

‘Water for Growth’

Recommendations and Findings from the ACRD Agricultural Use of Water Project

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For: Alberni-Clayoquot Regional District



ALBERNI-CLAYOQUOT
REGIONAL DISTRICT



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Executive Summary and Recommendations

The Agricultural Use of Water Project was completed with guidance from a diverse community roundtable committee. It aims to provide tangible supports to agricultural producers for their most primary production requirements - water. These supports have multiple benefits: *they spur production increases and industry investment; attract new producers to the region; increase knowledge within the community; reduce the draw on regional infrastructure and groundwater resources; and create a framework for further data collection, funding, and program support.*

Key deliverables include research data, a series of educational workshops and materials, and the following 7 sets of program policy recommendations. *Where the ACRD is the water purveyor in question, they will also recommend the adoption of the policy by other regional water purveyors.*

1. The ACRD will offer a **\$750 rebate to 2 residential producers** within its water purveyance region per year, for a total of 3 years (page 12).
2. The ACRD will offer **rebates totalling up to \$4500/year for commercial agricultural producers** within the Regional District, for a total of 3 years (page 15).
3. The ACRD will **discount the annual water parcel tax of commercial agricultural producers** within its water billing area by 50% and increase the maximum consumption rate by 20 cubic meters per month (page 17).
4. The ACRD will offer the following **water billing credits to residential growers** (page 18).
 - A) Community gardens (more than 3 growers sharing space) with no domestic water use on site will pay a flat fee of \$1/year for use of water,
 - B) A \$50 annual credit towards water bills will be available for up to 10 growers, and
 - C) The credit will also be available to non-profit organizations who produce a portion of their own food and/or who train clients in food production.
5. With regards to 'twinning' water lines (page 20), the ACRD will:
 - A) Enact regulations that **require the installation of twinned lines in new agricultural developments or subdivisions.**
 - B) **Support agricultural operations to be more independently water-wise,** and
 - C) **Lobby the Provincial government for further research and funding programs.**
6. With regards to emergency agricultural access to water (page 21), the ACRD will:
 - A) **Amend the existing community water license to include emergency agricultural use,**
 - B) Develop a **Drought Management Plan**
7. The ACRD will **convene a Community Watershed Committee** which works to develop long-term watershed management plans and solicits funding for the expansion of the proposed water rebate and other programs recommended by this report (page 22).

The recommendations outlined in this document provide incentives and support while minimizing bureaucratic requirements and oversight. Pilot programs include methodology for evaluation monitoring processes which will improve programs over time. Applications, where required, will be vetted by existing committees. Associated 'Program Packets' are launch-ready, needing only conversion to web-fillable forms. They are attached here as appendices.

The Alberni-Clayoquot Regional District has directed significant resources to agricultural planning since 2011. This project's recommendations direct some of those resources directly to the area's producers, stimulating production and fostering good will towards government by providing them with tangible support for a critical production requirement. Concurrently, it establishes a platform for increased regional water sustainability and ecological welfare.

While some of the proposed programming has an initially limited scope, it is anticipated that it will stimulate opportunities for further expansion, program improvements, and funding. Acting as a seed, these small starts will spur public interest, engagement, and education. In addition, the Alberni-Clayoquot Regional District will be modelling leadership within new and innovative programs for agriculture and watershed support, which can be mimicked by other communities and the Province of BC itself.

Projected Cost Table

Policy Recommendation Area	Financial	Human Resources
Residential Rebates	\$750	Minimal staff time and existing committee
Commercial Rebates	\$4500	Minimal staff time and existing committee
Commercial Discounts	\$3000	Minimal staff time
Residential Credits	\$500	Minimal staff time and existing committee
Focus Point - Twinning Lines		Water Committee or staff
Focus Point - Emergency Access		Water Committee or staff
Community Watershed Committee		Community Volunteers
Total per year	\$8750	

Part 1: Project Background

In 2011, the Alberni-Clayoquot Regional District (ACRD) commissioned an Alberni Agricultural Plan which set forth a vision for increasing food security in the region and 12 primary goals to achieve that vision. Goal 12 of the Plan is “To increase the availability of water for agriculture”. Partial funding for the Agricultural Use of Water Project was successfully solicited from the Real Estate Foundation of BC (REFBC) in 2016, as part of the Agricultural Plan Implementation Project.

Project Objectives

The Agricultural Use of Water Project intends to:

1. Develop policy and procedures which ensure the access, quality, and affordability of water to agricultural producers within the region, including;
 - Rainwater harvesting and storage rebate programs
 - Reduced water levies for agricultural users
 - Investigation into regional infrastructure options
2. Provide comprehensive research and summaries into existing regulations and regional data including;
 - The BC Water Sustainability Act
 - The Alberni Water Demand Model
3. Increase public awareness and education about water wise landscaping and rainwater harvesting strategies; and
4. Ensure that the key needs of multiple regional stakeholders are met.

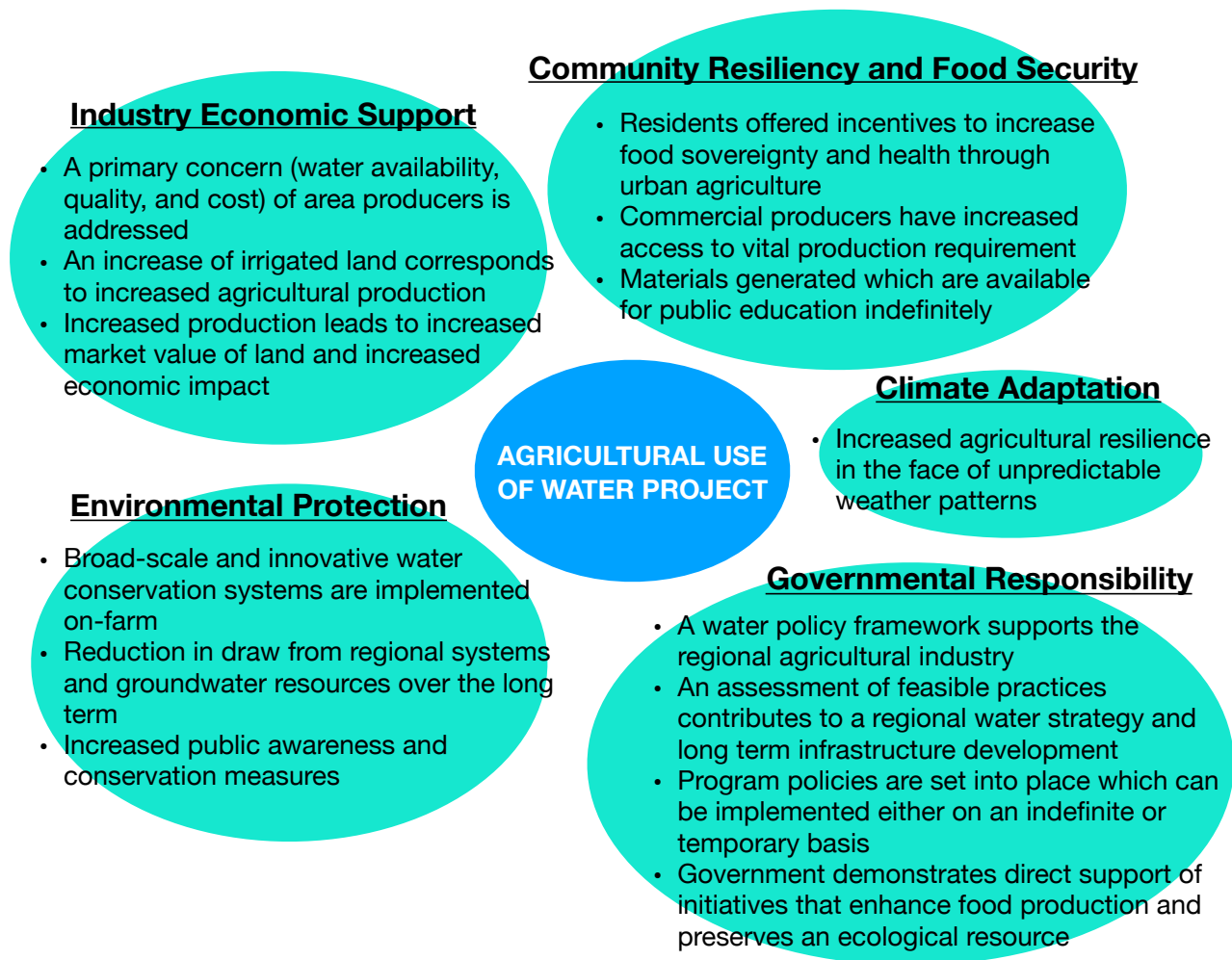
Project Rational

“Agricultural capability maps indicate that 5,184 ha could be improved to prime capability with irrigation - only 554 ha are currently irrigated. (Alberni Agricultural Plan, 2011). While many resources describe the importance of farm-water management, water availability, cost, and quality have been documented as a primary concern of the area’s agricultural producers since 2014. There are currently no funding programs or incentives available for producers to improve existing water management systems or install new or innovative systems.

Various municipalities within the ACRD have looked towards public education and regional initiatives to reduce demand on water infrastructure and support urban agriculture. The *City of Port Alberni’s Food Security and Climate Disruption Committee* recommended, in June 2015, that the ACRD implement a rainwater harvesting rebate program and launch an educational campaign to increase the capacity and viability of urban agriculture. A 2013 *City Water Conservation Plan* recommended public education about water conservation, water efficient gardening, and an examination into the potential of discounts and rebates for water-efficient infrastructure. The *District of Tofino* conducted a pilot project for a rainwater harvesting system rebate program in 2017.

Diagram 1 further highlights areas of key rational for this project and the recommended regional initiatives.

Diagram 1: Project Rationale



General Project Assumptions

1. Agriculture involves the cultivation of food. All cultivation, whether commercial or residential, will increase the region's food security and citizen well-being to some degree, through its economic, environmental, and social benefits.
2. Different levels of support are appropriate for residential and commercial producers.
3. Minimizing bureaucratic involvement will result in reduced implementation and management costs. Rebates are applicant driven processes. Rebate approvals will follow a discretionary approach and be vetted by existing committees.
4. Subsidies are an efficient way to provide government support and increase public participation towards a desired outcome. While they involve an immediate cost, there require little overhead and management. The Regional District of Nanaimo currently offers their residents 11 incentive programs to reduce the region's environmental footprint.
5. Pilot projects are an efficient means to trial projects, collect data, and evaluate longer-term options. A pilot project must be long enough to collect meaningful data about project impacts.

Project Roundtable: Function and Membership

A Roundtable committee was convened In October 2017 and project findings to date were shared both within the group context and via individual communication.

Function

1. Provide feedback that will result in widely acceptable policies and ensure that the key needs of regional stakeholders are met
2. Provide background information and expertise
3. Recommend additions or alterations
4. Draft letters to Provincial bodies requesting external support (rebates, watershed protection)

Membership

Roundtable membership was solicited from a variety of stakeholders including commercial agricultural producers, staff representatives from each of the region's municipalities and First Nations, the Tofino and Ucluelet Community Food Initiatives, City of Port Alberni's Food Security and Climate Change Committee, ACRD Board of Directors, Agricultural Development Committee, Alberni Farmers' Institute, Cherry Creek Waterworks, and Alberni Valley Transition Town Society.

Contributing participants included:

Ricardo Araya - Manager of Engineering and Public Works, District of Tofino
Leah Austin - Tofino Community Food Initiative
Lisa Aylard - Producer; Agricultural Development Committee member
Cathy Burkosky - Producer
Penny Cote - ACRD Board of Directors
Makenna Cyr - Producer; President, Alberni Farmers' Institute
Alex Dyer - ACRD Staff
Sally Hill - Producer
Jeanne Keith-Ferris - Ucluelet Community Food Society
Guy Langlois - Food Security and Climate Disruption Committee, City of Port Alberni
Dan Schubart - Alberni Valley Transition Town Society; Residential producer
Terry Shannon - Producer
Olivia Szostek - Independent consultant
Jamie Wallace - Jaan Designs
Kamruz Zaman - City Engineer, City of Port Alberni

Additional support and feedback was received by Julie Pisani - Nanaimo Regional District, Anna Lewis - ACRD Agricultural Support Worker, Jen Fisher-Bradley - Women's Food and Water Initiative, and from various other members of the public.

Overview of Regional Water System

- The existing water purveyors within the region are the ACRD (which includes the Beaver Creek and Bamfield areas), Cherry Creek Waterworks District, District of Ucluelet, District of Tofino, and City of Port Alberni.
- Residents of Sproat Lake and the Beaufort District have no regional water service.

