

April 22, 2022

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OKANAGAN TO BENEFIT FROM SEVERAL WATER PROTECTION PROJECTS

Kelowna, B.C. – As the Okanagan continues to grow, and the impacts of climate change continue to challenge the availability of sufficient clean water in the region, the Okanagan Basin Water Board has announced funding for several projects to help address these issues.

“By protecting the waters we have and finding better ways to do this, our valley will be in a much better position to weather whatever comes our way – flooding, drought, and wildfires,” explained James Littlely, OBWB’s Operations and Grants Manager.

In all, the Water Board (OBWB) approved \$350,000 in funding to 15 projects through its Water Conservation and Quality Improvement (WCQI) Grant Program.

One innovative project funded this year, is City of Kelowna’s “Snow Storage Location Risk Assessment.” Currently, the city stores urban snow at four locations with various conditions (e.g. paved/unpaved, connected/not connected to city storm sewer, close/not close to environmentally sensitive areas). The city proposes to sample the four sites for pollutants like metals, tire-derived contaminants, and more, which could harm surface water, groundwater and soil. The study will also include recommendations that will be shared with other Okanagan local governments. “This could be an easy win for water,” noted Littlely.

Another project funded this year is the Town of Spallumcheen’s “Source Water Quality Sampling in Deep Creek.” Historically, this stream has been heavily stressed due to agricultural production and run-off. This project will sample water quality at various sites along the creek before and after spring melt and also sample for aquatic invertebrate diversity to measure ecosystem health. The township will also work with each landowner to fine-tune prescriptions to address water health. Instead of using enforcement and compliance, the board noted that this project focuses on working collaboratively with people to protect the water in their backyards and on their farms, helping ensure better water quality as it flows south through the rest of the valley.

Another project, which was granted a second year of funding, is “Assessing Microplastics in Okanagan Lake” by Seven in the Ocean. Last year, phase one of the project sampled surface waters in Kelowna and at the Kelowna Wastewater Treatment Plant (WWTP) and discovered microplastics. Phase 2 will expand sampling on Okanagan Lake and include sub-surface water and sediment sampling in Vernon, Kelowna, Peachland, Summerland and Penticton, as well as continued water sampling at Kelowna’s WWTP. The goal is to gather enough data to inform strategies to reduce microplastics in the environment. “As we try to reduce plastic pollution it’s important to understand the scope and the source of the problem, helping drive solutions to address it,” Littlely said.

Since the program began in 2006, and with this latest award of 15 grants worth \$350,000, the board has now provided 315 grants to Okanagan non-profits, First Nations, local governments and irrigation districts, worth more than \$5.47 mill. in total. These projects have had combined budgets of over \$37.5 million going toward water improvements in the Okanagan.

For a full listing of this year's funded projects and more information on each, please see below. For more information on projects funded over the past 16 years, visit our WCQI database at https://www.obwb.ca/wcqi_project/.

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WATER CONSERVATION AND QUALITY IMPROVEMENT GRANT AWARDS – 2022

	Number of Applications	Total Requested	Total Available
Totals	15	\$377,376	\$350,000

Organization	Project	\$ Awarded
City of Kelowna	Snow Storage Location Risk Assessment	\$ 12,800.00
District of Lake Country	Okanagan Lake Source Protection Plan	\$ 30,000.00
Mission Creek Restoration Initiative	Mission Creek Monitoring and Restoration Initiative	\$ 26,500.00
Okanagan Collaborative Conservation Program	Developing the siw4k ^w (Water) Responsibility Plan	\$ 30,000.00
Okanagan Collaborative Conservation Program	Assessing wetland inundation patterns and climate vulnerability for policy	\$ 30,000.00
Town of Oliver	Water Smart Ambassador – Building sustainable futures for community	\$ 25,306.00
Okanagan Nation Alliance	nlux ^w lux ^w 4cwix (lower Trout Creek) Restoration Year 1	\$ 10,285.00
Okanagan Nation Alliance	Groundwater – stream exchange on alluvial fans of the Okanagan Valley – Phase 2	\$ 29,985.00
Okanagan Similkameen Stewardship Society	Community engagement in riparian stewardship and yellow flag iris management	\$ 20,000.00
Regional District of Okanagan Similkameen	A Baseline Study of the Cryptosporidium levels in Okanagan Lake	\$ 13,500.00
Seven in the Ocean	Phase II: Assessing Microplastics in Okanagan Lake	\$ 29,800.00

