

# WATER CONSERVATION AND QUALITY IMPROVEMENT GRANT AWARDS – 2024

	Number of Applications	Total Requested	Total Available
<b>Totals</b>	<b>23</b>	<b>\$631,725</b>	<b>\$350,000</b>

Organization	Project	\$ Awarded
Okanagan Nation Alliance	Impacts of Dam Operations in the McDougall Watershed Following Wildfire	\$ 30,000.00
Okanagan Nation Alliance	Groundwater – stream exchange on alluvial fans of the Okanagan Valley – Phase 4	\$ 29,167.00
Okanagan Nation Alliance	Water Quality Assurance during the Construction of Okanagan River Restoration in Okanagan Falls	\$ 25,000.00
City of West Kelowna	Okanagan Watershed Recovery for Drought Resilience	\$ 30,000.00
BC Wildlife Federation	Water, Water, Everywhere: Swan Lake Wetland Restoration	\$ 30,000.00
Okanagan Collaborative Conservation Program	Wetland Research for Climate and Land use Impacts	\$ 20,000.00
District of Lake Country	Beaver Lake Chain and Vernon Creek Water Management Plan	\$ 30,000.00
Living Lakes Canada	Collaboratively Mitigating Development and Climate Impacts to Foreshore Values on Wood and Kalamalka Lakes	\$ 15,000.00
Township of Spallumcheen	Source Water Quality Sampling in Deep Creek	\$ 29,999.42
Regional District of North Okanagan	Duteau Watershed Fire and Drought Weather Monitoring Station	\$ 29,833.58
Black Mountain Irrigation District	Ideal Lake Reservoir Release Automation	\$ 30,000.00
City of Kelowna	Drought Resilience Audit Program	\$ 15,000.00
District of Summerland	Source Protection Response Plan	\$ 30,000.00
Vaseux Lake Stewardship Association	Vaseux Lake Water Monitoring and Testing	\$ 6,000.00

<b>Project Title:</b>	Impacts of Dam Operations in the McDougall Watershed Following Wildfire
<b>Organization:</b>	Okanagan Nation Alliance
<b>Project Summary:</b>	The management of storage reservoirs in the Okanagan Basin plays a critical role in surface water management, extending beyond irrigation to address drought, climate change, flood mitigation, and environmental flow needs. The ongoing project, "Okanagan Reservoir Operation - Optimization Guidance," builds on recommendations from the Okanagan Dams and Reservoirs Committee, emphasizing collaboration with Indigenous Peoples, governments, and managers to optimize operations. This new project aims to document current strategies, enhance aquatic environments, and provide guidance for dam owners and managers. Additionally, focuses on assessing dam impacts on the

	McDougall Watershed post-wildfire, analyzing flood and drought scenarios influenced by dam operations.
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<b>Project Title:</b>	Groundwater – stream exchange on alluvial fans of the Okanagan Valley – Phase 4
<b>Organization:</b>	Okanagan Nation Alliance
<b>Project Summary:</b>	Surface flows on alluvial fans are crucial for fish access to spawning and rearing habitats, especially during low flow periods in the Okanagan Valley. However, the extent of water exchange between streams and groundwater on these fans, and its relationship with human water use, remains poorly understood. The Okanagan Nation Alliance (ONA) has been working to bridge this knowledge gap by identifying hydraulic connections and estimating water exchange volumes using various methods. The project, funded by WCQI, the Province of B.C., and DFO Canada, has progressed through several phases, evaluating techniques, assessing streambed roles, consulting Traditional Ecological Knowledge, and developing recommendations. Phase 4 aims to implement management actions on select creeks based on earlier findings and prioritize future actions considering water exchange, water demand, EFNs, and drought resilience.

<b>Project Title:</b>	<b>Water Quality Assurance during the Construction of Okanagan River Restoration in Okanagan Falls</b>
<b>Organization:</b>	Okanagan Nation Alliance
<b>Project Summary:</b>	The Okanagan River Restoration Initiative (ORRI) aims to restore and enhance the habitat quality and quantity of the Okanagan River by returning channelized portions to a more natural state. This involves relocating dikes, lengthening channels, re-establishing meanders, and creating nature-like features to reconnect floodplains. The project focuses on the Okanagan Falls reach between Skaha and Vaseux Lake, a sensitive aquatic ecosystem that has lost habitats and biodiversity due to channelization and vertical drop structures (VDS). The restoration work targets 21,500m <sup>2</sup> of the river, aiming to increase habitat quality and diversity for native aquatic species, including endangered Chinook salmon, resident trout, and the Rocky Mountain Ridged Mussel. Construction efforts prioritize minimizing negative impacts on water quality, mussel populations, and the surrounding environment. The project's overarching goal is to preserve water quality in the Okanagan River and Vaseux Lake throughout the restoration process.

