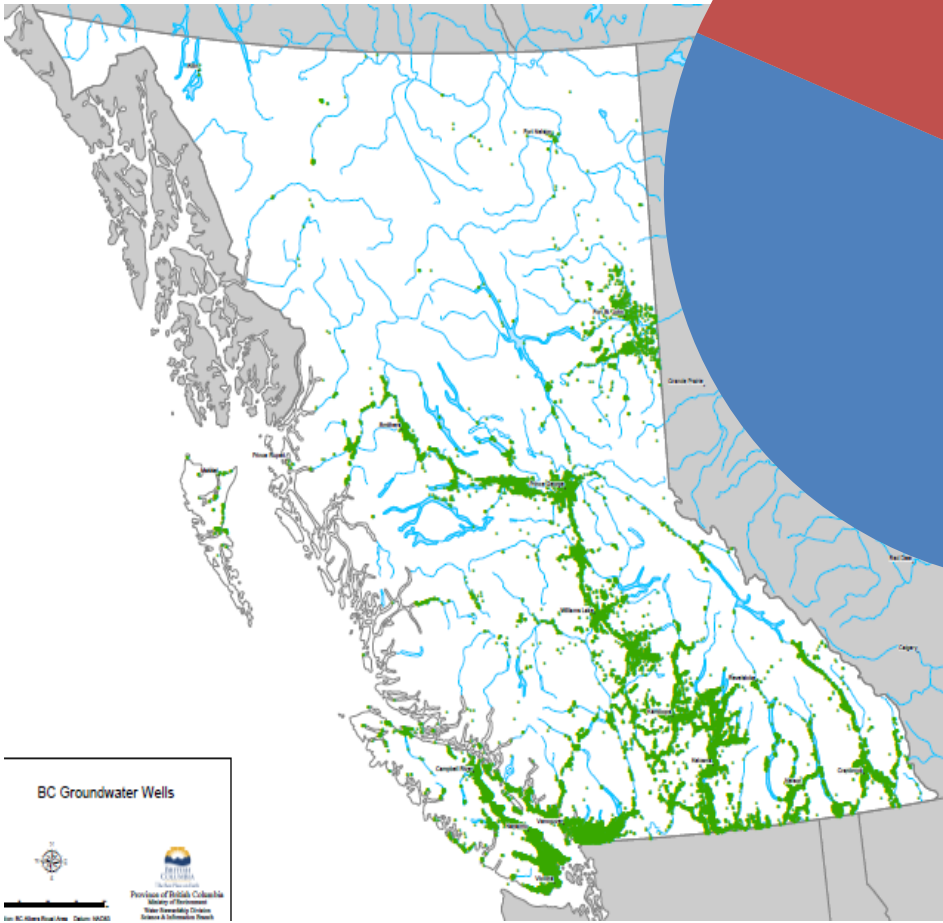
# Future Regulation Development

- Additional regulations will be developed once priority regulations are completed
- Regulations for development in the coming years include:
  - Measuring and reporting
  - Water Sustainability Plans
  - Dedicated agricultural water
  - Water objectives
  - Designated areas for domestic groundwater licensing
  - Licence reviews
  - Alternative governance approaches

# Transitioning groundwater wells



- Domestic wells (exempt from licensing)
- Small-medium, non-domestic (<250 m<sup>3</sup>/day)
- Large, non-domestic (>250 m<sup>3</sup>/day)



BC Groundwater Wells

Province of British Columbia  
Ministry of Environment and Climate Change  
Water Sustainability Division  
Science & Information Branch



# Licensing existing GW users

- 3 years to apply and have historical use recognized
- Application fee exemption in year one of 3-year period
- May continue to use water until
  - the end of the application period, or
  - a decision is made on the application
- Obligated to pay rental from day one



# Licensing issues

## Date of first use:

- The date from which groundwater has been used regularly and beneficially on an ongoing basis for a water use purpose.

## Quantity and Purpose:

- Evidence of beneficial use of water and the purpose.

