
TO: Regional District of Nanaimo Committee of the Whole **MEETING:** September 12, 2017

FROM: Julie Pisani
Drinking Water & Watershed Protection Program Coordinator **FILE:** 5600-07

SUBJECT: September 2017 Drinking Water and Watershed Protection Program Update

RECOMMENDATION

1. That the Board endorse the September 2017 update on the Drinking Water and Watershed Protection program.

SUMMARY

Our region’s watersheds and aquifers are natural assets that provide important community amenities: drinking water supply, water filtration, aquatic habitat, recreational value and cultural value. Healthy water resources provide the basis for a healthy region. With science and monitoring at its foundation, the Regional District of Nanaimo (RDN) Drinking Water and Watershed Protection (DWWP) service invests in developing a strong understanding of regional water resources in order to target specific actions to protect and improve water quality and water availability. By collecting local data to inform water management decisions at the regional level, and promoting and enabling water conservation region-wide, the DWWP service saves future infrastructure costs associated with degraded water resources.

The benefits generated by the proactive efforts of the DWWP program include cost savings for taxpayers due to reduced demand for water in our communities deferring and reducing infrastructure expansion costs; direct financial support to residents through rebate programs; economic spin-offs from supporting innovation in the water sector; leveraging additional funds to support program activities as a result of effective partnerships; and long-term protection of property values arising from better land use decision-making that considers local water information. This update and the accompanying attachments summarize work that has been completed or is underway in the service area.

BACKGROUND

The DWWP program was established by the Board after a referendum held in 2008 , to address concerns about water resources in our growing region, where the climate is changing, and where water availability and quality affect land use decisions. The objectives of the DWWP program are to:

- Increase water efficiency in our communities to avoid the costs of expanding water supply infrastructure;

- Track local water resources to ensure adequate water supply now and in the future;
- Enable better water management and land use decisions, to protect property values and ecological values in the region.

Appendix A highlights direct DWWP program actions and benefits in each electoral area and member municipality.

The [DWWP Action Plan](#) was first implemented in 2009. Most of the action areas have been implemented and are underway, with the remaining actions to be initiated over the 2017-2019 period (see Appendix B for a status update on 27 DWWP Action Areas). Due to the program's reach and success, it is regularly held up as an exemplary model across the province, demonstrating the RDN as a leader in watershed management. Appendix C summarizes recent requests for staff to present on the DWWP model.

DISCUSSION

2017 DWWP Performance Update

The 2017 Business Plan for the DWWP program identifies key performance objectives and outlines a series of actions to deliver this year. The following provides an update on how those objectives are being met and the benefits resulting from each activity:

1. Expanded water monitoring and data collection in priority areas:
 - 16 new volunteer observation wells: 5 in [French Creek Water Region](#); 5 in [Nanosee Water Region](#); 6 in [Cedar-Yellowpoint Water Region](#).
 - 7 additional stream level monitoring locations: 1 permanent station on Nanosee Creek; 5 seasonal stations on the Englishman River; 1 new station on Holden Creek.
 - Additional climate monitoring: Nanosee Creek watershed.

Benefit: More localized, high resolution data to quantify water supply, inform policy, decision making and emergency planning.
2. Foster dialogue on collaborative watershed-based decision-making:
 - Regular meeting coordination of multi-stakeholder DWWP Technical Advisory Committee – (March 21, July 18, October 18, 2017)
 - Regular participation on multi-stakeholder Nanaimo River Watershed Roundtable (January, March, June, September 2017)

Benefit: Developing partnerships and maintaining communications between public, private and civic sector organizations on regional water issues to advocate for our region.
3. Direct support and training to stewardship groups:
 - 14 groups in 17 watersheds trained and equipped to monitor surface water quality.
 - 2 groups in 2 watersheds trained to perform physical stream assessments.
 - 5 groups on 5 creeks to undertake stream enhancement i.e. riparian planting

Benefit: Engaged citizens actively contributing to understanding, protecting and improving stream health, to maintain recreational values, property values and ecological values.