Township of Spallumcheen	Source Water Quality Sampling in Deep Creek	\$ 22,824.00
Sqilxw Apna Society	N'sis'ooloxw Project and Recovery	\$ 29,000.00
District of Summerland	Decommissioning of Eneas Dam Consequence Study	\$ 20,000.00
District of Summerland	Decommissioning of Tsuh Dam Consequence Study	\$ 20,000.00
	Total	\$350,000.00

Project Title:	Developing the siwłk ^w (Water) Responsibility Plan
Organization:	OCCP (Okanagan Collaborative Conservation Program)
Project Goals:	<p>The tkłúsxñítkw (Okanagan Lake) Responsibility Planning Initiative (OKLRPI) emerged in response to the Okanagan Lake Foreshore Inventory and Mapping reports that identified large scale loss of natural areas around the lake and has expanded to address cumulative impacts of resource extraction activities in the Okanagan watershed and syilx territory. The initiative's planning process has incorporated a syilx water responsibility planning methodology that has created an ethical space where syilx and non-syilx partners can share values and perspectives</p> <p>for identifying solutions for social equality and greater environmental protection for the water and the land. The initiative is co-led by OCCP, the Okanagan Nation Alliance, the Regional District of Central Okanagan, the BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development, and UBC. In 2022, the initiative will complete a series of workshops and interviews to gather syilx and non-syilx perspectives and key actions for developing the first siwłk^w (Water) Responsibility Plan.</p>

Project Title:	Assessing wetland inundation patterns and climate vulnerability for policy
Organization:	Okanagan Collaborative Conservation Program
Project Goals:	<p>This research and mapping project will use remote sensing data and climate change modelling to enhance our understanding of wetland seasonal inundation patterns in the Okanagan region. This information is currently lacking for individual wetlands in the Okanagan and is critical to properly assess and prioritize conservation and restoration efforts. By understanding how wetland inundation changes in response to climatic conditions, future climate change impacts on wetland and water body permanence can be inferred. Through an existing working partnership of local governments, provincial agencies, indigenous communities, and UBC researchers, this project will identify and prioritize the wetlands that are most likely to withstand the impacts of climate change and exist over time and identify policies, regulations and co-management agreements to protect these wetlands.</p>

Project Title:	nlux ^w lux ^w łcwix (lower Trout Creek) Restoration Year 1
Organization:	Okanagan Nation Alliance
Project Goals:	<p>nlux^wlux^włcwix (lower Trout Creek)'s water quality and fish and wildlife habitat are negatively impacted by channelization and confinement. The creek's lower reaches and Okanagan Lake are also heavily impacted by a perpetual slide in the canyon ~7 km from the creek's mouth which contributes a significant amount of fine sediments year-round. The multi-agency Trout Creek Restoration Steering Committee is collaborating to restore the mainstem river and floodplain habitat of the lower 2 km of Trout Creek, in order to reduce the sediment load into</p>

	Trout Creek's lower 2 km and Okanagan Lake, and restore the self-sustaining, diverse fish and wildlife habitat which once existed in nluxwluxw4cwix (lower Trout Creek). These habitat restoration efforts complement the District of Summerland's ongoing efforts to mitigate the perpetual slide and primary source of sediment inputs. We expect planning and construction to occur over multiple years. The current proposal is for Section 1, Year 1 construction activities (in Reach 2, between canyon and Highway 97 Bridge).
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Project Title:	Okanagan Lake Source Protection Plan and Wildfire Threat Assessment 2022
Organization:	District of Lake Country
Project Goals:	This project will provide DLC with a Source Protection Plan for their Okanagan Lake Intake and monitor the effects of the devastating White Rock Lake Wildfire on the North Basin of Okanagan Lake. Using the OBWB Source Water Protection Toolkit, DLC will update their 2010 Source Assessment using recent north basin studies, including those conducted by DLC in 2020/2021, to develop their Source Response Plan. Prior research by DLC and BC ENV lowers project costs, expedites the delivery timeline, and enhances the understanding of source water quality trends. DLC's north basin studies concluded prior to the wildfire provide a unique opportunity for a BACI assessment of the immediate threat to the North Basin posed by the White Rock Lake Wildfire. Other research determined that there is high risk of watershed failures in the multiple burned watersheds (Clarke, 2022). This monitoring will also provide an early warning of degraded creek plumes that will be shared promptly with other water suppliers in the north basin including RDCO, RDNO and OKIB. The Source Protection Plan will enable DLC to enact policy and to advocate for basin-wide source water quality protection.