## Terms and Conditions:

- Decision to grant a licence may include conditions for water use

# Next steps

2015:

- Continue delivery in accordance with current *Water Act* and regulations
- Update water fees and rentals regulation
- Complete other priority regulations and supporting policies

2016:

- WSA and key regulations come into force
- Begin transitioning existing non-domestic groundwater users
- Surface and non-domestic groundwater use subject to new fees and rentals







BC WSA  
Groundwater  
Regulations

# New BC Water Sustainability Act

- Research on WSA  
Regulations Development

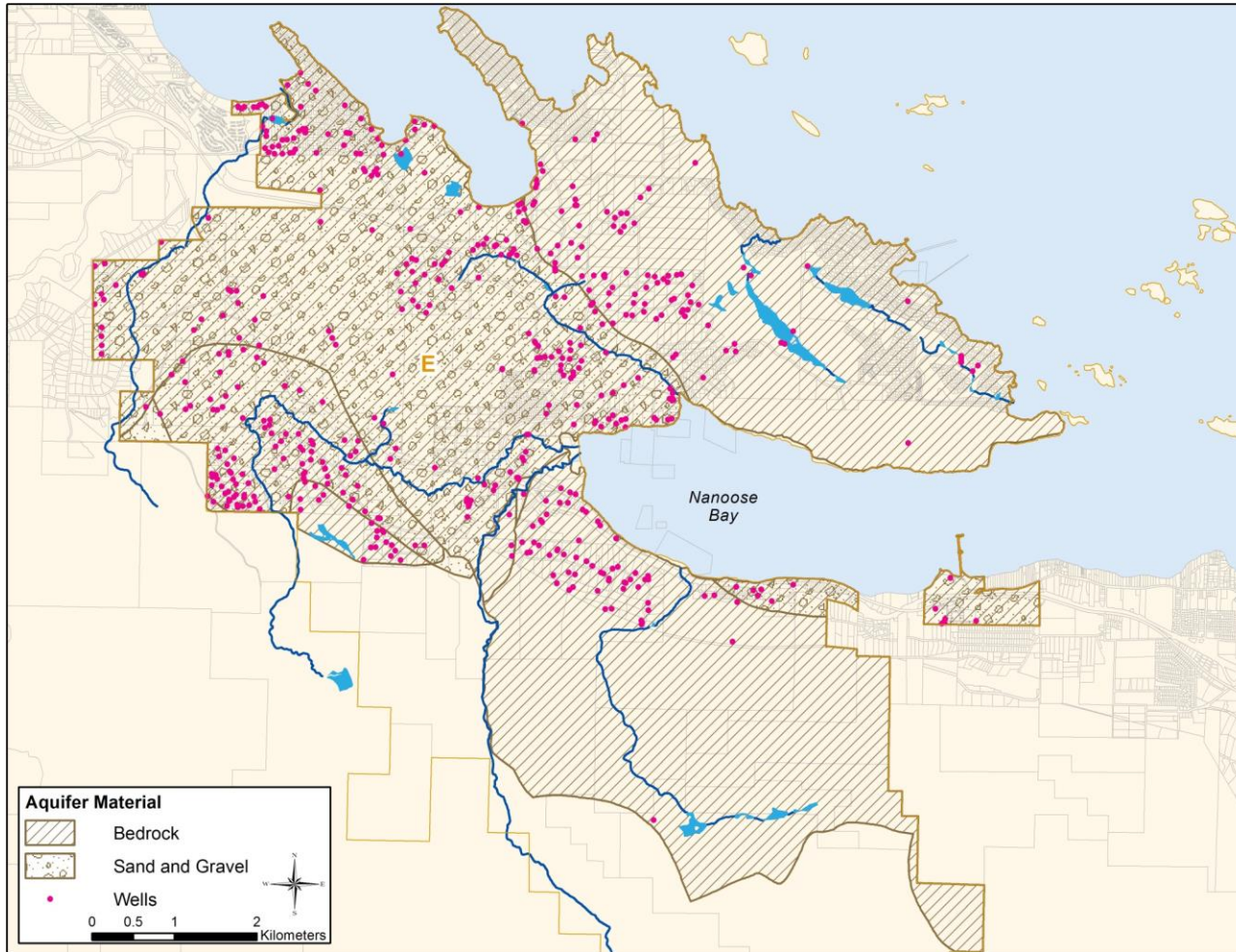
Laura Brandes, U of Victoria  
POLIS Project on Water Governance