4. State of Our Aquifers report and newsletter to communicate ongoing groundwater monitoring activities and trends.
 - Technical report complete; public newsletter in development for mail-out October 2017.

Benefit: Increased understanding of aquifers and support for groundwater conservation among residents; data interpreted to assist with local and provincial decision-making.

5. Working with Planning on OCP updates, development reviews, and policy development.
 - Policy B1.21 review underway for groundwater requirements for rezoning un-serviced lots.
 - Support for Area H OCP with hydrogeological review of aquifers and recharge areas; including updating language for aquifer protection development permit area.
 - Review and provide comments for referrals on development applications as required.

Benefit: The use of local data provides a scientific basis to guide and inform policies that protect local water resources as the region develops.

6. Advance Water Conservation Plans through rebate programs and outreach. In 2017 so far:
 - 23 rainwater harvesting rebates allocated
 - 7 wellhead protection upgrade rebates allocated
 - 51 well water quality testing rebates issued
 - 5 efficient irrigation / soil augmentation rebates allocated
 - 35 public events / workshops / field trips attended or scheduled

Benefit: Residents provided with resources to take action on water efficiency and source protection; reduced water consumption reduces direct costs to rate-payers, extends life of water systems and sources and maintains regional water supply for the future.

Partnerships

Watersheds and aquifers overlap many jurisdictions; therefore protection and planning must be a cooperative effort. Creating partnerships with other levels of government, community groups and industries is central to the success of the DWWP program. The implementation of the DWWP Action Plan is guided by a multi-stakeholder [Technical Advisory Committee](#), ensuring strong collaborative ties and open communication within our watersheds.

With water initiatives, the RDN recognizes it is especially important to build strong and meaningful working relationships with First Nations. For example, the DWWP program as worked with the Qualicum First Nation (QFN) to include traditional place names on the [DWWP interactive online watershed map](#), monitor groundwater in three QFN wells, and select the river monitoring sites on the Big Qualicum River as part of the Community Watershed Monitoring Network. Project partnerships like these are meaningful stepping stones to build relationships that will assist in collaborative watershed management over the long-term.

Other key relationships fostered through the DWWP program include working with Provincial ministries and authorities as well as industry partners, including private forestry companies, irrigation and landscape professionals, well drillers, the real estate community and stewardship non-governmental organizations. Appendix D provides a list of partnership activities.

Protecting water resources

Water data and information collected via the RDN DWWP program informs strategies for water protection and directs financial and in-kind support to specific water protection activities in our region, including:

- Riparian planting and stream restoration on 5 creeks: Shelly Creek (Parksville), Walley Creek (Nanaimo), Departure Creek (Nanaimo), Millstone River (Area C), Plum Creek Wetland (Area A)
- Stream enhancement assessments on 6 creeks: French Creek (Area G/F), Grandon Creek (Qualicum Beach), Annie Creek (Area H), Cat Stream (Nanaimo), Holden Creek (Area A), Millstone River (Area C).
- Wellhead upgrades on 33 domestic wells to prevent aquifer contamination in 14 aquifers.
- Addition of residential rainwater storage totaling 626,657 imperial gallons across the region to take pressure off groundwater resources and municipal water supplies.
- Declining trends in water consumption per connection (customer) across the region's water service areas. This prolongs existing infrastructure and maintains water supplies for future growth and ecological needs. See Appendix E for water consumption graphs.

As local groundwater level and surface water quality data is collected and observed, the RDN can use that information to inform policy changes, revise management activities, or target communications and outreach. This contributes to the successful preservation of water availability and water quality in our region which ultimately preserves property values by protecting the irreplaceable assets of our aquifers and watersheds.