Part 2: Research Findings

Public Survey Data

A public survey, via the web application ‘Survey Monkey’, was conducted between October 16th and 21st, 2017. A total of 60 people responded to the survey. Key findings included:

- 26 respondents were from City of Port Alberni, and 14 from Beaver Creek District
- 48 were residential, 11 commercial, and 1 unidentified.
- Of 11 commercial users, 3 said a rainwater harvesting rebate would help, 6 said it would not, and 2 said it depends. The latter two groups either said that the problem was in the projected high total cost of the system or gave no reason.
- Cistern and earthwork installations were the preferred technique of commercial respondents
- Of residential users, 38 said it would help, and 11 said it depends (generally on cost)
- 25 residential growers would consider installing a cistern of between 400-1000 gallons, and 8 between 1000 and 3000 gallons
- Of residential growers, 29 would spend less than \$1500, and 8 would spend between \$1500-\$5000
- 20 of the residential growers believed their overage water bills were between \$50-\$100/year.
- One resident of Beaver Creek, who produces a significant amount of food noted annual water overage cost of \$220
- One City resident with a smaller home garden noted annual overage charges of \$27
- Some commercial producers noted strong concerns with support of backyard food production
- Some commercial producers pointed to a need for region-wide infrastructure such as ‘twinning lines’ and reduced rates for commercial users

Water Demand Model

The Alberni Agricultural Water Demand Model is expected to be published by the Ministry of Agriculture prior to December 1, 2017. The research was conducted in 2016 as part of the Agricultural Use of Water Project, with funding from the ACRD, the Ministry of Agriculture, and the BC Partnership for Water Sustainability.

The Agriculture Water Demand Model (AWDM) is a water management planning tool used to provide current and future agriculture water demands in a particular region. The AWDM can be used for any region if provided with the appropriate land use and climate information. It calculates water use on a property by property basis and sums each property to obtain a total for sub-basins or the entire basin. Crop, irrigation system type, soil type and climate data are used to calculate the water demand. Since the AWDM can calculate future water demands based on climate change scenarios, it can help purveyors to make informed decisions on water use and land use planning.

The AWDM helps to understand current agricultural water use and helps to fulfil the Province’s commitment under the “Living Water Smart–BC Water Plan” to reserve water for agricultural lands. The Model can be used to establish agricultural water reserves throughout the various watersheds in BC by providing current and future agricultural water use data.

Water Demand Models have been completed in 13 other regions across the Province.

Water Sustainability Act

“The Water Sustainability Act (WSA) was brought into force on February 29, 2016 to ensure a sustainable supply of fresh, clean water that meets the needs of B.C. residents today and in the future. The WSA is the principal law for managing the diversion and use of water resources. The WSA provides important new tools and updates B.C.'s strategy for protecting, managing and using water efficiently throughout the province” (Province of BC, 2017).

Regulations about diverting water from streams and creating dams to hold water for agricultural use are addressed within the Act. It also introduces a number of changes to the way that water is managed in B.C including; licensing groundwater for non-domestic use, new fees and rentals for water use, stronger protection for aquatic ecosystems, expanding protection of groundwater related to well construction and maintenance, and increasing dam safety and awareness.

Other changes brought in by the WSA include: Fish Protection Act repealed and provisions brought into the WSA or the Riparian Areas Protection Act, Water Act (Part 3) renamed the Water Users' Community Act.

Key Regulatory Changes with Regards to Water Licensing

- All non-domestic groundwater users, including farmers and ranchers, must now apply for a water license.
- Existing well owners that apply for a license in the first two years (2016 and 2017) will be exempted from application fees (until December 31, 2017).
- Licensees with earlier licence dates (senior licensees) have priority over later licence dates (junior licensees) for accessing water. These rights are important during times of drought or water scarcity.

Please refer to Appendices 3 and 4 (pgs. 27 and 32) of this report for a summary of the Water Sustainability Act relevant to this project, and a quick guide to the water licensing application process.

Part 3: Regional Program Options

Part 3 of this report outlines 7 Regional Program Options that were explored as part of this project. Policy Recommendations and Rationale are provided where appropriate, and examples of programs in other BC communities are described.

“A rainwater harvesting system collects rainwater that falls on rooftops and on the ground and stores it either in a cistern or in engineered earthworks.

Rainwater harvesting (RWH) primarily consists of the collection, storage and subsequent use of captured rainwater as either the principal or as a supplementary source of water. Examples exist of systems that provide water for domestic, commercial, institutional and industrial purposes as well as agriculture, livestock, groundwater recharge, reduction of storm water runoff volumes, process water and as an emergency supply for fire-fighting.”

(City of Port Alberni’s Food Security and Climate Disruption Committee (FSCDC), 2015)

Rainwater Harvesting: General Rational

Rainwater harvesting and storage systems ensure that water from the region’s significant seasonal rainfall is available when the rate of supply exceeds the rate of use in drier seasons.

Promotion of rainwater harvesting and management is consistently cited as an important component of comprehensive regional water management plans (Cowichan Basin Water Management Plan, Farm Water Planning Toolkit (CVRD), Town of Gibsons Eco-Asset Strategy, Moving Towards Sustainable Watershed Systems (Partnership for Water Sustainability)).

Rainwater Harvesting: General Objectives

- To increase the harvest and storage of rainwater for summer use (for irrigation and livestock consumption).
- To reduce demands on the region’s wells and aquifers
- To increase urban and commercial agricultural capacity throughout the Alberni-Clayoquot Regional District.
- To mitigate the negative effects of drought on agricultural production
- To reduce peak water use and decrease the urgency of infrastructure upgrades
- To develop a clear program which supports a future application for funding for the rebate portions of the project funding from the Provincial level

1) Rainwater Harvesting Rebate Program - Residential Growers

Suggested Policy and Implementation

- The ACRD will offer a \$750 rebate to 2 residential producers within its water purveyance region per year, for a total of 3 years, with the following stipulations:
 1. Growers must install a rainwater harvesting cistern of a minimum volume of 1000 gallons,
 2. The system must be intended for the purpose of irrigation of food plants and/or livestock,
 3. Growers must pre-apply for the rebate by a pre-determined date with an application providing a description of the proposed system including elements, costs, and installation procedures,
 4. Applicants must agree to complete installation as per a Tank Installation and Safety Checklist,
 5. Installation must be completed within 4 months of date of approval,
 6. Cash is awarded after installation confirmed via photographs, receipts, and completed secondary form and Tank Installation and Safety Checklist, and
 7. Applicants must be willing to participate in a monitoring and reporting program
- The ACRD will recommend that the City of Port Alberni, Districts of Tofino and Ucluelet, and Cherry Creek Water District mimic the program.
- Applications will be vetted by an established committee (for example the Agricultural Development Committee and/or City of Port Alberni's Food Security and Climate Disruption Committee)
- The ACRD website will include a page which posts the full program packet (pre-application form, final form for submission of receipts, Tank Installation Checklist)
- Installations that include opportunities for public participation or education will be prioritized (such as through an installation workshop, community demonstration, or participation in an edible garden tour)
- Coastal communities could consider a 400 Gallon size minimum, due to higher summer precipitation and moisture and smaller property sizes

Related Project Option

Passive structures, such as rain gardens or swales, can help to utilize overflow and increase effectiveness of rainwater harvesting cisterns. To demonstrate such a system, a one day workshop and installation could be conducted on a City-owned park or landscape. Participants would help design and install the structure, which would be permanently available as an educational tool. The project cost would be about \$1000-2500 depending on scale.

Policy Rational

- A resident-driven application process reduces red-tape and allows for residents to develop a system that will work best for their property and pocketbook
- A pilot project of two systems per year, per water purveyor, allows for program development and refinement
- While governmental budgetary constraints are high, a small start will still have a ripple effect and lead to a greater culture of water conservation and storage in the long term
- Vetting applications through a committee will offer an opportunity for monitoring and evaluation of the project and its impact, through a diverse and knowledgeable group, for the duration of the pilot project

Please see Appendix 4 (pg. 36) for the draft 'Rebate Program Packet'

External Examples

Regional District of Nanaimo (RDN) - Rainwater Harvesting Incentive Program

- The RDN offers rebates of up to \$450 for cisterns that are rated for potable use and able to collect a minimum of 4,546 litres (1,000 gallons) of rainwater. In addition, there is up to \$300 available for other eligible collection system expenses such as transport piping, debris traps, filters and installation costs. Distribution components (beyond the tank) are not covered under the rebate. This makes a total of \$750 available per household for the purchase and installation of a rainwater harvesting system. There is only one rebate per household, available on a first-come, first-serve basis.
- The average sized cistern installed through their program is 1800 gallons, at an average cost of \$3000
- Project funding is derived from a parcel tax paid by all landowners in the Regional District of Nanaimo
- An application form, installation checklist, and design and installation resources are available on their [website](#).

Regional District of Nanaimo - Water Smart Garden Rebates

- This incentive program provides up to \$550 for improving the efficiency of existing residential irrigation systems through the installation and proper use of efficient irrigation system components. There is also up to \$100 available for the amendment of existing on-site soils through the addition of high quality compost, topsoil and bark mulch to improve soil health and water retention.
- Applicants who are pre-approved for both an Irrigation Efficiency Retrofit rebate AND a Soil & Mulch Amendment rebate under the program may be eligible for an efficiency bonus of up to \$100 upon completion of their projects. This makes a total of \$750 available per residential property for the improvement of landscape water efficiency.
- Irrigation components must be installed by an Irrigation Association of BC qualified contractor

Comox Valley Regional District - Smart Control Irrigation Rebate

- The CVRD offers a \$300 rebate for a qualifying smart irrigation controller which use information such as rainfall, soil moisture, site slope, plant type, and wind velocity to ensure an appropriate amount of water is delivered
- The CVRD completes an on-site inspection to ensure proper installation
- Applicants must have a back flow preventer and a valid plumbing permit
- Most of the receipts being received by the CVRD are in the range of \$300-\$350 and are for residential or commercial (non-agriculture) properties for lawn and garden watering

City of Victoria - Rainwater Rewards Program, Pilot Program

- Low Density Residential (1-4 units)
 - The City offers rebates of between \$35 and \$1,500 to assist with upfront cost of installing rainwater management methods (including cistern of minimum 1200L/ 317Gallon, rain gardens, bioswales, permeable paving)
 - Also offers an ongoing 10% credit off annual stormwater utility bills.
- Apartments, Condominiums, Institutions and Businesses
 - The City is offering ongoing credits of between 2.5% and 50% off the annual stormwater utility bill. Rebates are not available for these properties, but the credit amounts are larger.
- The City has created an extensive online rainwater management planner to estimate credits and a [do-it-yourself installation manual and checklist](#)
- The Do-it-Yourself Manual includes a chart which specifies whether the project requires professional installation to access a rebate

Parksville Rain Barrel Rebate Pilot Program

- The City is offering one rebate per residence of 50% of the cost of the rain barrel, up to a maximum of \$50. This offer is only for owners of existing residential buildings with a valid occupancy permit located within the City and connected to the City's water system.

District of Tofino's Rain Barrel Pilot program

- In 2017, the District of Tofino conducted a rainwater harvesting rebate pilot project.
- They offered a \$400 rebate to 8 residences and one business.
- Minimum cistern size was 400 gallons, most participants purchases 2 x 200 gallon food grade liquid totes. These were purchased in bulk and distributed to residents.
- The cost of the totes was \$175 each plus \$100 shipping. Total cost of system was \$450 + components
- Total program budget was \$4400 plus \$3000 for coordination
- A You-Tube video was distributed as an educational component for set-up
- Participants were supposed to set up by June 15 and report monthly.
- Anecdotaly, there were challenges with timely setup and reporting procedures
- Professional assistance was minimal
- Feedback from District of Tofino is that participation was low, installation procedures were lacking, and there was not a significant reduction in District water usage reported as participants had not set up their systems in time

2) Rebate Program - Commercial Producer

Suggested Policy and Implementation

- The ACRD will offer rebates totalling up to \$4500/year for commercial agricultural producers within the Regional District, for a total of 3 years, with the following stipulations:
 1. Projects will be funded at a maximum of 50% of total cost,
 2. The system must be intended for the purpose of irrigation of food plants and/or livestock for sale within the region,
 3. Growers must pre-apply for the rebate by a pre-determined date, with an application providing a description of the proposed system including elements, costs, and installation procedures,
 4. Cistern-type applicants must agree to complete installation as per a Tank Installation and Safety Checklist,
 5. Earthwork-type applications must comply with the Water Sustainability Act of BC (WSA). Detailed and justifiable design plans are required,
 6. Compost and compost teas must be tested at a lab and demonstrated to be of high quality.
 7. Applicants must be willing to participate in a monitoring and reporting program
 8. Installation must be complete within 8 months of date of approval, and rebate is awarded after installation confirmed via photographs and receipts, and completion of secondary form
 9. Inspection of system may be required prior to award of rebate, and
 10. Rebates are available as per the following table:

Technique	Limitations	Maximum Rebate
Cisterns	Minimum 5000 gallons	\$2250
Earthworks	May require professional design	\$2250
Compost/Compost Product Application	Must be tested	\$600 + \$80/acre

- Applications are vetted by an established committee (for example the Agricultural Development Committee (ADC) and/or FSCDC)
- **Professional support, machinery time, and educational programs which result in an instructor-facilitated design are eligible expenses.**

Policy Rational

- Access to quality water is essential for agricultural production
- A producer-driven application process reduces red-tape and allows producers to develop a system that will work best for their property and pocketbook
- Educational support increases the producer knowledge base within the region and has long-term beneficial impacts
- The program supports both high and low cost options, and a variety of operational needs
- Government incentives will increase the interest in the region for new producers and will stimulate new or increased agricultural operations
- Large-scale water harvesting and storage systems will have a marked benefit on the long-term health of regional aquifers
- 20% of all ground water used in BC is used for agriculture
- Rebates for irrigation improvements are available through the Environmental Farm Plan Program

Please see Appendix 5 (pg. 43) for the draft 'Rebate Program Packet'

Overview of Acceptable Projects

Large Cisterns - Large cisterns are ideal when coupled with large roof area found on most barns or agricultural outbuildings, as large roof areas have an increased ability to collect water when it rains. 1 square meter of roof area x 1 mm of rain = 1 litre of water. Large cisterns provide an excellent source of water for livestock or nursery operations but tend to be too small for larger irrigation applications.