## PRESENTATION



# Nanoose (Area E) Water Monitoring



Build off of the Phase 1 Water Budget Study

Expand groundwater and surface water monitoring

Higher resolution data for improved supply/demand/ stress calculations

Balance water users - community water, private well owners, agriculture

## UPDATE



# Nanoose (Area E) Water Monitoring



- Phase 1 of Nanoose Monitoring: Parker Road area
- Started logging groundwater levels April 1
- Will continue for min. 12 month period

# UPDATE

Program Action 2:  
Water Resources  
Inventory & Monitoring



Vancouver Island  
201 - 3045 Douglas Street  
Victoria, BC V8T 4N2  
T 250 595 4223  
F 250 595 4224

## Regional Climate and Hydrometric Monitoring Network Scoping Study

FINAL  
April 2015  
0536.010

Prepared for:  
Regional District of Nanaimo



Prepared by:  
Craig Sutherland, P.Eng.



# Regional Hydrometric and Climate Monitoring

Final report scoping out the gaps  
in streamflow and climate  
monitoring across the region.

Includes a list of priority candidate  
sites for adding to a monitoring  
network.

Greater Vancouver • Okanagan • Vancouver Island • Calgary

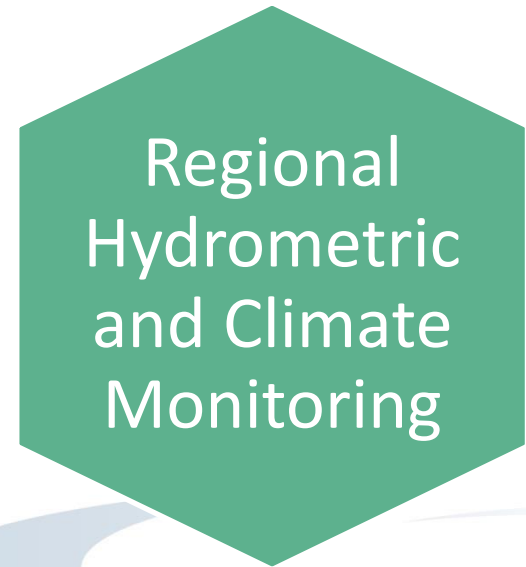
kwj.ca

# REPORT



**Table 3-1: Preliminary Recommended Hydrometric Station List**

Watershed	Watershed Area (km <sup>2</sup> )	Dominant Physiographic Region	Neighbouring Climate Station
<b>Primary Permanent Baseline Stations</b>			
<b>French Creek</b>	69.7	Highlands/Plateau	Qualicum Beach Airport
<b>Nanoose Creek</b>	34	Highlands/Plateau	Currently None (Recommended Nanoose Climate Station)
<b>Haslam Creek</b>	129	Highlands/Plateau	Nanaimo Airport
<b>Goodhue Creek</b>	10.5	Lowlands	Currently None (Recommended Gabriola Climate Station)
<b>Thames Creek</b>	8.8	Lowlands	Bowser/Mud Bay
<b>Cameron River</b>	112	Mountains	Currently None



**Next steps:**

- Identify funding sources and partners for costs and operation of the stations
- Strategy to implement priority stations in 1 to 2 years

# REPORT



# Regional Hydrometric and Climate Monitoring

Secondary Short Term or Seasonal Stations (operate for two or three years)			
Morningstar Creek	15.1	Lowlands	Qualicum Beach Airport
Hokkanen Creek	15	Lowlands	Nanaimo Airport
Whiskey Creek	26.8	Highlands/Plateau	Little Qualicum Hatchery
Morrison Creek	38.1	Highlands/Plateau	City of Parksville
Kinkadee Creek	39.6	Highlands/Plateau	Horne Lake Road/Hwy 19 - MoTI Station
Annie Creek	5.4	Lowlands	Qualicum Fish Research

Next steps:

- ID funding sources and partners
- Look at prioritizing **urban streams** (in municipalities) based on WQ monitoring and ISMPs