Project Title:	MCRI Monitoring and Restoration Planning
Organization:	Mission Creek Restoration Initiative (MCRI)
Project Goals:	This 2022/23 project application marks the final year of this 3-year initiative. This year's phase will continue monitoring a series of fish/fish habitat parameters according to standard methodology to assess habitat quantity and quality, and associated fish utilization over time. Continue monitoring stability and functionality of restoration structures as well as channel geomorphic conditions according to established flood protection standards and restoration objective. Contribute to MCRI Phase 2 habitat conservation and restoration implementation for lower Mission Creek. This year's focus is on development of an engineered design for restoring a priority reach as directed by the Plan. Continue utilizing a MCRI Coordinator to ensure all aspects of Phase 1 and Phase 2 related project planning/delivery, and MCRI Steering Committee function are managed to provide maximum benefits. Continue outreach and communication services to highlight MCRI and supporting organizations over the long term, this project will be an important contributor to Mission Creek ecosystem recovery, improvements to flood protection, water quantity and quality, and increased economic, recreational, and cultural benefits.

Project Title:	Phase II: Assessing Microplastics in Okanagan Lake
Organization:	Seven in the Ocean
Project Goals:	This project will expand on the 2021 microplastics scoping study ("Phase I") and quantify microplastic abundance from North to South and subsurface. Initial results from Phase I suggest that microplastics are indeed present in the Lake, but more evaluation is needed to quantify abundance throughout the lake - from surface to sediment. This project ("Phase II") will expand sampling efforts to include more areas of the lake including sub-surface as well as sediment sampling. Phase II will also continue its work with the City of Kelowna's Wastewater Treatment Facility to gather more data on microplastic abundance in treated wastewater, as well as incorporating biosolids to the sampling protocol. Establishing localized sampling and analysis protocols will allow this project to be replicated over time, with the goal of gathering enough data to inform mitigation strategies. These data will also

	inform communication strategies to the public on actions individuals, homeowners, corporations and local governments can take to reduce microplastic shedding into the environment.
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Project Title:	Groundwater – stream exchange on alluvial fans of the Okanagan Valley – Phase 2
Organization:	Okanagan Nation Alliance
Project Goals:	Surface flows across alluvial fans are required for fish to access spawning and rearing habitat at key times throughout the year. In the Okanagan, critical times for fish passage align with natural low flow periods and in the summer and fall, irrigation demand. In many systems, groundwater maintains flow in streams during these low flow periods when precipitation is also low. One of the critical knowledge gaps identified in the recent Environmental Flow Needs Project completed by ONA and the OBWB is the extent of water exchange between surface streams and adjacent groundwater on alluvial fans throughout the Okanagan valley. ONA aims to address this knowledge gap by identifying hydraulic connectivity between streams and alluvial aquifers, and, for a select critical creek, estimating the volumes of water exchanged, using desktop and field-based methods. In Phase 1, ONA explored the usefulness (and limitations) of various techniques for observing the direction and magnitude of surface water – groundwater exchange in winter flow conditions on Shingle Creek. Phase 2 of the study proposes to extend observations and analysis throughout the hydrologic year, to assess methods that specifically assess the role of the streambed in moderating the exchange, groundwater age, and to interweave Traditional Ecological Knowledge with the up-to-now Western science approach. The methods tested may also be applied to identifying source waters and hence source water protection of aquifers connected to streams in similar environments.