Economic returns

The RDN DWWP program successfully leverages in-kind and financial support from other groups and agencies to expand the reach and efficacy of the base program funding. The RDN DWWP program also generates economic benefits through rebate programs. Specific examples include:

- \$300,000 in savings in new volunteer [observation wells](#).
Coordinating a volunteer observation well network has resulted in 30 new groundwater monitoring wells to track this important resource. By working with volunteers, the RDN saved \$300,000 in the cost of new wells while doubling the reach of the Provincial observation well network.
- More than \$535,000 in direct economic activity.
The [Rainwater Harvesting Incentive program](#) has provided 216 households at total of \$157,666 in rebates between 2012-2016 which generated \$693,413 in spending within our region for materials and the service of professional installers.
- Three million dollar [aquifer characterization study](#).
The RDN DWWP program attracted the investment of the Geological Survey of Canada to complete a 5-year study for the Nanaimo Lowlands (Deep Bay to Nanoose). The result is an enhanced understanding of the aquifer assets in this region, to support better groundwater management.
- \$24,000 of annual in-kind stream stewardship.
Training and equipping volunteers to [monitor surface water quality in streams](#) across the region results in over 1,200 in-kind hours per year and seven times more streams tracked than when

done previously. This results in unrivalled local information on stream health that directs restoration and protection activities.

Overall, significant long-term economic returns come from avoiding potential future costs of degradation to our water resources that would require expensive expansion of supply infrastructure or remediation of watercourses or aquifers. Through proactive education to change behaviour and monitoring to track water resource health, the DWWP program positions the RDN well for protecting our watershed and aquifer assets into the future.

ALTERNATIVES

1. That the Board endorse the September 2017 Drinking Water and Watershed Protection Program Update
2. That the Board provide alternate direction.

FINANCIAL IMPLICATIONS

There are no financial implications as a result of this report. Requisitions for the Drinking Water and Watershed Protection program function are set at a flat rate of \$8 per parcel per year. This includes parcels in all member municipalities and all Electoral Areas.

STRATEGIC PLAN IMPLICATIONS

The DWWP service is a strategic function. It aligns with and acts upon the key Board Strategic Plan Focus Areas of “Economic Health”, “Environment” and “Relationships”, including the following strategic priorities:

We recognize the importance of water in supporting our economic and environmental health.

We will have a strong focus on protecting and enhancing our environment in all decisions.

We will include conservation of resources as a planning factor.

We look for opportunities to partner with other branches of government / community groups to advance our region.

We will facilitate / advocate for issues outside of our jurisdiction.

As our region continues to grow, develop and feel the effects of climate change, water awareness, water monitoring and water sustainability planning are crucial actions delivered by the RDN DWWP program that will support an environmentally and economically prosperous region.

Julie Pisani
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September 1, 2017

Reviewed by:

- S. De Pol, Director, Water and Wastewater Services
- R. Alexander, General Manager, Regional and Community Utilities
- P. Carlyle, Chief Administrative Officer

Attachments

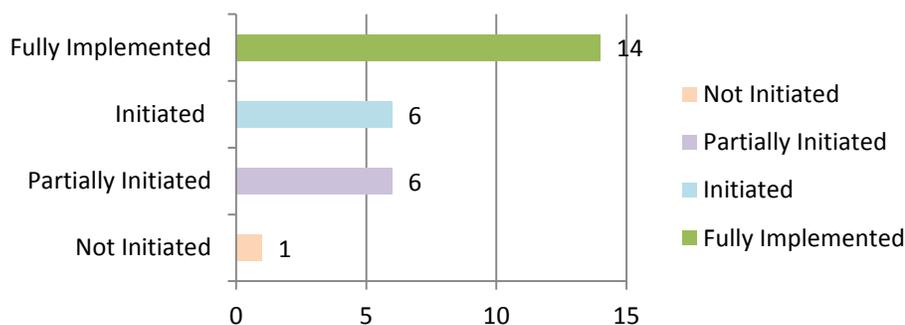
1. Appendix A – Direct DWWP Program Benefits per Electoral Area / Municipality / Water Region
2. Appendix B – DWWP Action Plan Implementation Status Update
3. Appendix C – Invitations to Present and Published Case Studies Showcasing RDN DWWP
4. Appendix D – List of Key Partners and Collaborative Activities
5. Appendix E – Water Consumption Trends Over Time in Major Water Service Areas