<b>Project Title:</b>	<b>Okanagan Watershed Recovery for Drought Resilience</b>
<b>Organization:</b>	City of West Kelowna
<b>Project Summary:</b>	Extended drought in the Okanagan has led to a decline in available water quantity in reservoirs, exacerbated by reduced watershed resilience due to logging and wildfires. Flashy freshet flows and low summer flows characterize disturbed watersheds, compounded by climate instability and increasing populations. To address this, the City of West Kelowna (CWK) and Larratt Aquatic Consulting (LAC) propose a comprehensive review of upland water storage options. Increasing storage capacity can mitigate intense freshets, increase low summer flows, and provide resilience during extended droughts. The project will assess storage options in the CWK Bear (Lambly) Creek and Powers Creek watersheds, considering ecological impacts and water quality alongside hydrological and engineering considerations. Methods include GIS analysis, ground truthing, and data from the OBWB water quality database. Three options will be evaluated: creating new reservoirs, raising existing reservoirs, and reconnecting stream floodplains using permeable structures. The findings will inform revisions to the CWK Water Master Plan.

<b>Project Title:</b>	<b>Water, Water, Everywhere: Swan Lake Wetland Restoration</b>
<b>Organization:</b>	BC Wildlife Federation
<b>Project Summary:</b>	Wetlands play a crucial role in providing resilience to climate change impacts such as droughts and floods, as well as offering benefits like water filtration, recreation, and carbon sequestration. This project will restore 0.65 hectares of wetland habitat near Swan Lake in Vernon, B.C., within the Swan Lake Nature Reserve owned by the Regional District of North Okanagan (RDNO) and Ducks Unlimited Canada. The park serves as a hub for biodiversity, conservation, education, and recreation, surrounded by additional conservation areas owned by Nature Trust of BC and RDNO. Given the collaborative efforts already underway for Swan Lake's conservation, it is an ideal site for restoration. Vernon residents will enjoy increased recreation opportunities and improvements to the local aquifer. The project involves partnerships with the North Okanagan Naturalists' Club and Okanagan Indian Band. Restoration planning is ongoing, with restoration activities scheduled for late 2024, including replanting native species, removing invasives, and monitoring the site's progress for at least two years thereafter.

<b>Project Title:</b>	<b>Wetland Research for Climate and Land use Impacts</b>
<b>Organization:</b>	Okanagan Collaborative Conservation Program
<b>Project Summary:</b>	The project builds on a previous wetland predictive model project, enhancing resolution and accuracy using remote sensing techniques. The new models, refined to 3m resolution, have identified previously unmapped wetlands in the Okanagan basin. This proposed project aims to further characterize wetlands by their hydrological regimes and assess the impact of land cover/land use changes. Using historic Landsat satellite data, the research will assess changes at both individual wetland and watershed scales. The findings will help assess wetlands' susceptibility to climate and land use changes, informing effective policy and management strategies for wetland protection and restoration.

<b>Project Title:</b>	Beaver Lake Chain and Vernon Creek Water Management Plan
<b>Organization:</b>	District of Lake Country
<b>Project Summary:</b>	The project focuses on managing the Beaver Lake Chain and Vernon Creek system, spanning multiple jurisdictions, and facing challenges from changing climates, urban development, and rising water demands. Phase 1 aimed to build understanding and support among stakeholders, identifying critical issues related to water supply resilience and Kokanee sustainability. Phase 2 aims to integrate technical solutions and stakeholder input to develop a comprehensive water management plan. Key outcomes include confirming environmental flow needs, identifying technical solutions to support these flows, promoting water conservation in agriculture, and developing a drought management action plan. Overall, Phase 2 seeks to enhance environmental flows, safeguard against drought, and protect aquatic ecosystems, with continued engagement of stakeholders to align technical analysis with community needs.

<b>Project Title:</b>	Collaboratively Mitigating Development and Climate Impacts to Foreshore Values on Wood and Kalamalka Lakes
<b>Organization:</b>	Living Lakes Canada
<b>Project Summary:</b>	The project aims to inventory the foreshore of Wood and Kalamalka Lakes to understand their current condition and facilitate collaborative, long-term management. This information is crucial for monitoring management objectives over time. The FIMP protocol will provide decision-makers, and stakeholders with a better understanding of the foreshore's condition, allowing for the setting of objectives for improved lake management. The project seeks to incorporate results and recommendations into planning policies at various government levels to promote consistency in foreshore management. Co-creating the project with the Upper Nicola Band has provided guiding instructions to prioritize Indigenous values in lake management, supporting collaborative

	decision-making. The project will be pursued in partnership with the Okanagan Indian Band, focusing on inventorying the cultural, archaeological, and ecological values of the lakes. Outreach efforts will include providing diverse learning and training opportunities.
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<b>Project Title:</b>	Source Water Quality Sampling in Deep Creek
<b>Organization:</b>	Township of Spallumcheen
<b>Project Summary:</b>	This project involves collecting water samples at 14 stations and aquatic macroinvertebrate samples at nine stations along Deep Creek to assess and track stream health. The sampling will occur during drought conditions and post-freshet to target areas with low flows and algal blooms, impacting fish and water sources flowing into Okanagan Lake. The samples will help identify nutrient-loading sites and guide rehabilitation prescriptions for each landowner. Riparian planting and other measures will be implemented as part of the ongoing Deep Creek rehabilitation project. Aquatic macroinvertebrate sampling will quantify populations to determine water quality, with sampling planned for September 2024. The results will be combined with previous data to reveal trends in ecosystem health and identify key areas for rehabilitation, demonstrating the success of completed works.