Project Title:	N'sis'ooloxw Project and Recovery
Organization:	Sqilxw Apna Society
Project Goals:	Sqilxw Apna aims to restore the N'sis'ooloxw Creek riparian strip to that of a functioning living system of prospering vitality with and alongside the Sqilxw people of the North Okanagan Syilx. This recovery project phase emerges as an opportunity to respond directly to the wildfires of 2021. The goal of this phase encourages restoration, from initial assessments to the reintegration of a diversity of plant species, to empower Sqilxw agency and build community capacity, and to inspire young people to take up larger roles in the site's future promotion and preservation. By concentrating new planting densities, we expect the N'sis'ooloxw riparian zone to go through rapid forest system succession, protecting the water source's natural biofiltering capacity, drought tolerance, fire resilience, and pest resistance found in established old growth forests. This project addresses Sqilxw climate action goals of holism in siwłkw (water) relations by enacting Sqilxw protocols, knowledge, ethics, eco-ethnography and relational kinship building, aimed at reconnecting Sqilxw Elders, youth and families to Sqilxw territory, meaningfully.

Project Title:	Snow Storage Location Risk Assessment
Organization:	City of Kelowna
Project Goals:	Urban snow is exposed to contaminants from snow maintenance practices and traffic activities. Snow storage locations have the potential to contaminate surface water, groundwater and soil. Contaminants such as metals and suspended solids can be several orders of magnitude higher in snowmelt opposed to stormwater runoff. There are currently four snow storage locations that the City uses and with varying characteristics; characteristics include paved/unpaved, connection/no connection to the City storm system, vicinity to environmentally sensitive areas, etc. The goal of the study is to provide an overall risk assessment of snow storage locations specific to the Okanagan region. The study would involve sampling the four snow storage locations during the snow storage months and when the snow piles are melting for contaminants such as metals, PAHs, and tire- derived

	contaminants. The risk assessment would be applicable to other municipalities and privately owned snow storage locations. Recommendations on treatment or site improvements will also be included. The outcome of the study is to assess the environmental impacts of the City's urban snow storage locations, create an Okanagan-based risk assessment formula, and provide treatment options.
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Project Title:	Community engagement in riparian stewardship and yellow flag iris management
Organization:	OSSS
Project Goals:	<p>The first goal of this project is to maintain consistent public engagement in riparian, wetland and water stewardship and conservation, to encourage people to take action for water and riparian conservation. The second goal of this project is to engage local residents in a strategic management of yellow-flag iris infestations, restoring riparian habitat within Eneas Creek. Approximately 85% of riparian and wetland areas in the Okanagan have been destroyed due to urban and agricultural development. Yellow-flag iris was introduced to North America as an ornamental plant and now invades riparian areas and wetlands throughout the Okanagan. It spreads through seeds, horizontal roots, and pieces of roots can break off and form new plants. These plants form a thick, monoculture mat that reduces biodiversity, damages wildlife habitat, causes flooding and displaces native trees and shrubs.</p> <p>Residents face many barriers to undertaking conservation action on their properties that can be boiled down to time, money, and skill. Without support, landowners are very unlikely to apply for the permits/notifications required to manage invasive plants in their riparian areas. Further, large patches of yellow-flag iris are best controlled with benthic barrier, which requires specialized knowledge to install properly. This project also engages the community as the creek is a vector for invasive plants and as such, managing from upstream to down in a community coordinated manner is more strategic and will have more success.</p>

Project Title:	Source Water Quality Sampling in Deep Creek
Organization:	Township of Spallumcheen
Project Goals:	<p>This project will collect water quality samples at 10 stations along Deep Creek within the Township of Spallumcheen to assess the health of Deep Creek. In addition, three samples will be taken in Otter Lake, one at the inlet, one at the outlet and one in the deepest location. Parameters to test for include Ammonia nitrogen, Nitrogen-nitrates, phosphates, pH, conductivity, turbidity, dissolved oxygen, and water temperature. This list may be expanded as needed. The location of each water quality sample will aid in sourcing nutrient loading locations in addition to fine tuning the prescription for each landowner (conducted in a separate ongoing stream rehabilitation project with the Township of Spallumcheen). In addition, the project will sample the quantity and diversity of aquatic invertebrates at specified locations within Deep Creek. At present, seven sampling locations are proposed for Deep Creek. The tolerance quotient of aquatic invertebrates can be used as an indicator of water quality. Identifying the number and types of aquatic species will be used as an indication of water quality and ecosystem health. Water samples will be obtained pre- and post-freshet. Pre-freshet samples will be collected in April 2022. Post-freshet samples will be collected in October 2022. Benthic sampling is best done in the early fall and is scheduled for September 2022.</p>