APPENDIX A: DWWP Initiative / Program Benefit * more details on all program areas at www.dwwp.ca	Elect. Area / MUNICIPALITY	A		B		C		E		F		G		H		LV		CoN	PV		TQB		
	Rainwater Rebate	26		112		8		7		22		9		7		8		9		1		5	
	Stream Water Quality Monitoring	3 streams		1 stream		5 streams		2 streams		7 streams		1 stream		7 streams		1 stream		6 streams		2 streams		3 streams	
	Stream Assessment / Restoration	Holden Creek Plum Wetland				Millstone R				French Creek		French Creek		Annie Creek				Millstone R Cat Stream Walley Creek Departure Creek		Shelly Creek		Grandon Creek	
	Groundwater Observation Wells	3 volunteer	5 Prov.	2 volunteer	4 Prov.	1 volunteer	1 Prov.	15 volunteer	5 Prov.		2 Prov.	1 volunteer	2 Prov.	3 volunteer	3 Prov.	2 volunteer	2 Prov.			3 Prov.		5 Prov.	
	GSC Aquifer Characterization							Y		Y		Y		Y						Y		Y	
	Phase 1 Water Budget	Y		Y		Y		Y		Y		Y		Y		Y		Y		Y		Y	
	Phase 2 Expanded GW Water Monitoring	6 volunteer						4 volunteer		2 volunteer		3 volunteer				1 volunteer							
	Well Water Testing Rebate	59 well test		90 well test		66 well test		44 well test		79 well test		21 well test		16 well test		59 well test		3 well test		1 well test		1 well test	
	Wellhead Update Rebate	3 well upgrades		9 well upgrades		6 well upgrades		1 well upgrade		6 well upgrades		3 well upgrades		1 well upgrade		3 well upgrades				1 well upgrade			
	Irrigation Check-ups	3 checkups						70 checkups				16 checkups		3 checkups		5 checkups		69 checkups		48 checkups		75 checkups	
	WaterSmart Garden Rebate (new 2017)	1 soil + irrg.						2 soil										1 soil		1 soil + irrig.			
	School Visit / Field Trip	5 +		2		5 +		3+		2+		3+		2		2		16 +		7+		7+	
Community Events / Workshops	13+		11+		2+		10+		16+		1+		15+		15+		57+		30+		30+		
Climate / Hydrometric Monitoring	Haslam Stn				Mt Arrowsmith Stn		Nanoose Crk Stn		Englishman R Stns												Englishman R Stns		
Watershed Roundtable Participation	Nanaimo R				Nanaimo R				Englishman R		Englishman R						Nanaimo R		Englishman R				
Small Water Systems Workshop	Y		Y		Y		Y		Y		Y		Y										
Regional Water Purveyor Comms	NCID/RDN						RDN		RDN		RDN/ EPCOR		DBID/QBHL/BWW		LV		CoN		PV		TQB		

Appendix B: Drinking Water and Watershed Protection Action Plan – Implementation Status Update