<b>Project Title:</b>	Duteau Watershed Fire and Drought Weather Monitoring Station
<b>Organization:</b>	Regional District of North Okanagan
<b>Project Summary:</b>	The installation of two Fixed Remote Automated Weather Stations (RAWS) in the Duteau Community Watershed aims to enhance timely and data-driven decision-making in response to extreme weather threats, including drought, flood, and wildfire. These stations will enable the establishment of procedures based on meteorological factors, such as precipitation, temperature, and humidity, to activate alarms and aid in decision-making. The RAWS will provide standard weather station requirements for accurately describing climate conditions, aiding in predicting drought conditions and early fire weather detection. This model, aimed at early fire weather detection, is part of a broader effort to install similar stations across the Okanagan to assist in planning and avoid catastrophic losses due to wildfire. The RAWS, programmed to monitor weather conditions with an emphasis on fire conditions, will enhance situational awareness with real-time information, aiding in decision-making related to fire prevention and preparedness. The installation of RAWS in the Aberdeen Plateau area will provide much-needed weather information for water purveyors relying on this area for their water supply.

<b>Project Title:</b>	Ideal Lake Reservoir Release
<b>Organization:</b>	Black Mountain Irrigation District
<b>Project Summary:</b>	The project aims to enhance the operational efficiency of the Black Mountain Irrigation District's (BMID) releases from Ideal Lake Reservoir through the implementation of telecommunications and remote control hardware. The automation of reservoir releases is expected to increase BMID's operational efficiency, improving volumetric capacity for drought resilience, water resource management, and supplying water for environmental flow needs (EFNs) in Lower Mission Creek. Ideal Lake Reservoir is a critical source for domestic supply, irrigation, and EFNs in Mission Creek, making it the highest priority site for implementing automated releases. Currently, releases are controlled manually, requiring operators to make a 4-hour round trip from Kelowna to adjust the release rate, leading to operational inefficiencies. By aligning release rates with real-time streamflow conditions, the project will enhance drought resilience and meet conservation objectives.

<b>Project Title:</b>	Drought Resilience Audit Program
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<b>Organization:</b>	City of Kelowna
<b>Project Summary:</b>	This project focuses on assessing the current state of aging green space irrigation systems in Kelowna to understand key issues and find solutions for drought resilience. Using the Certified Landscape Irrigation Audit (CLIA) process, the project aims to identify opportunities to lower irrigation water use and improve system efficiency. Recommendations based on visual inspections, catch can collections, soil observations, and water pressure tests will lead to increased system uniformity, decreased water usage, and cost savings. The project will involve testing thirty sites within the City's green space inventory, transitioning from instinctive to data-based automated operation. The results will be presented in a format that can be shared with other organizations, supporting community health and sustainability of green spaces.

<b>Project Title:</b>	Source Protection Response Plan
<b>Organization:</b>	District of Summerland
<b>Project Summary:</b>	Water suppliers in B.C. must follow a multiple barrier approach to ensure safe drinking water, including source protection, effective treatment, a maintained distribution system, trained operators, and emergency response. Source protection involves influencing land use activities upstream of the water supplier's intake. The District of Summerland (DoS) has completed a Source Protection Assessment and is now working on a response plan to implement recommendations for improving drinking water safety. This plan will involve coordinating with other landowners, businesses, and governments to influence land use activities. The DoS will also address water quality impacts during drought in the response plan, building on their existing water use plan for managing water quantity.

<b>Project Title:</b>	Vaseux Lake Water Monitoring and Testing
<b>Organization:</b>	Vaseux Lake Stewardship Association
<b>Project Summary:</b>	Vaseux Lake, a shallow and nutrient-rich lake, experiences high water temperatures in summer, leading to elevated coliform and E. coli levels. A two-year project continuation aims to address water quality issues through testing, building on work from 2020 to 2022. Funding is crucial for testing as Vaseux Lake lacks the capacity to monitor coliform and E. coli levels. The previous project, funded by OBWB, enabled the purchase of a Hach testing kit and analysis by Caro Analytics in Kelowna, revealing high coliform and E. coli levels, especially in August 2020 and July 2021. The project highlighted the need for more frequent testing during summer, especially when water temperatures reach 80 degrees Fahrenheit. The Regional District's construction of an engineered wetland downstream of the sewage treatment plant in 2021 aims to lower nitrate and phosphate levels entering the lake. The proposed project will continue testing nitrogen, phosphorus, coliform, and E. coli levels, focusing on areas around the lake and Okanagan River, especially during summer to ensure safe swimming conditions.