# REPORT



**Table 3-2: Preliminary Recommended Climate Station List**

Location	Purpose	Potential Partner <sub>2</sub>
<b>First Priority (install in 1 to 2 years)</b>		
Nanoose Region (Nanoose Elementary, RDN Treatment Plant or Fairwinds Golf Course Climate Station)	Provide climate data for Nanoose/Fairwinds areas	RDN, Fairwinds, School District 69
Mt Cokely/Mt Arrowsmith Automated Snow Pillow	Snow Pillow to collect snow data for Cameron River and Englishman River watersheds	City of Parksville/AWS/DFO/MFLNRO/MABRRI /IU
Gabriola Island Climate Station	Provide Climate Data for Gabriola/Mudge DeCourcy Island Water Region	RDN/Gabriola Volunteer Fire Department
<b>Second Priority (install up to 5 years)</b>		
Upper Little Qualicum/Cameron River Watershed	Additional Data for western portion of region with high annual rainfall	MoTI (Climate Station on Highway 4)/ Island Timberlands
Horne Lake or Cameron Lake Climate Station	Additional Collect data in highland/plateau region and to assist with forecasting for Storage at Horne Lake and Cameron lake	DFO
<b>Third Priority (install more than 5 years)</b>		
Upper Qualicum Watershed	Additional Data for northwestern portion of region with high annual rainfall	DFO (inflow to Horne Lake)
Upper Nanaimo River Watershed/Fourth Lake Dam/Labour Day Lake	Additional Data for western portion of region with high annual rainfall	Harmac/Timberwest/Island Timberlands

1 - First Priority implement within 1 to 2 years, Second Priority implement WITHIN 5 years, Third Priority implement AFTER 5 years

# REPORT



**DRINKING WATER  
WATERSHED  
PROTECTION**



Program Action 2:  
*Water Resources*  
*Inventory & Monitoring*

## Nanaimo Lowland Groundwater Study Atlas

Regional District, Nanaimo, British Columbia



Russell, H.A.J., Benoit, N., and Pisani, J.  
(compilers)

Bednarski, J., Crow, H., Grasby, S., Knight, R., Paradis,  
D., Provencher, ?, Pugin, A.J., Wang, S., others  
(contributors)



Natural Resources  
Canada

Resources naturelles  
Canada

Geological Survey of Canada Publication

NRCAN/GSC  
Nanaimo  
Lowlands  
Aquifer Study

Atlas: draft  
complete for early  
May... will hit the  
press in the  
summer.

Model: publication  
(of model results) in  
June...

# UPDATES



Program Action 1:  
Public Awareness &  
Involvement

# State of our Streams Publication

## Morrison Creek Profile

Map shows the portion of Morrison Creek that flows through the City of Courtenay



4



### Opportunities include:

Invasive species plant removal and replanting with native species as well as being mindful of storm drain runoff which flow into the creek - **No soaps, oils, paints, fertilizers or pesticides.** Morrison Creek is considered to be a very productive salmonid stream for its size and is home to 6 of the 7 species of salmonids found on the coast.

### To learn more

about Morrison Creek and how you can get involved visit The Morrison Creek Streamkeepers website at: [www.morrisoncreek.org](http://www.morrisoncreek.org) or email: [morrisoncreek@yahoo.ca](mailto:morrisoncreek@yahoo.ca)



5

### Details of note:

Morrison Creek is in west Courtenay and drains into the Puntledge River.  
Approximate stream length: **19 kilometres**  
Approximate watershed size: **890 hectares**  
Major tributary: **Arden Creek**  
A number of land uses take place along its length including forest management, agriculture and urban development.  
This creek is home to the rare Morrison Creek Lamprey, found nowhere else in the world! For more information on the status of this rare and endangered species search for it on the National Species at Risk Registry: [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)



### Major challenges include:

This stream crosses Cumberland, the Comox Valley Regional District and Courtenay and involves many private land owners. Effective management requires coordination across boundaries.  
The recovery plan for the endangered Morrison Creek Lamprey lists urban development and land use changes in the watershed as the major threat to this unique species.  
The key to watershed health lies in the area known as the Morrison Creek Headwaters, west of the Inland Island Highway and immediately south of Lake Trail Road. Groundwater traveling underground towards Courtenay from Comox Lake "springs" up to the surface and supplies the clean, cool, streamflows that run year-round in Morrison Creek.

One report for each  
Water Region; mail-out

Profile of the creeks &  
streams that are  
monitored as part of  
the CWMN

Target publication: July

# UPDATES



Other updates, comments from  
committee members?



*Thank You! ...for your feedback and guidance as we  
work together for our water*