Action Category	Status
1A WaterSmart Public Awareness Program	Fully Implemented, Underway
1B Coordinated Information and Education Resources	Fully Implemented, Underway
1C Demonstration Projects	Partially Initiated, Exploring Options
1D Support for Volunteers and Non-Profit Organizations	Fully Implemented, Underway
2A Compilation and Mapping of Existing Data	Initiated, In Progress
2B Additional or New Data Collection	Fully Implemented, Underway
2C Water Quality Monitoring	Fully Implemented, Underway
2D Data Response Systems	Initiated, In Progress
3A Land Development (Engineering) Standards	Partially Initiated, Exploring Options
3B Development Application Review	Initiated, In Progress
3C Development Cost Charges	Not Initiated
3D Planning Tools	Partially Initiated, Exploring Options
4A Watershed Prioritization	Fully Implemented, Underway
4B Watershed Management Planning	Partially Initiated, Exploring Options
4C Support Local Food Production	Initiated, In Progress
5A Water Conservation Plans	Fully Implemented, Underway
5B Cooperation among Community Water Supply Systems	Fully Implemented, Underway
5C Rainwater and Greywater Use	Initiated, In Progress
5D Incentive Programs	Fully Implemented, Underway
5E Water Use Regulations	Fully Implemented, Underway
6A Contaminant Management	Partially Initiated, Exploring Options
6B Agriculture and Forestry	Fully Implemented, Underway
6C Private Water Well Safety	Fully Implemented, Underway
6D On Site Sewage Disposal	Fully Implemented, Underway (now under WWS)
7A Follow the Science	Fully Implemented, Underway
7B Land and Water Use Adaptation	Partially Initiated, Exploring Options
7C Assessing Local Hydro-climatic Balance	Initiated, In Progress

DWWP Action Categories - Implementation Status



Out of the 27 Action Categories outlined in the DWWP Action Plan, 14 are fully implemented and underway as annual operations under the DWWP workplan. Six are initiated and in progress, well on their way to being fully implemented and underway. Yet another six have been partially initiated and are still in the exploratory stage. One has not been initiated at all.

Appendix C:

Invitations to Present on the RDN DWWP Program (within the past year)

- [Watersheds 2016 Forum](#) (Vancouver, October 1, 2016)
- VIU Masters of Community Planning Guest Lecture (January 12th, 2017)
- VIU Natural Resource Management Class Guest Lecture (March 24th, 2017)
- [Cowichan Valley Regional District Board Presentation](#) (April 12th 2017)
- [Parksville TEDx](#) (May 13th, 2017)
- [BCWWA Presentations](#) x2 (Victoria, May 30th, 2017)
- [Coquitlam Watershed Board Roundtable](#) (June 10th 2017)

Published Case Studies Showcasing the RDN DWWP Program

[Financial Mechanisms and Models for Collaborative Watershed Governance in BC](#)

Published By: Fraser Basin Council – May 2015

[A Blueprint for Watershed Governance in British Columbia](#)

Published By: POLIS Water Project (University of Victoria) – January 2014

Appendix D: List of Key Partners and Collaborative Activities

The DWWP program provides the stability and coordination as a regional hub for water initiatives including water education, water data collection, and planning across sectors and jurisdictions. The following is a list that details key project partners and the collaborative activities we have engaged in. Member municipalities and Electoral Areas are not listed as they are partners on all activities that are a part of this regional service. Partners that participate on the DWWP Technical Advisory Committee are listed [here](#). This list is not exhaustive; rather it is a snapshot to illustrate the cooperation taking place under the DWWP function:

Qualicum First Nation

- Volunteer well monitoring program;
- Surface water monitoring site selection assistance on the Big Qualicum River;
- DWWP Water Region interactive online map traditional place names;
- Team WaterSmart presentation for preschool on reserve;
- Traditional welcome from Chief at Water Day events in 2016 and 2017.

Snaw-naw-as First Nation

- Co-organized watershed tour with elders and stakeholders 2015;
- Traditional welcome and councilor participation at water meeting in Area E 2016 and Parksville Water Day event in 2017;
- Team WaterSmart presentation for preschool on reserve.

Snuneymuxw First Nation

- Team WaterSmart presentations for each grade at Qwam Qwam Stuwixwulh school on reserve.

Provincial Ministries

- Ministry of Forests, Lands and Natural Resource Operations help advise on DWWP volunteer groundwater monitoring network, utilize DWWP data and studies to inform their work and decisions within our region. Partner on wellSMART workshops delivered to private well owners.
- Island Health Authority partner on wellSMART workshops delivered to private well owners.
- Ministry of Environment advise on water quality objectives, training and reporting for the DWWP Community Watershed Monitoring Network.