Compost and Compost tea or extract applications - Compost or compost tea/extract is a simple low cost approach to improving agricultural soils. Science has shown us that soil biology drives nutrient cycling within soils as well as improving soil texture and water holding capacity. A 1% increase in organic matter over one acre of land will allow soils to absorb and hold onto an additional 75,000 litres (20,000 gallons) of water which in helps to reduce the effects of drought.

Ponds - One of the most common water storage structures for holding large volumes of water. These have a much lower cost per gallon to store water versus a cistern but because of their typical size they often come with a substantial cost and may require engineering. Water licensing may also be required depending on where the source of water originates.

Keyline Systems - This system was developed in Australia in the 1950s as a strategy to slow down, spread, and sink water throughout a property. It analyzes the natural contours of the land within a specific design process and uses a Yeomans plow to break up compacted soils along prescribed 'keylines', with minimal disturbance to the soil surface. There is a Yeomans plow on Vancouver Island which is available for contract.

Passive rainwater harvesting - This is probably the easiest and lowest cost approach to harvesting rainwater. This strategy takes advantage of run off from hard and soft surfaces with the intent of slowing down the movement of water within a site. This slower movement of water increases the opportunity for the water to infiltrate and be stored within the soils for later use. When one inch of rain falls onto a farmer's access road (500' x 12'), this road captures approx. 14,000 litres of rainwater. Water flowing off this road can be slowed and stored within surrounding soils or sent to a larger holding structure such as a pond. Roads and other hard surfaces can be integrated into an overall water farm plan.

Examples of Producer Projects

- Gary Swann, Leda Organic Farm - determining how to develop farm water supply from the wet lands at the bottom of the Beaufort Mountain Range.
- Peter Novotny, Beaufort Rainbow Farms - Repair of an existing 60,000 litre cistern which is currently not holding water
- Nancy Roussell, Lettuce-B-Microgreens - Repair of existing 2 x 3000 gallon cisterns so that they hold water
- Mark Super, beef producer - recent pond installation

Examples of Provincial Programs and Educational Material for Reference

- Environmental Farm Plan Program - No water storage funding available at this time
- Publications: In-Ground Harvesting systems:
 - BC Farm Practices and Climate Change Adaptation Series, Water Storage
 - British Columbia Farm Water Dugouts
 - Keyline Water Management: Field Research & Education in the Capital Region
- ***No other rebate programs for agricultural-scale water harvesting and storage systems have been identified within the Province***

3) Reduced Water Rates - Commercial Growers

Policy Recommendation

- The ACRD will discount the annual water parcel tax of commercial agricultural producers within its water billing area by 50% and increase the maximum consumption rate by 20 cubic meters per month
- The ACRD will recommend that the City of Port Alberni, Districts of Tofino and Ucluelet, and Cherry Creek Water District mimic the program

Rationale

- Many producers have noted water access and cost as a primary barrier to increased production
- Water subsidy is an effective tool for promotion and support of farming enterprises, and will increase economic and business interest in the area from afar
- A water levy reduction provides a concrete subsidy to producers for a vital production component
- Higher water consumption is to be expected in a commercial agricultural operation

Regional Data and System Structure

- The total number of commercial farms within the ACRD, based on BC Assessment Farm Property Tax Classification, is 93. Of those, 44 are in the Beaufort and Sproat Lake Areas (no water service), 25 are in the Beaver Creek Water Service Area, and 17 are in the Cherry Creek Water Service area.
- The Beaver Creek Water System is managed by the ACRD:
 - There are no existing rate reductions for commercial producers
 - The annual parcel tax for water is \$238/year and rate for single family residential use is \$51.67/month with a maximum consumption of 36 cubic meters per month
 - Overage charges are charged at the rate of \$2/cubic meter
 - As assessment in September 2017 revealed that there are no agricultural producers amongst the largest users of the system
- The only community water systems within the ACRD that offers a reduced rate for commercial agriculture is operated by the Cherry Creek Improvement district (CCID)
 - CCID farm service rates are \$30/month and have a higher maximum consumption rate, 55 cubic meters, compared to residential rates which are \$37.67/month with a maximum of 33 cubic meters
 - However, CCID's farm property parcel tax is \$77 higher than residential properties, which minimizes the actual cost savings

Province-wide Models

- The Regional District of North Okanagan provides a separate irrigation system for agricultural producers, distributing non-potable water in the summer months to property owners who apply for an allocation.
- The District of Summerland and the Towns of Oliver and Osoyoos in the Okanagan provide a similar service.
- No other Regional Districts on the Island provide comprehensive agricultural water rate plan.

Monitoring and Evaluation

- The number of commercial farms are tracked annually
- Overall consumption changes are tracked to monitor for system abuse

4) Billing Credits - Residential Growers

Policy Recommendation

- Community gardens (more than 3 growers sharing space) with no domestic water use on site will pay a flat fee of \$1/year for use of water
- A \$50 annual credit towards water bills will be available for up to 10 people within the ACRD billing region, with the following stipulations:
 1. They maintain a food production system with a minimum size of approximately 1500 square feet (ie: a full yard). Large fruit trees and ornamental plants are not included unless part of an integrated design or food forest system,
 2. They have proof of water saving techniques already in place (swales, hugelkulturs, cisterns/water collection practices, grey water use, irrigation systems, reusing water, xeriscaping, food forestry systems),
 3. Gardens which are fenced or otherwise secured from wildlife
 4. They agree to participate in a monitoring and reporting program, and
 5. An annual application, which includes evidence of the above, must be submitted prior to May 1
- The credit will also be available to non-profit organizations who produce a portion of their own food and/or who train clients in food production
- The ACRD will recommend that the City of Port Alberni, Districts of Tofino and Ucluelet, and Cherry Creek Water District mimic the program, amending the total number of credits issued as appropriate.
- Applications will be vetted through FSCDC, ADC, or similar municipal committee
- Participants may be subject to site Inspections

Background and Rational

- Port Alberni Water Conservation Plan 2013 suggests investigation into discounts on water bills for water efficient garden designs/irrigation systems
- Reduced water rates for residential growers are routinely requested by growers and have been suggested by the Food Security and Climate Disruption Committee
- Residential growers can impact regional food security, and governmental support for growers will increase the community's food culture and may reduce food poverty
- The regional Grow Local survey of 2017 indicated that 28% of respondents (43 people total) managed a garden of about 150 square feet in size, 17% (26 people total) managed a garden of about 750 square feet in size, and 11% (16 people total) managed a garden of 1500 square feet in size

Existing Rates and Examples

- City of Port Alberni rates - Effective for the September 1st, 2017 billing, single family residential customers pay \$0.53 per cubic metre (m3) on the first 60 m3 of water they use over a four month billing period. Above that amount, customers pay \$0.70 per m3 for the balance of water used during that period.
- Dry Creek Community Garden in Port Alberni has an agreement with the City that they will pay \$1/year for water
- In a survey done in October, 2017, 42% of residential growers believed their overage water bills were between \$50-\$100/year.
- One resident of Beaver Creek, who produces a significant amount of food noted annual water overage cost of \$220
- One City resident with a smaller home garden noted annual overage charges of \$27

Monitoring and Evaluation Procedures

- Participant's annual application form includes production estimates, expansion and improvement details
- The number of applicants are tracked annually
- Overall consumption changes of participants will be tracked to determine whether system abuse is evidenced

Please see Appendix 6 (pg. 58) for the draft 'Credit Program Packet'

5) Regional Infrastructure - 'Twinning Lines'

Twinning water lines involves placing non-potable water lines alongside potable lines and is often recommended as a cost effective solution for provision of non-potable water for various uses, including agriculture and fire hydrants (see Appendix 3, pg. 34). There is a pump house from the Somass River near Mackenzie Road which could be used to supply the lines.

Twinning lines can be done in stages, as existing lines are repaired or exposed. The cost to replace waterline is approximately \$600/meter, most of which is incurred through road cutting, traffic management, and labour. While this work is being done, the additional cost of laying a new non-potable line is minimal. ***The intent of twinning lines, as they are repaired or replaced, is that a new non-potable line will eventually form a corridor through an agricultural area and be available to provide non-potable water for irrigation.***

The idea poses a number of challenges however. Firstly, benefits would only be available within a very long time frame. For example, only 200 meters of line was replaced in the Beaver Creek Region in 2016, and there are no plans for other significant repairs or replacement within the next few years. In addition, the project causes liability and public health concerns about the potential consumption of untreated water. Finally, the engineering studies involved to develop a plan for development of a specific agricultural corridor would likely be very costly.

Jurisdictional Examples

Irrigation districts with non-potable water have been developed in the Okanagan Lake corridor and parts of the Kootneys, mostly as a means of supplying water for agricultural irrigation. Many of these have now been upgraded to provide potable water as well. The town of Oliver has undergone a twinning project to separate domestic waterlines from an existing line subject to frequent boil water advisories. The community of Naramata in the Regional District of Okanagan Similkameen has investigated a project to twin their water lines, but in that jurisdiction, 86% of water used in the system was for irrigation purposes.

ACRD Options and Recommendations

While further studies could be completed at the Regional level, less resource-intensive options have been identified.

1. Enact regulations that require the installation of twinned lines in new agricultural developments or subdivisions,
2. Support agricultural operations to be more independently water-wise, such as through conservation, rainwater harvesting and storage measures, and through recycling of grey water,
3. Lobby the Provincial government to research the feasibility of, suggest implementation plans for, and provide a funding program for Regional line-twinning projects.

6) Emergency Water License for Agricultural Use

Commercial agricultural producers have suggested that the ACRD apply for a Regional water license for emergency agricultural use. In one case, a producer noted that during the severe drought of 2015, they placed a number of frantic phone calls trying to source water and transportation infrastructure in order to secure enough water to irrigate and prevent crop loss.

The ACRD holds a water license from the Somass River for use within the Beaver Creek District, and water can be accessed from a pump house near Mackenzie Road. It is expected, from research into the Water Sustainability Act of BC, that this license could be expanded to include emergency use for all agricultural producers within the Regional District.

The logistics of water transport would still need to be determined, however producers have identified a number of possibilities, including flat deck trucks with portable tanks or a tender for service with a professional company. If the emergency license were secured, it is expected that the Alberni Farmers' Institute and members could organize the needed infrastructure.

An additional option for emergency water delivery to agricultural operations is to work with local volunteer fire departments, whose weekly practices typically include the discharge of large volumes of water. One producer noted that a chance encounter with a practice crew resulted in a significant irrigation event for their crops during a drought period.

Recommendations

1. That the ACRD amend their existing community water license to include emergency agricultural use for all Regional producers and work with the Alberni Farmers' Institute to develop a protocol for that use,
2. That the ACRD convene a committee (including representatives of regional fire fighting services) to develop a Drought Management Plan, as being recommended by Province of BC, which includes these or other protocols for the emergency access to water for agriculture (see also Program Option 7, page 22).

7) Regional Water Committee and Parcel Tax

The Agricultural Use of Water Project experienced significant limitations in its ability to address the concerns raised by stakeholders throughout the course of the project, due to limitations in the project scope, time frame, and budget.

Water policy concerns, questions, and suggestion which were outside of the agricultural scope of this project were routine, and it became clear that more resources would be needed to address them. ***In addition, the policy framework that has been developed is limited due to budgetary constraints.***

Examples of stakeholder concerns include the need for:

- **Drought Response Plans**, developed regionally, to help mitigate emergency situations. The BC Drought Response Plan (2016) suggests that multi-stakeholder committees that address water sustainability issues could work with the Province towards their development
- Assessment of **climate change scenarios** and impacts of **sea level rise**
- **Source water quality protection and watershed preservation**
- **Regional Watershed Management Plans**, particularly when applying for water-related grant opportunities. The ACRD is lacking such a plan, with the exception of the Somass Basin Watershed Management Plan, which focuses on ensuring Salmon futures.
- Lobby to the Provincial government for more **funding for water sustainability issues and long term infrastructure.**

Jurisdictional Model

In 2008, the Nanaimo Regional District approved its Drinking Water and Watershed Protection Service Establishing (Bylaw No. 1556) following a general referendum. This program is guided by an Action Plan that was developed by committee in 2007. A parcel tax of \$7.50/parcel generates about \$515,000/yr and funds a variety of water initiatives, including their rainwater harvesting rebates. The Action Plan includes 7 program areas: public awareness and involvement, water resources inventory and monitoring, management of land use and development, watershed management planning, management of water use and water quality, and climate change mitigation.