Project Title:	A Baseline Study of the Cryptosporidium levels in Okanagan Lake
Organization:	Regional District of Okanagan Similkameen
Project Goals:	<p>The goal of this study is to evaluate the risk presented by protozoan parasites such as Cryptosporidium and Giardia to the domestic source water. This study will serve as a component of RDOS's implementation of the Naramata Source Protection Plan and apply the results generally to other intakes in the south basin of Okanagan Lake. This program will also serve as a template for other water suppliers on how to perform protozoan monitoring that is approved by IHA.</p>

Project Title:	Water Smart Ambassador – Building sustainable futures for community
Organization:	Town of Oliver
Project Goals:	<p>All communities in the Okanagan Basin depend on local water sources for their drinking water, and most have enjoyed a plentiful and predictable supply as their historical norm. However, faced with the rising costs of water treatment and distribution, a widening infrastructure gap, and a changing climate that brings more extreme weather events, communities have many reasons to manage water more wisely.</p> <p>It is the goal of the Town of Oliver to educate water users on conservation strategies and build local capacity to implement effective water conservation plans, policies and actions by hiring a Water Smart Ambassador to engage the public. This goal will help serve protection and restoration of source waters.</p> <p>The Water Smart Ambassador will promote previous conservation education programs and make recommendations within the updated Water Conservation Plan 2022; perform residential, commercial, and municipal irrigation audits and surveys while collecting/compiling/analyzing/reporting on data regarding general water usage; conduct public relations and education activities on new city-led initiatives and projects related to general water conservation through on-site appointments and assessments, local markets and other community events; and complete additional communications and outreach programs within the community.</p>

Project Title:	Decommissioning of Eneas Dam Consequence Study
Organization:	District of Summerland
Project Goals:	<p>The overall objective of the project is to produce a study to determine the consequences of both decommissioning Eneas Dam and keeping it in service. Eneas dam stores a small volume of water in it's reservoir compared to the water available in the water system. The dam is inspected regularly per Dam Safety but the water has not been released for consumption in many years. The study will help to determine (if the dam remains in operation) capital work and costs required to become compliant with Dam Safety including but not limited to adequate vehicle access, and repairs or upgrades to the spillway, intake, outfall, and log boom; future potential capital work and costs for the 20 year horizon; continued operational costs; current downstream consequence; effectiveness to store water in the reservoir; Benefit of the water stored in the reservoir; and current recreational use.</p> <p>If the dam was to be decommissioned, the study will determine continued beneficial use of this volume of water; capital work and costs required; environmental impacts such as erosion and aquatic life; process to dismantle the structure; ongoing operations and costs; potential downstream consequence; avoid loss of licensing capacity of the reservoir by assigning this license elsewhere; effect on community water supply needs; water quality or other potential consequences; and impacts on recreational use.</p>

Project Title:	Decommissioning of Tsuh Dam Consequence Study
Organization:	District of Summerland
Project Goals:	<p>The overall objective of the project is to produce a study to determine the consequences of both decommissioning Tsuh Dam and keeping it in service. Tsuh dam stores a small volume of water in its reservoir compared to the water available in the water system. The dam is inspected regularly per Dam Safety but the water has not been released for consumption in many years. The study will help to determine (if the dam remains in operation) capital work and costs required to become compliant with Dam Safety including but not limited to adequate vehicle access, and repairs or upgrades to the spillway, intake, outfall, and log boom; future potential capital work and costs for the 20 year horizon; continued operational costs; current downstream consequence; effectiveness to store water in the reservoir; Benefit of the water stored in the reservoir; and current recreational use.</p> <p>If the dam was to be decommissioned, the study will determine continued beneficial use of this volume of water; capital work and costs required; environmental impacts such as erosion</p>

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