Stewardship Groups

- Over 14 groups from across the region.
- RDN DWWP provides training, equipment and reporting to ensure volunteers time collecting water quality data on local creeks and streams has a broader use and purpose
- Water quality data tracking provides critical information to help maintain local fisheries, recreational values, property values and ecological function.

Real Estate Board

- Support the real estate industry in educating property owners about local water resources and best practices including: well maintenance, rainwater collection, indoor/outdoor water efficiency at Vancouver Island Real Estate Board events.

Irrigation and Landscaping Industry

- Support irrigation and landscaping industry partners in subsidizing training for Certified Irrigation Technicians and Schedulers.
- Offer irrigation check-ups to residents to enable them to identify what fixes/efficiency upgrades they need to have their irrigation professional perform so they can save water;
- Provide residents with resources to encourage water-smart plant selection and soil augmentation.

Rainwater Harvesting Industry

- Support emerging rainwater harvesting industry through Best Practices Guidebook and rebate program investment.

Water Well Industry

- Support private well owners in upgrading and protecting their wells via the Rural Water Quality Stewardship Rebate, which also has a positive impact on the local water well industry.

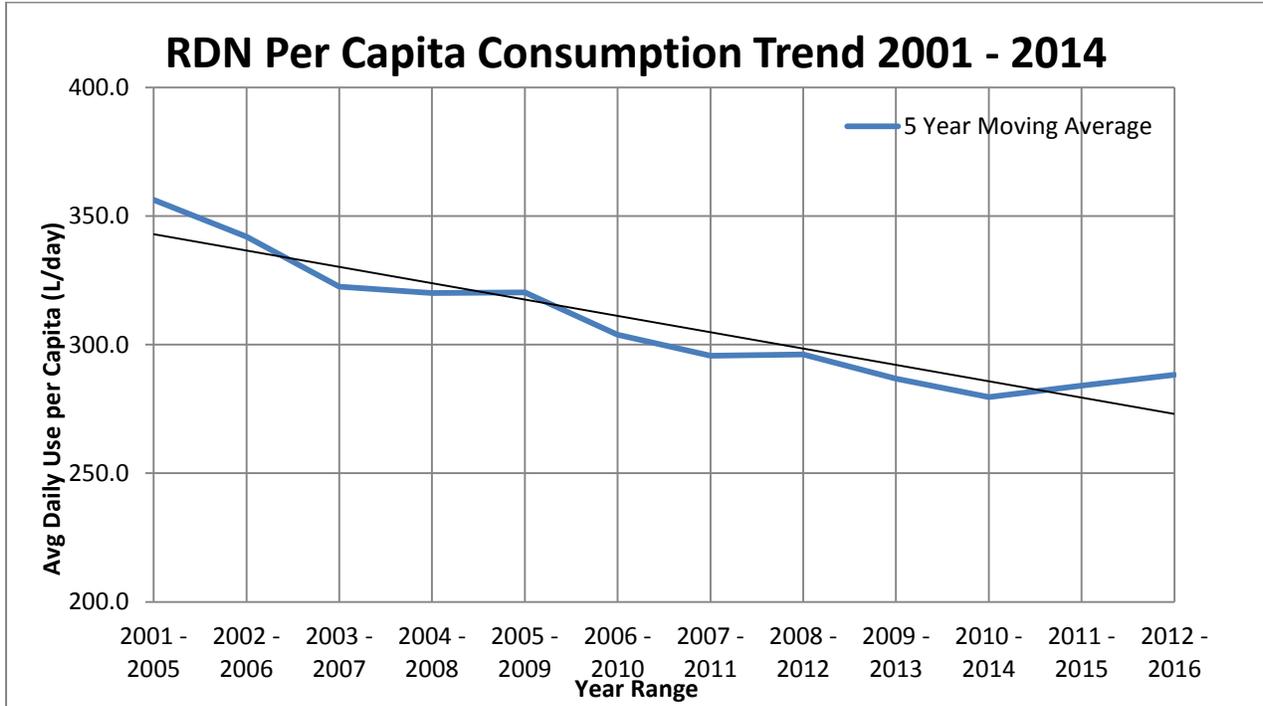
Private Forestry

- Offer field trips to elementary school students, in partnership with private forestry landowners and timber companies to communicate the value of our watersheds.
- Timber companies partner to provide land-access for volunteers monitoring water quality in upper watershed locations through the DWWP Community Watershed Monitoring program.

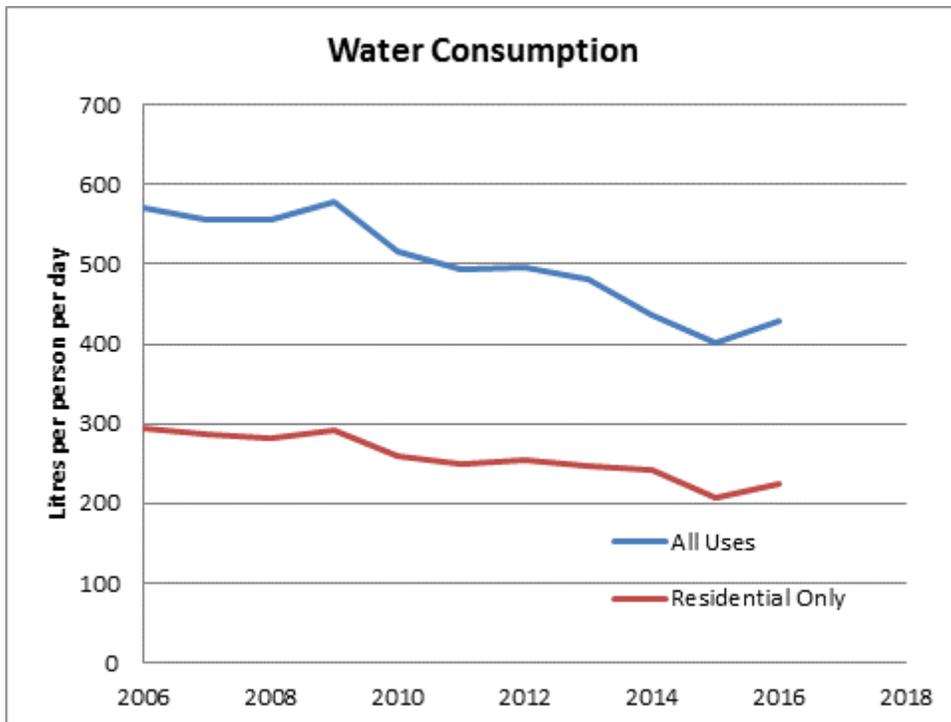
Universities

- Research partnerships with Vancouver Island University (VIU) and Simon Fraser University (SFU) help build local water understanding and support students to take on relevant community-based projects.
- Currently collaborating with VIU on wetland mapping and monitoring project within our region.
- SFU researchers assisted with Phase 2 of the Gabriola Water Budget Study; developing a groundwater recharge model.