With an estimated 9,000 parcels within the ACRD outside municipalities, the region could generate \$18,000 with a \$2 parcel tax and \$67,500 with a \$7.50 parcel tax.

Recommendation

1. That the ACRD convene a Community Watershed Committee which works to develop long-term watershed management plans and drought plans, and to solicit funding for the expansion of the proposed water rebate and other programs recommended by this report, including by assessment of the feasibility of a Watershed Planning Parcel Tax.

Part 4: Key Project Outputs

Public Education

Public Workshops - Tofino, Ucluelet, and Port Alberni

- A water-catchment workshop took place in Ucluelet on Jan. 30, 2016 and Tofino, Jan. 31, 2016
 - Facilitated by Jennifer-Price Francis, Connie Kuramoto, and Heather Shobe
 - Included brief section on farm-scale agricultural and in-ground water storage
 - Workshops included a component where participants assisted to build a rain barrel
 - Free to participants
- A Rain Water Harvesting and Water-Wise Landscaping workshop was held in Port Alberni on July 5, 2017
 - Facilitated by Jamie Wallace
 - Free to participants

Farm-Scale Water Harvesting and Storage Solutions Workshop

- A Farm-Scale Water Harvesting and Storage Solutions Workshop took place in the Alberni Valley on October 25, 2017
 - The session describes large scale cisterns, ponds, dams, swales, Key-line systems, agro-forestry, and soil-based water holding improvements
 - Facilitated by Jamie Wallace
 - Free to participants, 20 participants total

Professional Workshop in Rainwater Harvesting

- The ARCSA's (American Rainwater Catchment Systems Association) 2-day professional workshop will be presented by Ken Nentwig of CANARM (Canadian Association for Rainwater Management) on January 22/23, 2018.
- The ACRD, with the assistance of the REFBC has offered full sponsorship for 4 seats in this program.
- Sponsored participants include representatives from the City of Port Alberni, District of Tofino, District of Ucluelet, and Canadian Mental Health Association's Healthy Harvest Farm.
- Other targeted participants include regional building inspectors, landscape architects and designers, gutter and building professionals, and agricultural producers.

Series of Three Brochures

Rainwater Harvesting (1) and Waterwise Landscaping (2)

- Published September, 2017
- Distributed in hard copy at Alberni Fall Fair and at ACRD office
- Summaries, in a single sheet format, mailed out to Beaver Creek residents and are available for mail-out to municipalities/other water districts
- Hard copies available at ACRD office at various venues throughout the Region
- Available on ACRD Website

Farm-Scale Water Harvesting and Storage (3)

- Published October, 2017
- Distributed via mail to farm operators
- Available on ACRD website with hardcopies at various venues throughout the Region

Please see Appendix 7 (pg. 60) for Brochures

Letter to Province, Watershed Protection

Throughout the course of this project, producers in the Beaufort Range of the Alberni Valley have expressed repeated and significant concerns about the impact of forestry activities taking place in the Beaufort Range on their water quality and the integrity of their watershed. This is a sensitive political issue that has strongly impacted the region's largest agricultural producers.

In 2017, the Central Kootney Regional District put forth the UBCM Resolution: B115 - Task Force for Watershed Management requesting that the Province *create a task force to consult with local governments to determine their concerns on consumptive watershed management.* UBCM noted in response that members consistently endorse resolutions seeking authority for local governments to manage the use and activities in their community's watersheds

As part of this project, a letter to the Province of BC in support of the above resolution was drafted and sent, noting the specific concerns and challenges of the region's agricultural producers adjacent to the Beaufort Range. Research into the regulatory framework of the Water Sustainability Act was also conducted, and preliminary findings have been documented.

Please see Appendix 1 (pg. 27) for Regulatory Framework of WSA

Please see Appendix 8 (pg. 66) for the Letter to the Province of BC

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Appendix 1: Water Sustainability Act

BC Water Sustainability Act (WSA)
February 2016

Highlights for Agricultural Water Users

A. New Requirements for Groundwater Users

Overview:

Under the new BC Water Sustainability Act (2016), any water diverted for use other than domestic is required to be done only with an approved water licence. February 2016 - February 2019 will be a transition period, allowing current groundwater users to apply for licences that will be granted in accordance with the first-in-time, first-in-right principle.

Details:

Any water diverted for use other than domestic are now required to obtain a licence and pay water fees & rentals (for use greater than 250L/day). The government of BC has established the positives of this new policy to include:

- establishing equity between stream water & groundwater users
- clarifying how much water you can legally use
- increases security of your access to water
- reduces opportunity for conflict between water users in times of scarcity

Domestic groundwater users are still encouraged to register their well as to ensure decision makers have an accurate picture of groundwater use in the area.

The first 3 years of the new WSA (February 2016-February 2019) is meant to be a transition period, with the following policies/incentives put in place to encourage early application for non-domestic groundwater use.

- First-in-time, first-in-right (FITFIR): principle of law that the first person to use a certain source of water gets the right to use it in the future over the right of later users
- If you are an existing groundwater user, you are encouraged to apply within the three-year transition period to maintain your date of precedence (you are granted precedence based on the date you began using groundwater, as determined by evidence submitted in your application). IF YOU APPLY AFTER MARCH 1, 2019 your application will be considered a junior application and treated as a new applicant based on the date of your application.
- Applications submitted on or before December 2017 will have application fees waived.

Establishing Date of First Use -

Evidence of date of first use of the groundwater source include but are not limited to:

- Records & invoices related to the construction of wells
- Environmental Assessment Certificate
- Well maintenance records
- Photographs
- Other corroborating information recognized as evidence of historic use

B. Water Use in Times of Scarcity

Overview:

In the event that stream levels fall below their critical flow threshold and/or water levels becomes so low in a stream that a population of fish may be or become threatened, water restrictions may be enforced. Water shortage declarations that enforce water restrictions cannot exceed 90 days.

Details:

Section (22) of the act discusses water use in times of scarcity. In times that streams are at risk of or have fallen below their critical flow threshold, temporary water restrictions may be put in place. Water restrictions may also come into effect if the flow level of water in a stream becomes so low that a population of fish in the stream may be or become threatened. In this event, users will have rights based on the FITFIR principle. If multiple license holders have the same date of first use, priority will be given to water users in this order:

- domestic
- waterworks
- irrigation
- mineralized water
- mining
- industrial
- oil and gas
- power
- storage
- conservation
- land improvement

In most cases where a water user is authorized to store water for future use, restrictions on the diversion and use of water during times of scarcity **will not apply to the stored water**. The Act does state that when restricting water in times of scarcity, use of water for agricultural users must be *considered* before putting forth an order.

C. Introduction of Foreign Matter into Waterways

Overview:

The 2016 WSA outlines in section (46) the prohibition on introducing foreign matter into streams, stream channels, or an area adjacent to the stream. However, there are subsections dismissing this guiding principle in the the event that it is a forest practice that is protected under the *Forest and Range Practices Act* OR is a 'prescribed activity, practice, or substance.'

Details:

A person is not allowed to introduce, cause, or allow foreign matter to enter streams, stream channels, or areas adjacent to the stream in such a way that negatively impacts any of the following:

- the stream or stream channel
- existing uses of the water from the stream
- property of riparian owners on the stream
- an aquifer hydraulically connected to the stream

- the aquatic ecosystem of the stream.

Exceptions, however, were noted in a subsection of the act that include:

- a forest practice in which section 46 of Forest and Range Practices Act applies
- a prescribed activity, practice, or substance.

Section 46 of the Forest and Range Practices Act states that you cannot cause environmental harm *unless* you are adhering to the rights of the permit. Consequently, this leaves some grey area around the responsibilities and acceptable activities of forestry practices surrounding water quality issues.

Remediation of pollution into a water system as described above would consequently be managed/prescribed by an engineer, water manager, or comptroller.

D. Who Can Apply

Under section (9) of the WSA, licences can be awarded to any of the following, authorizing the diversion or use of water for one or more water use purposes:

- land or mine owners
- a municipality, regional district, improvement district, development district, or water users' community
- the government of BC or Canada
- a commission, board, or person having large of the administration of Crown land or a mine undertaking on Crown Land
- the Greater Vancouver Water District or any other water district incorporated by an Act
- BC Hydro and Power Authority
- a holder of a certificate of public convenience and necessity issued under the Public Utilities Act

Applications may be asked to include the following information:

- demonstrate that they comply with requirements
- pay fees
- include information specified by the decision maker regarding any plans, specifications, reports of assessments and other information the decision maker requests including but not limited to: personal info, existing water users, riparian owners, other applications and other authorization holders who's rights are likely to be affected if application is granted, and land owners whose land is likely to be physically affected

Looking at this, we could theorize that a regional district could apply for a licence to divert and store water for agricultural use during times of water scarcity. Further work would need to be done to look into the specifics of what the application process would be looking for, and if any other regulations would need to be met depending on the type and size of reservoir/holding structure.

E. SUMMARY

The 2016 Water Sustainability Act for BC has major implications for groundwater users. Applying for licenses by 2019 is integral for users to keep priority regarding their current water use. The new implementation of 'First-in-time, First-in-right' will aid in addressing rights to water, especially in times of scarcity.

In regards to agricultural water security, private land owners and/or regional governments are able to apply for licenses to divert and store water for emergency purposes. Any applicant will need to go through an application process that will ask for a variety of work and information regarding the structures anticipated to be constructed, amount of water planned on being diverted, etc. If the regional district or agricultural community is planning to look at growing emergency water reservoirs, more research and work would need to be done to assess what the application would require.

Water quality is largely *not* a topic covered by the WSA. Legislation that deals more directly with water quality includes but is not limited to:

- The Riparian Area Regulation (RAR) deals with water quality at a more local level
- The Forest Planning and Practices Regulation (a division of the Forest and Range Practices Act) pertains more to forestry practices and their impacts on water quality
- The Guidelines for Canadian Drinking Water Quality, established by the Federal-Provincial-Territorial Committee on Drinking Water, addresses water quality standards across the country
- The Drinking Water Protection Act, which is enforced at a provincial level by different bodies (E.G. Vancouver Island Health Authority).

To address issues of water quality, a further study into these pieces of legislation and where responsibility falls in different circumstances would be necessary.

Resources:

Drinking Water Protection Act, BC

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_01009_01

Forest and Range Practices Act, BC

http://www.bclaws.ca/civix/document/id/complete/statreg/02069_01#section46

Gov BC Website - Water Licensing Rights

<http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/water-licences-approvals/new-requirements-for-groundwater-users>

Gov BC Website - Info on the Drinking Water Protection Act

<https://www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/laws-related-to-health-in-bc/drinking-water-protection-act>

Riparian Areas Regulation (Under the Riparian Areas Protection Act), BC

http://www.bclaws.ca/civix/document/id/complete/statreg/376_2004

Water Sustainability Act, BC

<http://www.bclaws.ca/civix/document/id/complete/statreg/14015>

Forest and Range Practices Act, BC

http://www.bclaws.ca/civix/document/id/complete/statreg/02069_01#section46

Appendix 2: Quick Guide to Water Licensing Applications

Requirements for Water Licence Applications

STEP 1: Identify source/area that the application would be referring to.

STEP 2: Gather all information needed for the application. These details are outlined below and separated into 'BASICS' which is information that should be somewhat accessible/easy to compile, and 'FURTHER WORK NEEDED', which describes application requirements that would require a bit more time and/or expertise.

BASICS

1. Name & contact information of applicant
2. Official name of the water source or a description of a location of the source
3. If the application relates to water in a stream, the official name of the stream to which a proposed source of the water discharges to is immediately tributary or a location description for that stream.
4. If water is to be stored in a reservoir, the official name of the reservoir (if known) or a location description of the reservoir.
5. Purpose for which the water will be used
6. Legal description and tenure of the land where the water is to be used (legal description, PID, or description if the land is unsurveyed) OR a description of the project or water use scheme.
7. Legal land description and land tenure for all lands on which you propose to construct works or flood.
8. Applicant's title to or interest in the appurtenance and the name of the owner(s) of any land not owned by the applicant.
9. Location (latitude and longitude or UTM coordinates) or the point(s) on the source where you propose to withdraw water and, if applicable, any proposed or existing storage reservoir.
10. Written consent from every person on the land title/land tenure where you propose to use the water, or to whom a licence may be issued, and written consent from each person in the application for disclosure of their personal information that is included in the application. (A consent form with the appropriate details will be generated by the online system).

FURTHER WORK NEEDED

1. The quantity of water that will be diverted or stored for each water use purpose.
2. For water that will be used for irrigation - the area of land that will be irrigated (there is a BC Agriculture Water Calculator available on the BC Ministry of Environment Website that can estimate crop irrigation needs).
3. Periods of the year that the water will be diverted if not year round.
4. A detailed description of the proposed works (e.g. diversion structures, pumps, pipelines, irrigation system, reservoir) and a description of the land affected by the works
5. If the works includes one or more wells, detail of the well(s) including well depth and well identification plate number or well tag number if available.
6. If water is to be stored by a dam, details of the dam's height, length, crest width, and maximum storage volume.
7. A location description of the land on which the application proposes to construct works and any land that is likely to be physically affected by the proposed works.

DOCUMENTS NEEDED

- A map or drawing that meets the requirements outlined in the Application Drawing Standards (https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/water-rights/new_drawing_standards_final_2016.pdf)
- A copy of your lease, if you have privately leased the land where you want to use the water
- A copy of any permit, tenure or other authorization to use Crown land elevation to the locations of the water diversion and use
- A copy of your letter of agency or other proof of authorization, if you are completing the application on behalf of the applicant
- If you are share or are connected to another person's works, it is recommended that a Joint Works Agreement outlining each party's role and responsibility be completed.
- It is recommended that a topographical map showing the general location of the property where the water is proposed to be used and the works constructed in relation to nearby communities, highways, railways, and other water sources
- It is recommended that you provide a copy of Registered Survey Plan for any parcel of land where the water is intended to be used, if you have one.
- An accurate labelled drawing, to scale, showing all the following:
 - (i) the location and boundaries of the appurtenancy and the location within the appurtenancy where the water is to be used;
 - (ii) the approximate location of the proposed works;
 - (iii) the boundaries of any land that is likely to be physically affected by the proposed works;
 - (iv) if the water source is an aquifer, streams and other water bodies, whether natural or otherwise, other wells that are diverting water from the aquifer and other water features in the area shown in the drawing, if known to the applicant;
 - (v) if the water source is a stream, the location of the stream and the direction of flow.

If a dam is to be built, the application will also need to adhere to the rules and regulations of the Dam Safety Regulation.

BC Dam Safety Regulation:

http://www.bclaws.ca/civix/document/id/complete/statreg/40_2016#section3

Appendix 3: UBCM Resolutions, 2017

B115 Task Force for Watershed Management Central Kootenay RD

Whereas the forest industry is critical to the success of the economy of British Columbia;
And whereas communities that rely on surface water for drinking and irrigation are concerned about the effect of wildfire, tree harvesting and landslides in all consumptive water sources:
Therefore be it resolved that UBCM request the provincial government to form a task force comprised of representatives that include tenure holders, wildfire specialists, biologists, hydrologists, and citizen representatives to consult with local governments to determine their concerns on consumptive watershed management.

Not presented to the Association of Kootenay & Boundary Local Governments UBCM

Resolutions Committee recommendation: No Recommendation

UBCM Resolutions Committee comments:

The Resolutions Committee advises that the UBCM membership has not previously considered a resolution asking the provincial government to establish a task force of representatives from tenure holders, wildfire specialists, scientists, and the citizenry, that would consult with local governments to determine their concerns on consumptive watershed management. However, the Committee notes that members have consistently endorsed resolutions seeking authority for local governments to manage the use and activities in their communities' watersheds (most recently 2016-B25, 2015-B32, 2014-B88, 2013-B32, 2013-B37, 2013-B195, 2011-B50, 2011-B57, 2011-B100, 2011-B129, 2009-B136, 2008-B35, 2007-B26, 2007-B42, 2007-B122).

B76 Local Government Infrastructure Project Funding Oliver

Whereas the Province of British Columbia and the Government of Canada have taken a leadership role by investing in local government infrastructure projects, however exclude funding programs that supports irrigation water capital infrastructure that serves the agricultural sector;

And whereas local governments across Canada responsibly manage and deliver irrigation water service to the agricultural sector through infrastructure that supports the economic health of the community:

Therefore be it resolved that UBCM call upon the Province of British Columbia and Government of Canada to replace restrictive funding initiatives with funding criteria that supports local government capital infrastructure project funding for irrigation water services that serves agriculture.

Endorsed by the Southern Interior Local Government Association

UBCM Resolutions Committee recommendation: No Recommendation

UBCM Resolutions Committee comments:

The Resolutions Committee advises that the UBCM membership has not previously considered a resolution asking the provincial and federal governments to amend the criteria for infrastructure funding programs, to enable use of existing infrastructure funding programs for

development or improvement of local government infrastructure for agricultural irrigation purposes.

In terms of resolutions, UBCM notes that members endorsed 1999-B77, which called on the Province to provide funding for irrigation of farm properties in the Agricultural Land Reserve, “as an integral part of its commitment to preserve farm land for future generations of British Columbians.” At the time, the provincial government expressed willingness to advocate for inclusion of water development for agriculture in the eligibility criteria for future infrastructure initiatives.

In general, UBCM would acknowledge that both federal and provincial capital funding programs have expanded eligible project categories in recent years. As an example, the Gas Tax Fund identifies 17 eligible project categories, focused on the majority of core local government services. However, providing standalone agricultural irrigation is not considered a core service provided by the majority of local governments. In circumstances where potable water and agricultural irrigation exist in a single system, improvements to the system would likely be eligible. *UBCM would note that both federal and provincial programs have supported 'twinning', or separation of domestic and agricultural water systems, as the most cost effective way to provide potable drinking water, resulting in significant savings in overall infrastructure, operation and maintenance costs for both drinking and agricultural water systems* (Emphasis added).



Appendix 4: Residential Rebate Packet

Application: ACRD Water Harvesting Rebate Program (Residential Users)

This pilot program applies to residential property owners who are actively producing food on their property. Participants are eligible to receive a \$750 rebate for the purchase and installation of a rainwater harvesting cistern that will store a minimum of 4546 Litres (1000 US Gallons) of water and which is rated for potable use.

This the Pre-Approval Application Form, which must be submitted, along with relevant documentation prior to May 1 of each year. A minimum of 2 rebates within the ACRD's Water Service Area (link) will be considered in 2018, 2019, and 2020. They will be vetted through the ACRD's Agricultural Development Committee.

Successful applicants will be notified via a letter, and must complete the installation and submit the Step 2 form (link) with receipts and documentation within 4 months of the date of the letter. All applicants must agree to submit a monitoring and reporting form (link) annually. All rebates are subject to onsite inspection or verification. Please see the ACRD website (link) for more details.

Applicant Information

Property Owner Name _____
Street Address _____ Postal Code _____
Phone Number _____ Email Address _____

Description of System

Include tank size, make, and model; location of installation; roof area; other components including debris filters and traps; details about tank bedding or foundation; estimated system cost; and installation procedures:

Note: Any variation from the standards outlined in the Tank Installation and Safety Checklists (link) must be listed here and pre-approved or you will be ineligible to receive a rebate.

Address of Installation (if different from above)_____

Will the installation involve the alteration of indoor plumbing, the installation of a new potable water line, or the alteration of an existing potable water line? Note: These installations will require a building permit and inspection document. Circle: NO YES

Will the installation be professionally completed? Circle: NO YES

Assessment Criteria

Application vetting process will favourably weigh those projects where:

- Significant food stores are being produced
- There are opportunities for public participation or education (such as through an installation workshop, community demonstration, or participation in an edible garden tour)
- There is professional design and/or installation
- There are other water conservation techniques being used on the site or a larger tank size being installed

Description of agricultural activities (garden size, crop types, livestock, sales, etc), other water conservation strategies, potential for community education, or other relevant info:

I have read and understood the program policy and procedures provided on the ACRD website, and the Nanaimo Regional District's Rainwater Harvesting Best Practices Guidebook, particularly pages 5-7 (planning and professionals) and pages 73-82 (operation, maintenance, and safety):

NO YES

I understand that the Alberni-Clayoquot Regional District is not responsible for the installation, treatment, operation, or maintenance of the rainwater harvesting system, or any damages resulting thereof:

NO YES

I will complete the full installation and submit required documentation (Receipts, Step 2 Form, and Tank Installation and Safety Checklists) within 4 months of receiving a letter of acceptance to the program:

NO YES

I have enclosed a photo of the specific location where the cistern is to be installed:

NO YES

Signature _____ **Date** _____

Applications may be dropped off or mailed to:

Water Harvesting Rebate Program
Alberni-Clayoquot Regional District
3008 5th Ave, Port Alberni, BC
V9Y 2E3



Step 2 Form: ACRD Water Harvesting Rebate Program (Residential Users)



ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

This form is to be used by pre-approved applicants who have completed installation of the Rainwater Harvesting System. It must be submitted, with receipts, tank checklists, and photos, within 4 months of the date of the letter of project approval. All rebates are subject to onsite inspection or verification. All rebate program participants are required to complete an evaluation form (link) within one year of installation. Please see the ACRD website (link) for more details.

Applicant Information

Property Owner Name _____
Street Address _____ Postal Code _____
Phone Number _____ Email Address _____

Description of System

Address of Installation (if different from above) _____
Contractor/Retailer _____ Date of Installation _____
Cistern Model _____ Cistern Size _____
Cost of Installation _____ RECEIPT PROVIDED? YES NO
Cost of Cistern _____ RECEIPT PROVIDED? YES NO
Cost of Additional Components _____ RECEIPTS PROVIDED? YES NO

Checklist For Rebate Reimbursement

- ☐ Receipts
- ☐ Photos of installed cistern clearly showing all connections and system components
- ☐ The completed Tank Installation and Safety Checklists

Did the installation involve the alteration of indoor plumbing, the installation of a new potable water line, or the alteration of an existing potable water line? Note: These installations will require a building permit and inspection document (check this?). Circle: NO YES

Was the installation be professionally completed? Circle: NO YES

Signature _____ Date _____

Applications may be dropped off or mailed to:

Water Harvesting Rebate Program
Alberni-Clayoquot Regional District
3008 5th Ave, Port Alberni, BC
V9Y 2E3

TANK INSTALLATION CHECKLIST

The Tank Installation and Safety Checklists must be completed and submitted to receive your rebate. These checklists are based on the Nanaimo Regional District's Rainwater Harvesting - Best Practices Guidebook. Any variances to these standards must have been noted in the pre-approval application form and described at the bottom of this form.

- ☐ Is installed according to the manufacturer's installation instructions, or is certified by a professional engineer.
- ☐ Complies with the B.C. Building Code, and with the administrative policies of your local building department. It may be necessary to obtain certification from a professional engineer, especially if your cistern does not contain the manufacturer's certification.
- ☐ Complies with the setback and zoning regulations of your local planning department.
- ☐ Includes an inspection hatch for servicing and cleaning, and is located to allow clear access.
- ☐ Has an overflow pipe located near the top of the cistern that is of equal or greater diameter than the intake pipe. The end of the overflow must be directed away from the base of the tank and from house foundations, and to an area protected from erosion.
- ☐ Is placed on level ground.
- ☐ Is, if above-ground, opaque, painted, or located within a building to limit the entry of sunlight.
- ☐ Is protected from excessive debris accumulation by the presence of a debris trap and/or filter to clean the rain before it enters the tank.
- ☐ Is ventilated to accommodate pressure changes when water enters or exits the tank. Larger vents increase the oxygen supply to the stored water.
- ☐ Has properly sealed openings, inlets and outlets to prevent mosquitoes, rodents, groundwater, and other sources of contamination from entering the tank.
- ☐ Has been freeze-protected at exit fittings and water entries.
- ☐ Is not installed in the path of surface water runoff.
- ☐ Is not installed in a concave area where water could collect around the base and compromise its foundation.
- ☐ Is not (especially if constructed of a lightweight poly material) installed in an area prone to high winds, which could topple an empty tank.
- ☐ Is sitting on a tank pad or foundation that is capable of supporting the cistern when full (water weighs 1 kg per litre, or 10 pounds per imperial gallon). The pad should consist of a compacted soil layer, covered by a level layer of sand so that the tank load will be distributed evenly. The sand layer should be smooth, containing no sharp

objects that could puncture the tank. While the underlying soil layer will shift, swell, and shrink, the sand will help to absorb this movement. Engineering approval may be required for tank pads located on steep or unstable sites, or for underground tanks in areas with high groundwater.

TANK SAFETY CHECKLIST

Rainwater Harvesting tanks and systems may pose a danger to children or property. They also qualify as a confined space, as the air inside may be oxygen deficient. Please keep safety top of mind and ensure that the tank:

- ☐ Clearly displays the label DANGER — CONFINED SPACE. NEVER enter a tank. There are specific guidelines for entering a confined space, and only those with specific qualifications, training, and equipment should do so.
- ☐ Is fitted with safety devices or locked lids to prevent tampering or unintended entry, especially if it is large enough for a child to fit inside and drown. As an added precaution, do not leave a ladder where it could provide easy access to the roof of the tank and inspection hatch.
- ☐ Is never left open and unattended.
- ☐ Never contained a toxic substance, and that the interior surface of the tank is CSA or NSF approved for potable water
- ☐ Is certified by the manufacturer for its intended application

Variances to the standards noted in either the Tank Installation Checklist or the Tank Safety Checklist are noted as follows:

These variances were approved in the pre-application form submitted prior to acceptance to the rebate program:

YES NO



Evaluation: ACRD Water Harvesting Rebate Program (Residential Users)



ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

Thank you for having participated in the ACRD Rainwater Harvesting Rebate Program.