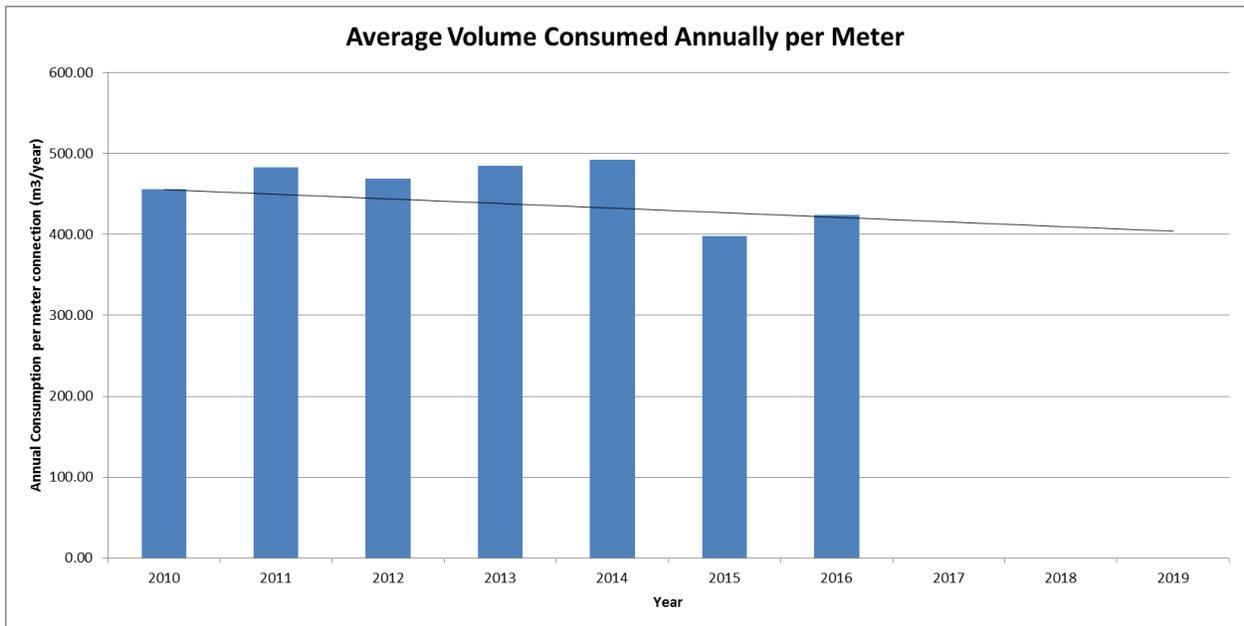
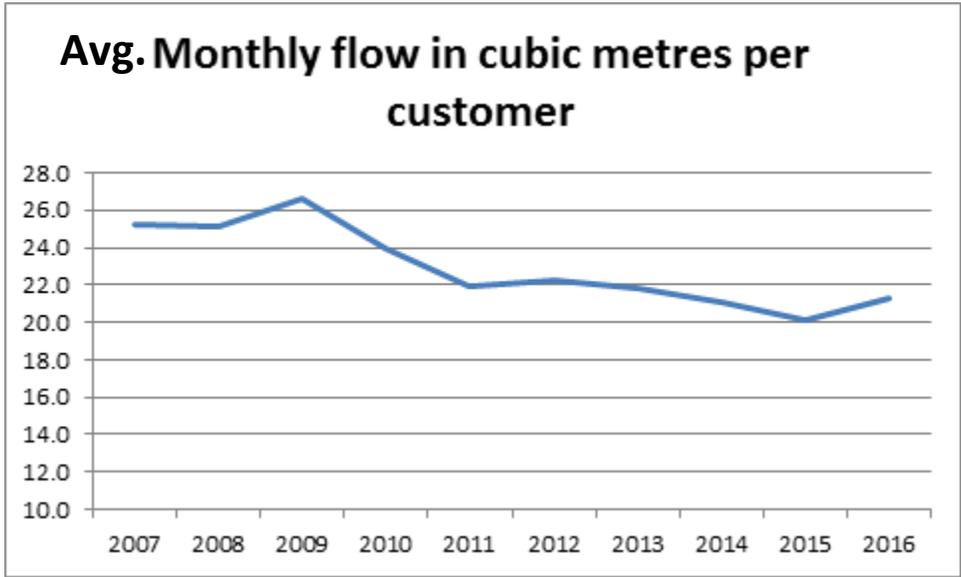
Appendix E: Water Consumption Trends Over Time in Major Water Service Areas



RDN WATER SERVICE AREAS



CITY OF NANAIMO



CITY OF PARKSVILLE