A monitoring and evaluation program will help us to improve the program and assess it against its intended outcomes. Rebate recipients are required to complete the following form within one year from the date of installation or after the system has been installed for one full summer season (whichever is later).

Applicant Information

Property Owner Name _____

Street Address _____ Postal Code _____

Phone Number _____ Email Address _____

Address of Installation (if different from above) _____

Water Savings

How many weeks of additional irrigation were you able to supply your garden from the cistern?

Please describe _____

Approximately how much water was remaining in your cistern on July 1 and September 1 of the previous year _____

Do you believe the cistern resulted in a significant reduction the cost of supplying water to your garden? YES NO

Have you implemented any other water conservation measures in your garden? Please describe _____

Food Producing Activities

Did your food production increase due to the installation of a rainwater harvesting system?

Please describe. _____

System Design and Functionality

What were the benefits and drawbacks to the particular system you installed? Please share any lessons learned about system design, installation, or maintenance? _____

Public Education

Have you participated in any events or discussions where you were able to educate other residents about your rainwater harvesting system design, installation, or maintenance? Please describe. _____

Thank you!

Signature _____ **Date** _____

Applications may be dropped off or mailed to:

Water Harvesting Rebate Program
Alberni-Clayoquot Regional District
3008 5th Ave, Port Alberni, BC
V9Y 2E3

Appendix 5: Commercial Rebate Packet



Application: ACRD Water Harvesting Rebate Program (Commercial Users)



This pilot program applies to owners of commercial agricultural properties within the Alberni-Clayoquot Regional District. Participants are eligible to receive a rebate for up to 50% of project cost, according to the following table. Please see Appendix 1 for a more thorough description of acceptable projects.

Technique	Limitations	Maximum Rebate
Cisterns	Minimum 5000 gallons	\$2250
Earthworks	May require professional design	\$2250
Compost/Compost Product Application	Must be tested	\$600 + \$80/acre

This the Pre-Approval Application Form, which must be submitted, along with relevant documentation, prior to May 1 of each year. A minimum of 2 rebates will be considered in 2018, 2019, and 2010 and will be vetted through the ACRD's Agricultural Development Committee.

Successful applicants will be notified via a letter, and must complete the installation and submit the final form (link) and receipts within 8 months of the date of the letter. All applicants must agree to submit a monitoring and reporting form (link) annually. All rebates are subject to onsite inspection or verification. Please see the ACRD website (link) for more details

Applicant Information

Property Owner Name _____

Street Address _____ Postal Code _____

Phone Number _____ Email Address _____

Address of Installation (if different from above) _____

Description of System

Stream 1: For Cisterns: Include tank size, make, and model; location of installation; roof area; other components including debris filters and traps; details about tank bedding or foundation; estimated system cost; and installation procedures:

Note: Any variation from the standards outlined in the Tank Installation and Safety Checklists (link) must be listed here and pre-approved or you will be ineligible to receive a rebate.

Stream 2: For Ponds, Dams, or Earthworks: Describe details as to method, site overview, design, installation procedures. Attach sketches, photograph, and other reference material.

Note: All projects must comply with the Water Sustainability Act of BC (WSA). Professional design is desirable and may be deemed mandatory for some projects. Educational programs which result in a student-drafted design are an eligible expense. See Appendix 2 of this application for resources.

PERSON OR AGENCY ASSISTING WITH REGULATORY AND DESIGN SUPPORT		
Name	Description of support and/or role	Contact Info

Stream 3: Compost or Compost Product Applications: Describe, in detail, the method of production and application of compost or compost tea as well as any suppliers, consultants, testing laboratories, and the total acres and crop types to which application will be delivered. Attach sketches, photograph, and other reference material.

Note: Compost and Compost Teas must be tested at a lab and demonstrated to be of high quality. See Appendix 3 of this application for resources and testing instructions.

Assessment Criteria

Application vetting process will favourably weigh those projects where:

- There are opportunities for public participation or education (such as through an installation workshop, community demonstration, or participation in an edible garden tour)
- There is professional-assisted design and/or installation
- There are other water conservation techniques being used on the site
- There is a high potential for increased production or reduction of ground water draw.

Description of agricultural activities (Farm size, crop types, livestock, gross sales, etc), other water conservation strategies, community education potential, other relevant info:

I have read and understood the program policy and procedures provided on the ACRD website and;

For Cisterns: the Nanaimo Regional District's Rainwater Harvesting Best Practices Guidebook (link) , particularly pages 5-7 (planning and professionals) and pages 73-82 (operation, maintenance, and safety)

For Earthworks: Appendix 2 of this application and the resources listed there-in, particularly [BC Farm Practices and Climate Change Adaption - Water Storage](#), [BC Farm Water Dugouts](#), [Ministry of Agriculture](#), [Water Sustainability Act of BC](#), [Water Harvesting Manual](#)

For Compost/Compost Teas: Appendix 3 of this application

NO YES

I understand that the Alberni-Clayoquot Regional District is not responsible for the installation, treatment, operation, or maintenance of the rainwater harvesting or storage system, or any damages resulting thereof:

NO YES

I will complete the full installation and submit required documentation (Receipts, Step 2 Form, and Tank Installation and Safety Checklists where applicable) within 8 months of receiving a letter of acceptance to the program:

NO YES

I have enclosed photos and design sketches of the specific location where the system is to be installed as well as any other reference material:

NO YES

Signature _____ **Date** _____

Applications may be dropped off or mailed to:

Water Harvesting Rebate Program
Alberni-Clayoquot Regional District
3008 5th Ave, Port Alberni, BC
V9Y 2E3

Appendix 1: Description of General Project Types and Rationale

Farmers recognize the importance of achieving water security on their properties in order to maintain production. This can be achieved using a wide variety of strategies, from simple low cost approaches, such as passive rainwater collection, compost and compost tea or extract applications, to more sophisticated and costly systems which include large cisterns or ponds for storing the collected rainwater.

Large Cisterns - Large cisterns are ideal when coupled with large roof area found on most barns or agricultural outbuildings, as large roof areas have an increased ability to collect water when it rains. 1 square meter of roof area x 1 mm of rain = 1 litre of water. Large cisterns provide an excellent source of water for livestock or nursery operations but tend to be too small for larger irrigation applications.

Compost and Compost tea or extract applications - Compost or compost tea/extract is a simple low cost approach to improving agricultural soils. Science has shown us that soil biology drives nutrient cycling within soils as well as improving soil texture and water holding capacity. A 1% increase in organic matter over one acre of land will allow soils to absorb and hold onto an additional 75,000 litres (20,000 gallons) of water which in helps to reduce the effects of drought.

Ponds - One of the most common water storage structures for holding large volumes of water. These have a much lower cost per gallon to store water versus a cistern but because of their typical size they often come with a substantial cost and may require engineering. Water licensing may also be required depending on where the source of water originates.

Keyline Systems - This system was developed in Australia in the 1950s as a strategy to slow down, spread, and sink water throughout a property. It analyzes the natural contours of the land within a specific design process and uses a Yeomans plow to break up compacted soils along prescribed 'keylines', with minimal disturbance to the soil surface. There is a Yeomans plow on Vancouver Island which is available for contract.

Passive rainwater harvesting - This is probably the easiest and lowest cost approach to harvesting rainwater. This strategy takes advantage of run off from hard and soft surfaces with the intent of slowing down the movement of water within a site. This slower movement of water increases the opportunity for the water to infiltrate and be stored within the soils for later use. When one inch of rain falls onto a farmers access road (500' x 12'), this road captures approx. 14,000 litres of rainwater. Water flowing off this road can be slowed and stored within surrounding soils or sent to a larger holding structure such as a pond. Roads and other hard surfaces can be integrated into an overall water farm plan.

Appendix 2: Resources for Earthworks Projects

Regulatory Requirements

The Water Sustainability Act (WSA) was adopted in 2016 to ensure a sustainable supply of fresh, clean water for British Columbians, today and in the future. It is the principal law for managing the diversion and use of water resources, and includes the regulatory requirements for licensing and use of groundwater, streams, and dams, and other water resources.

Generally, if water is diverted from a stream or groundwater for a pond, a water license is required. If it is filled with surface water run-off or snow melt, it does not require a license. However, the context and definition of terms is important, and thus ***referencing the WSA is an important step when planning any surface or ground water initiative.***

Other Resources

- Passive Rainwater Harvesting: <https://www.harvestingrainwater.com/store/volume1/>
- Regrarian farm design course: Online course which results in a student-drafted full farm design. <http://rex.farm/>
- Topographic data: Lidar data or simple elevation data can be accessed via Contour curator <http://contourmapcreator.urgr8.ch/>
- Information and evaluation of various farm water storage practices: [BC Farm Practices and Climate Change Adaption - Water Storage](#)
- Information about pond design: [BC Farm Water Dugouts, Ministry of Agriculture](#)
- [The Water Sustainability Act of BC](#)

Passive Rainwater Harvesting

Passive Structures

- Start harvesting at top of watershed and spread water throughout site
- Start at top elevation of site
 - Slow, spread, and infiltrate water in small increments at multiple locations
 - Work on shallow slopes; avoid steep Use existing topography or regrade
 - On flat landscapes, use multiple structures to harvest direct rainfall
 - On undulating landscapes, construct structures in low areas and on gentle slopes
 - Harvest soil, detritus, seeds, water
 - Integrate passive and active design



General Information and Guidance: Swales

Swales are an example of a very simple and cost-effective farm-scale passive rainwater harvesting system. Swales work best where there is some slope, but need suitable engineering where there is a steep slope. A system of swales can be initiated on a small scale and then expanded on in the future. Source water can come from a road, pathway, a roof, or runoff from a parking area.

Planning steps for installation of a swale or swale system:

1. Calculate the potential catchment area which is uphill from your proposed swale.
 - Plan or design your swale to handle peak flows from the source or catchment area.
 - 1 meter of area + 1mm of water = 1 litre
2. Plan an overflow or level spillway to deal with excess water. In some situations you can introduce some simple devices to keep your swale's water level low during winter months.
3. Mark out your swale on the ground using irrigation flags which represent the top edge of the cut, these will remain in the ground as the machine (excavator, tractor) makes the cut.
The swale should be on contour (ie: level across the landscape). You can use several methods to take elevation measurements including an optical leveller and laser level.
4. Caution should be exercised during wet weather, swales are ideally constructed during dry weather to minimize erosion and damage to surrounding soils.
5. If you're going to create a mound with the displaced soil from your swale, place it downhill from your excavation. You'll want to establish a cover crop on this as soon as possible. In the long term trees, shrubs and perennial crops can be added and these will benefit from the stored water.
6. Cover crop your planting mound right after the machine work is complete and apply a thin layer of mulch like straw or hay.

Application Guidance: Swale Systems

- With your application form, include a site photo and a design that is to scale (either hand drawn or computer aided), showing the property lines, structure locations, basic slope or topography, significant infrastructure such as wells and septic fields, proposed swale location and uphill catchment area.
- Calculate peak flows from catchment using the following formula in metric: length x width x the storm flow in mm. Example we have a parking lot 20x30 meters or 600 sq meters. In this example will use a storm rating of 32mm of rain in one hour, $600 \text{ sqm} \times 32\text{mm} = 19,200$ litres of run off.
- In the example below we have a 6' (1.828 meters) wide swale that is 1.5' deep (.457 meters) at it's maximum depth. Over a length of 30M we find the total swale catchment is 16.59 cubic meters or 16,590 litres, if we allow the swale to totally fill. With this in mind our swale maybe undersized based on the potential catchment, we recommend allowing for at least an additional 40% swale capacity for future increase in storm surge potential. Also consider the max height you wish water to reach within your swale and plan your overflow and calculations accordingly.

Application Guidance for Earthworks: General

- Machine and operator costs are an eligible expense.
- Educational programs, which result in a student drawn design with oversight by an instructor, are an eligible expense.

Appendix 2: Resources and Testing Instructions, Compost Products

Several steps are required, as follows, to qualify for reimbursement for compost, compost tea, or compost extract application under this rebate program. This includes a minimum of 3 laboratory tests.

1. A soil sample from an area in your operation that your trying to improve must be taken, and send to a lab for testing, noting the type of crop you are growing. *Contact a lab which offers **biological** analysis of your soil, such as Docterre in Quebec, and follow their soil collection methods for best results.*
2. A sample of compost that you hope to use in your soil amendment application must be sent to the lab as well.
3. Once you have received the test results, recommendations will be made on what types or kind of soil biology will be needed to maximize the planned improvements to your growing area and whether the compost you plan to apply has the biology you want
4. Apply compost, compost tea or extract to the area based on test recommendations, which will quote ideal application rates.
5. After two-three weeks take another soil sample from the crop area and send this in for testing to compare the improvements made and determine if another application is required.

General Rationale and Information

- Test results/recommendations will help the farmer develop a strategy for applying compost or compost tea/extract.
- Testing is the only way, under this program framework, to ensure that soils are benefiting from this application.
- High quality or diverse compost can typically be applied at 1 ton per acre. Lower quality or less diverse composts will have to be applied at greater rates.
- If high quality compost is in short supply then the use of compost tea or extract is an option. However, these processes are very tricky and require microscopic analysis to ensure the suitability of biological content.
- Compost extract is a simple method of extracting the biology from the compost and suspending it in water, which is then applied to the soil.
- Compost tea is a similar process, but after the extraction process food is added to the extract in order to increase the soil biology population.

Resources

- DOCTERRE - Soil Testing Lab
 - (514) 781-8152
 - lab.docterre@gmail.com
 - https://www.facebook.com/agriculturesolvivant/?fref=pb&hc_location=profile_browser
- Online Education: <https://www.environmentcelebration.com>
- Online Education: <https://www.lifeinthesoilclasses.com>
- Online Education, soil samples: <https://www.youtube.com/watch?v=H8CCIDH7jW0>

Quick Guide to Making Quality Compost

Compost is a product of the aerobic decomposition of organic matter.

Good compost includes high level of diversity of Bacteria and Fungi. This is achieved via the different ingredients or foods used to create it.

Three different approaches to getting the job done...

1. **Hot or Thermal composting:** We keep temperatures high but not over 165 F / 74C
2. **Worm or Vermi-compost:** A cold or cool process, raising worms in a high moisture environment (around 70% moisture)
3. **Static compost:** Heat is uneven. These piles can become anaerobic and take longer

Compost components

10-20% High nitrogen: Animal manure, meat, seeds, and legumes

30% Greens (bacteria food): Any plant material that is green when harvested, including hay

50-60% Woody (fungal food): Wood chips, old hay, leaves

Other critical items to note:

- Materials must have a 50% moisture content. Soak dry materials in water overnight before you create a new compost.
- Air flow must be maintained to support the microbial activity. Avoid using fine woody material, wood chips 1" in size are ideal.
- Use old fencing as an enclosure for your active compost to ensure that the outside surfaces of your compost have access to air. It's an inexpensive and simple approach.
- Only turn your compost once it reaches 165F or 74C. Turning a pile damages fungal growth which is often what is lacking in our soils.
- Turn your pile so that the cool outer edges end up in the center or middle, while the hot middle ends up on the outside of the pile.
- Why do we heat a pile? To kill pathogens and undesirables like weeds, plant diseases, insect pests, and E-coli or other unwanted bacteria.
- Temperatures need to stay above 131F for three days, above 150F for 2 days, or above 165F for only one day to kill all pathogens while maintaining the beneficial organisms.
- How do you measure temperatures? With a compost thermometer. It must be long enough to reach the middle of your pile so often this would be 3-4' in length.



How to simply test your own compost (generally, not for rebate purpose)

- Place a cup of compost into a cheese cloth or t-shirt
- Slowly pour around four cups of water through the compost and collect this in a bowl or mason jar.
- Observe the colour, if the colour resembles 70% dark chocolate, and after leaving the jar for some time the colour is consistent (not much settling), you can assume that this material is humic acid (shown on the right hand side of this image). A great sign of compost health.
- Yellow or golden water is most likely fulvic acid, good but not as good. This liquid came from a purchased vermi-compost.
- Home made compost is generally more diverse and better quality than expensive store bought products.





Step 2 Form: ACRD Water Harvesting Rebate Program (Commercial Users)



ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

This form is to be used by pre-approved commercial agriculture applicants who have completed installation of the Rainwater Harvesting or Storage System. It must be submitted, with receipts, tank checklists (where indicated), and photos or final drawings, within 8 months of the date of the letter of project approval. All rebates are subject to onsite inspection or verification. All rebate program participants are required to complete an evaluation form (link) within one year of installation. Please see the ACRD website (link) for more details

Applicant Information

Property Owner Name _____
Street Address _____ Postal Code _____
Phone Number _____ Email Address _____

Description of System

Address of Installation (if different from above) _____
Contractor/Retailer/Designer _____ Date of Installation _____
Cistern Model and size (if applicable) _____
Cost of Professional Design _____ RECEIPT PROVIDED? YES NO
Cost of Installation _____ RECEIPT PROVIDED? YES NO
Cost of Cistern _____ RECEIPT PROVIDED? YES NO
Cost and Details of Other Components _____

_____ RECEIPTS PROVIDED? YES NO

Checklist For Rebate Reimbursement

- ☐ Receipts
- ☐ Photos of installed cistern showing all connections and system components (if applicable)
- ☐ The completed Tank Installation and Safety Checklists (if Applicable)
- ☐ A lab test and summary of quality of compost or compost tea (If applicable)
- ☐ Photos of installed earthworks and final design schematics (if applicable)

For Cisterns:

Did the installation involve the alteration of indoor plumbing, the installation of a new potable water line, or the alteration of an existing potable water line? Note: These installations will require a building permit and inspection document. Circle: NO YES

Signature _____ **Date** _____

Forms may be dropped off or mailed to:

Water Harvesting Rebate Program
Alberni-Clayoquot Regional District
3008 5th Ave, Port Alberni, BC
V9Y 2E3

TANK INSTALLATION CHECKLIST

The Tank Installation and Safety Checklists must be completed and submitted to receive your rebate. These checklists are based on the Nanaimo Regional District's Rainwater Harvesting - Best Practices Guidebook. Any variances to these standards must have been noted in the pre-approval application form and described at the bottom of this form.

- ☐ Is installed according to the manufacturer's installation instructions, or is certified by a professional engineer.
- ☐ Complies with the B.C. Building Code, and with the administrative policies of your local building department. It may be necessary to obtain certification from a professional engineer, especially if your cistern does not contain the manufacturer's certification.
- ☐ Complies with the setback and zoning regulations of your local planning department.
- ☐ Includes an inspection hatch for servicing and cleaning, and is located to allow clear access.
- ☐ Has an overflow pipe located near the top of the cistern that is of equal or greater diameter than the intake pipe. The end of the overflow must be directed away from the base of the tank and from house foundations, and to an area protected from erosion.
- ☐ Is placed on level ground.
- ☐ Is, if above-ground, opaque, painted, or located within a building to limit the entry of sunlight.
- ☐ Is protected from excessive debris accumulation by the presence of a debris trap and/or filter to clean the rain before it enters the tank.
- ☐ Is ventilated to accommodate pressure changes when water enters or exits the tank. Larger vents increase the oxygen supply to the stored water.
- ☐ Has properly sealed openings, inlets and outlets to prevent mosquitoes, rodents, groundwater, and other sources of contamination from entering the tank.
- ☐ Has been freeze-protected at exit fittings and water entries.
- ☐ Is not installed in the path of surface water runoff.
- ☐ Is not installed in a concave area where water could collect around the base and compromise its foundation.
- ☐ Is not (especially if constructed of a lightweight poly material) installed in an area prone to high winds, which could topple an empty tank.
- ☐ Is sitting on a tank pad or foundation that is capable of supporting the cistern when full (water weighs 1 kg per litre, or 10 pounds per imperial gallon). The pad should consist of a compacted soil layer, covered by a level layer of sand so that the tank load will be distributed evenly. The sand layer should be smooth, containing no sharp

objects that could puncture the tank. While the underlying soil layer will shift, swell, and shrink, the sand will help to absorb this movement. Engineering approval may be required for tank pads located on steep or unstable sites, or for underground tanks in areas with high groundwater.

TANK SAFETY CHECKLIST

Rainwater Harvesting tanks and systems may pose a danger to children or property. They also qualify as a confined space, as the air inside may be oxygen deficient. Please keep safety top of mind and ensure that the tank:

- ☐ Clearly displays the label DANGER — CONFINED SPACE. NEVER enter a tank. There are specific guidelines for entering a confined space, and only those with specific qualifications, training, and equipment should do so.
- ☐ Is fitted with safety devices or locked lids to prevent tampering or unintended entry, especially if it is large enough for a child to fit inside and drown. As an added precaution, do not leave a ladder where it could provide easy access to the roof of the tank and inspection hatch.
- ☐ Is never left open and unattended.
- ☐ Never contained a toxic substance, and that the interior surface of the tank is CSA or NSF approved for potable water
- ☐ Is certified by the manufacturer for its intended application

Variances to the standards noted in either the Tank Installation Checklist or the Tank Safety Checklist are noted as follows:

These variances were approved in the pre-application form submitted prior to acceptance to the rebate program:

YES NO



Evaluation: ACRD Water Harvesting Rebate Program (Commercial Users)



ALBERNI-CLAYOQUOT
REGIONAL DISTRICT

Thank you for having participated in the ACRD Rainwater Harvesting Rebate Program.

A monitoring and evaluation program will help us to improve the program and assess it against its intended outcomes. Rebate recipients are required to complete the following form within one year from the date of installation or after the system has been installed for one full summer season (whichever is later).

Applicant Information

Property Owner Name _____

Street Address _____ Postal Code _____

Phone Number _____ Email Address _____

Address of Installation (if different from above) _____

Water Savings

How many weeks of additional irrigation did your new system supply you with (cisterns, ponds etc), or by how much did you decrease your irrigation needs (compost, key line systems, etc)?

Please describe _____

Approximately how much water was remaining in your system on August 1 and September 1 of the previous year _____

Do you believe the system resulted in a significant increase in your ability to supply water to your crops? YES NO

Have you implemented any other water conservation measures on your farm? Please

describe _____

Production Impacts

Did your agricultural production increase due to the water harvesting or storage system you implemented on-farm?

Please describe. _____

System Design and Functionality

What were the benefits and drawbacks to the particular system you installed? Please share any lessons learned about system design, installation, or maintenance? _____

Public Education

Have you participated in any events or discussions where you were able to educate other residents about your rainwater harvesting or storage system design, installation, or maintenance? Please describe.

Thank you!

Signature _____ **Date** _____

Applications may be dropped off or mailed to:

Water Harvesting Rebate Program
Alberni-Clayoquot Regional District
3008 5th Ave, Port Alberni, BC
V9Y 2E3



Appendix 6: Residential Water Credit Packet

Application: ACRD Residential Producer Water Credit

In 2018, 2019, and 2020, the ACRD will offer credits to significant non-commercial food producers within the ACRD Water Billing Region according to the following;

- Community gardens (more than 3 growers sharing space) with no domestic water use on site will pay a flat fee of \$1/year for use of water
- A \$50 annual credit towards water bills will be available for up to 10 people within the ACRD billing region, with the following stipulations:
 1. They maintain a food production system with a minimum size of approximately 1500 square feet (ie: a full yard). Large fruit trees and ornamental plants are not included unless part of an integrated design or food forest system,
 2. They have proof of water saving techniques already in place (swales, hugelkulturs, cisterns/water collection practices, grey water use, irrigation systems, reusing water, xeriscaping, food forestry systems),
 3. Gardens which are fenced or otherwise secured from wildlife, and
 4. They agree to participate in a monitoring and reporting program.
- The credit will also be available to non-profit organizations who produce a portion of their own food and/or who train clients in food production

This Application Form must be submitted, along with relevant documentation prior to May 1 of each year. Applications are vetted through the ACRD's Agricultural Development Committee.

Successful applicants will be notified via a letter, and water bills will be credited accordingly. All participants are subject to onsite inspection or verification. Please see the ACRD website (link) for more details

Applicant Information

Name _____

Street Address _____ Postal Code _____

Phone Number _____ Email Address _____

Property Owner Information (if different from above)

Name _____

Street Address _____ Postal Code _____

Description of Food Garden

Include size, crops, production methods and any other relevant information.

Description of water conservation materials and techniques in place:

Is the garden fully fenced from livestock and wildlife? (Required) Circle: YES NO

Photos (and sketches where available) included? (Required) Circle: YES NO

Do you have a pool on your property? Circle YES NO

What were your total water overage charges in the year prior to application? (Required)

Please describe any production increases or decreases since last year: _____

Please describe your annual garden costs (seeds, tools, fencing, other): _____

Assessment Criteria

Application vetting process will favourably weigh those projects where:

- Significant food stores are being produced
- There are opportunities for public participation or education (such as through an installation workshop, community demonstration, or participation in an edible garden tour)
- There are other water conservation techniques being used on the site

Applicant's Signature _____ **Date** _____

Witness and Verification (Required)

I certify that the information is true and complete to the best of my knowledge

Name: _____ **Signature:** _____

Occupation: _____ **Date:** _____

Applications may be dropped off or mailed to:

Water Harvesting Rebate Program
Alberni-Clayoquot Regional District
3008 5th Ave, Port Alberni, BC
V9Y 2E3

Appendix 7: Educational Brochures



WATERWISE

Water, too precious to waste.

When it comes to water use the average residence will use 40% of its total annual water consumption within the landscape.

Collect it Today, Use it Tomorrow!

Rainwater:

- Harvesting has been carried out by humans for over 5,000 years.
- Is one of the purest sources of water.
- Falls for free!
- Can be used for potable and non-potable use.
- Can green your landscape and lessen your environmental footprint.
- Promotes self-sufficiency and helps conserve existing water supplies.

Island-wide demand for clean water is growing while supply diminishes.

Cover photo credit: www.jaandesigns.ca

For more information, contact:
Alex Dyer, Planner, Alberni-Clayoquot Regional District

📞 250-720-2700

✉️ adyer@acrd.bc.ca

🌐 www.acrd.bc.ca/av-ag-plan



ALBERNI-CLAYOQUOT
REGIONAL DISTRICT



This Project is made possible with funding from the Real Estate Foundation of British Columbia.

Waterwise practices help reduce water usage in the landscape.

When applied to a landscape you'll see:

- Potable water supply quality and volume is preserved as less water is needed to support the landscape.
- Retaining water in the watershed or ground water will improve the surrounding ecosystem and provide a more resilient local forest ecology.
- Less water means less pumping (whether that is on a community system or well) which in turn leads to less energy use.
- Infrastructure will have less load during peak outdoor usage and will not need to be replaced or upgraded as quickly during periods of community growth.
- Improved landscape performance and yield.
- Reduced water costs.

Be proactive! Drought proof your landscape and lessen your worries about water restrictions.



Photos credit: www.jaandesigns.ca

Waterwise practices

1 Plan or design outdoor space with water usage and passive water harvesting in mind.

Passive water harvesting is a simple method of taking water from any hard surface (roof, road, pathway or patio) and directing it into the landscape. When we apply passive rainwater harvesting techniques we 'slow it, spread it, sink it', and increase the opportunity for the water passing through a site to infiltrate the soil.

2 Improve existing soils structure and water holding capacity.

- Mulch between plants with a 2" layer of straw, grass clippings, compost, wood chips, or other organic matter to protect the soil surface from sunlight, wind, rainfall and subsequent erosion.
- Add a high quality compost to plantings to enhance and encourage the diversity of soil organisms. These are responsible for building soil structure and supplying plants with nutrients. By improving the organic matter content in landscape soils by just 1%, the average city lot increases the amount of water it holds or stores by an extra 5,200 litres of water! When in doubt, add compost and avoid using synthetic fertilizers which harm soil organisms.

3 Be selective of what plants are in your landscape.

Use drought tolerant plants that are suitable for our climate. Select plants that are at their best in warm dry summers, such as those of Mediterranean origin or perennials like Artichoke, Russian Sage or Nepeta. When planning your planting areas, consider the individual plants water needs. Avoid placing dry loving and moisture loving plants next to each other, as one will end up being unhappy.

4 Avoid overhead irrigation and use drip or low flow irrigation where possible.

Improper irrigation techniques and equipment can significantly increase the amount of water you use in your landscape. Drip irrigation, micro spray nozzles and low flow nozzles can decrease your water usage by 30% while maintaining a good level of hydration close to your plants.

5 Make an assessment of your lawn areas, as these tend to be huge water consumers.

Look and see if there are other ground covers that could work as a great alternative. In an appropriate location, clover is an excellent example of a ground cover which requires very little care once it is established. With a bit of research we can break ourselves free of our strong ties with traditional turf grass.

Rainwater harvesting is an ancient method of collecting rainwater and storing it for later use.

Traditionally, this involves harvesting rain from a roof, although in Asia it is common to harvest surface water. Rain collected from a roof is typically sent to the gutters, which then directs the water into a network of piping eventually leading to a cistern or other storage devices.

Benefits of rainwater collection and storage

- Reduces storm water runoff from homes and businesses and reduces wear and tear on taxpayer funded infrastructure (ditches and storm pipe).
- Reduces rainwater run off and increases groundwater infiltration by storing and slowly releasing into the soil.
- Flexible and modular options exist, allowing expansion, reconfiguration, and even relocation. Systems can easily be retrofitted to an existing structure.
- Conserves ground water supplies by reducing peak summer water demands.
- Rainwater is the perfect temperature for plants when stored in a tank.
- The highest quality water for your landscape: Community water systems use disinfectants which have a negative effect on soil organisms. Rainwater is the best source of water for new seedlings and any landscape application.
- In Port Alberni an average size roof (2,000 ft²) will have over 93,000 US gallons of rainfall collection potential in an average rainfall year.



Photo credit: www.jaandesigns.ca



Photo credit: www.jaandesigns.ca

Types of rainwater harvesting

1

ACTIVE

Collecting rainwater from rooftops and storing the water within barrels, underground tanks or lined ponds.

Key components of an active system:

- **Roof surface:** A wide variety of roof surfaces can work well with a rainwater harvesting strategy. Metal roofs offer the highest quality water harvesting potential with cedar shake being the lowest quality choice.
- **Gutters:** Most gutters work well in a rainwater harvesting system, but ensure the gutter has been sized appropriately to handle potential flows from the roof.
- **Downspouts and conveyance pipe:** New conveyance pipe, which is potable rated, is incorporated into the system to transport water from the gutter and downspout to the cistern or storage vessel.
- **Filtration:** A critical component that removes coarse and finer materials before the water enters the cistern. Proper filtration ensures good storage and quality of your water.
- **Storage:** Choices range from small, 50 gallon rain barrels to those over 10,000 gallons and made from polyethylene, concrete, fiberglass and other materials.
- Often a pump is used to deliver the stored water to its destination.

2

PASSIVE

The practice of intercepting and storing water directly in the soil rather than passing it through a storage tank first. Passive structures are porous earthen vessels formed by making depressions in the soil - low tech and no moving parts!

Filter facts

Rainwater collected from roofs contains a wide range of dust, particulates, and other contaminants. The best way to ensure that your water is kept as clean as possible is to provide filtration prior to the water entering the cistern. For drip irrigation, filter your rainwater down to at least 200 microns. Options include:

- Primary debris filters, which remove large debris such as leaves.
- Self cleaning Vortex type pre-filters, which should be inspected annually.
- Tank mounted filters, such as a basket filter which sits inside the cistern lid with a 40 micron 'Tuffy' filter for improved performance.

RAINWATER HARVESTING

Collect it Today, Use it Tomorrow!

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- Is one of the purest sources of water.
- Falls for free!
- Can be used for potable and non-potable use.
- Can green your landscape and lessen your environmental footprint.
- Promotes self-sufficiency and helps conserve existing water supplies.

Island-wide demand for clean water is growing while supply diminishes.

Cover photo credit: www.grooving.com

Water, too precious to waste.

Uses of collected rainwater

Rainwater can be used for nearly any purpose that requires water:

- Landscape irrigation and outdoor use at home
- Stormwater control
- Livestock watering
- Toilet flushing
- Potable water source (with appropriate filtration and design)
- Fire suppression and emergency preparedness

For more information, contact:

Alex Dyer, Planner, Alberni-Clayoquot Regional District

250-720-2700

 adyer@acrd.bc.ca

 www.acrd.bc.ca/av-ag-plan



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FARM-SCALE RAINWATER HARVESTING & STORAGE

Additional resources:

Search the following terms online for some great resources

- The Partnership for Water Sustainability in BC
- BC Farm Practices and Climate Change Adaptation - Water Storage
- BC Farm Water Dugouts, Ministry of Agriculture
- Water Sustainability Act of BC
- Keyline Water Management - Field Research

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Island-wide demand for clean water is growing while supply diminishes.

Cover photo credit: worldagroforestry.org

Water, too precious to waste.

Rain & surface water: Slow it, Sink it, Spread it & Store it!

For more information, contact:

Alex Dyer, Planner, Alberni-Clayoquot Regional District

250-720-2700

✉ adyer@acrd.bc.ca

🌐 www.acrd.bc.ca/av-ag-plan



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Water is a vital component of every agricultural operation. Ground water resources on Vancouver Island are being depleted, and in our drought-subject climate, producers need to adapt and innovate to fully take advantage of our abundant seasonal rains.

Here are some proven techniques which can help create a more resilient farm water system:

1

Active rainwater harvesting

Water is collected from roof structures and stored in large volume cisterns, with overflow directed to other rainwater harvesting structures, which slow the movement of water through the landscape.

2

Passive rainwater harvesting

This is one of the simplest, yet most often ignored, ways to improve water retention on a farm. Land forms capture water flows from roadways, paths, and other hard surfaces and directs it to further landforms, such as swales or ponds. By developing these systems, we are able to hold or slow the movement of immense quantities of water. Planning and design is an important first step in any passive process. Please consult the key regulatory points and reference materials listed within this brochure.

3

Keyline planning

Keyline planning and ploughing are management and implementation tools that use natural landscape contours and a series of soil rips to **slow, sink, spread** and **store** rainwater and **build soil fertility**. Using a detailed contour map, keyline plans also help determine the optimal placement for farm elements such as irrigation ponds, cropping and orchard rows, roads, fences, livestock rotation, etc. Vancouver Island has a Keyline research project underway in the Capital Region.

4

Agroforestry

This integrated land use system combines elements of agriculture (agro) and trees (forestry) in a sustainable production system. The emphasis is on managing the complexity of a farm's ecosystem, and creating functional and bio-diverse systems that balance productivity with environmental enhancement and protection. The forest elements, in part, provide shade, windbreaks, and a temperature moderation in order to reduce the water needs of other agricultural crops.



Credit: jingarcade.com

5

Two-stage ditch design

This system incorporates floodplain zones, called benches, into a ditch by removing the ditch banks roughly 2-3 feet above the bottom for a width of about 10 feet on each side. This allows the water to more area to spread out on and decreases its velocity. Water quality, soil biological conditions, and production capacity increases.

6

Compost and soil biology

There are over 7 billion microorganisms in one tablespoon of healthy soil, but often years of farming have depleted this microbiological life. Through applications of high quality compost and compost tea or extract we can reintroduce soil organisms, leading to better quality soils which have larger water holding capacities. Each 1% increase in soil organic matter helps soil hold 20,000 gallons more water per acre!

7

Hügelkultur

This production technique employs large raised beds constructed from decaying wood debris and other compostable plant materials. Inside the mounds, the huge reservoir of rotting wood acts as a holding sponge for water over extended time periods. The process also helps to improve soil fertility and soil temperature, thus benefiting the plants grown on or near such mounds.



Credit: urbanhomesteadervt.com



Credit: Jan Designs



Credit: Regedale Permaculture

Key Regulatory Points

The Water Sustainability Act (WSA) was adopted in 2016. It is the principal law for managing the diversion and use of water resources, and includes the regulatory requirements for licensing and use of groundwater, streams, and dams, and other water resources.

Generally, if water is diverted from a stream or groundwater for a pond, a water license is required. If it is filled with surface water run-off or snow melt, it does not require a license. Referencing the WSA is an important step when planning any surface or ground water initiative.

Appendix 8: Letter to Province of British Columbia

October 31, 2017
The Honourable John Horgan,
M.L.A., Premier of the Province of BC
PO Box 9041
STN Provincial Government
Victoria, BC V8W 9E1

CC: Ms. Lana Popham, Minister of Agriculture, M.L.A. Saanich South
CC: Mr. Scott Fraser, Minister of Indigenous Relations and Reconciliation, M.L.A. Mid-Island Pacific Rim

Re: Support for UBCM Resolution: B115 - Task Force for Watershed Management

Dear Sirs and Madam:

We represent a diverse group of stakeholders convened by the Alberni-Clayoquot Regional District (ACRD) to make recommendations to government that will support our agricultural producers and work towards implementation of our Agricultural Plan.

Many of our regions's largest producers draw their water directly from the Beaufort Range Watershed, and the integrity of their water supply is being compromised by commercial activities taking place on private lands within that watershed. This committee therefore reiterates the request made to the Province in the Central Kootney Regional District's UBCM Resolution: B115 - Task Force for Watershed Management, that *the Province create a task force to consult with local governments to determine their concerns on consumptive watershed management.*

The ACRD has a documented history of contraventions to the Private Managed Forest Land Act. Four of the 11 'Determinations' of the Private Managed Forest Land Council relate to forestry activity on the Beaufort Range. The impact of poorly executed forestry operations on producers range from the forced relocation of a home due to a landslide, to damaged irrigation systems and roadways, and foreign injection of herbicides, rocks, and debris into irrigation systems.

The Water Sustainability Act (WSA) aims to ensure a sustainable supply of fresh, clean water that meets the needs of B.C. residents, but it does not adequately address quality issues when exceptions are allowable under section 46 of the Forest and Range Practices Act, and these exceptions, particularly section 46(1)b referring to weather and site factors, are repeatedly taken advantage of. In 2008, the ACRD sponsored a UBCM resolution requesting that private lands in the area be managed to the same standards as public lands. In 2014, 2015 and 2016 the UBCM requested regulations that would establish an increased local role in manners pertaining to their watershed.

The Province must establish an avenue whereby local governments maintain some authority to manage the use and activities within their community's watersheds. Agriculture depends on safe and reliable water sources. The ACRD welcomes the opportunity to participate in a Watershed Management Task Force, with the specific objective of better supporting the region's agricultural industry and stakeholders. We look forward to receiving your timely response to this letter and to Resolution: B115.

Sincerely,

The ACRD Agricultural Development Committee