

In this Annual Report you'll find the highlights of the SWC's work on:

- Water quality monitoring and research Ø
 - Water quality protection and improvement
 - A wetland strategy for the Shuswap
 - Aquatic invasive species prevention

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- Safe boating and swimming
- Communications, reporting and advocacy
- - Council administration and governance
 - **Expenditures** \$

Photo credit: Darren Robinson Photography / Shuswap Tourism



Message from the Chair

Photo credit: Darren Robinson Photography / Shuswap Tourism



RHONA MARTIN Chair, Shuswap Watershed Council Director, Columbia Shuswap Regional District Area E —Rural Sicamous and Malakwa

As the new Chair of the Shuswap Watershed Council, I want to thank past Chair Jay Simpson and the past and present members of the Council for their efforts and collaboration to protect and improve the water quality of the Shuswap watershed. I have been pleased to be part of this Council since its inception in 2014 and am very supportive of its work on water quality, invasive mussels, and safe water-based recreation.

We are very fortunate to have clean lakes and rivers in our region, which are so important for drinking water, tourism and recreation, fish and wildlife, and agriculture. However, the watershed is facing challenges from sources of pollution, climate change, fires and drought, and invasive species. The best way to approach these problems is through collaboration. The Council brings together municipal and regional governments, First Nations, Provincial government agencies, scientists, water monitors, and stewardship organizations to work together on water.

I want to highlight the threat that invasive zebra and quagga mussels pose to the Shuswap watershed. Monitoring indicates that the Shuswap—and all lakes in BC still do not have invasive mussels. However, quagga mussels were detected last year in Idaho, the closest known presence of the mussels to BC. If the mussels spread to BC, it's estimated that managing infestations will cost up to \$129 million annually for BC residents. It's imperative that boaters and all watercraft users practice 'Clean-Drain-Dry' and stop for watercraft inspection when travelling—this applies to watercraft of all kinds, including non-motorized and inflatables.

I encourage you to read this report and learn more about what the Shuswap Watershed Council is doing for the watershed and for all residents.

SHUSWAP watershed council

Who We Are

About the Shuswap Watershed Council

The SWC was established in 2014 as a watershed-based partnership of several organizations with an interest or responsibility for protecting water quality. There are 20 members that represent three regional districts, two municipalities, the Secwepemc Nation, three Provincial government agencies, and Shuswap communities. The SWC is a collaborative, non-regulatory group that focuses on strategic initiatives to protect, maintain, and enhance water quality and promote safe recreation in the Shuswap.

Staff

The Fraser Basin Council, a BC non-profit non-government organization established in 1997, provides staff services to the Shuswap Watershed Council. There are two staff in FBC's Kamloops office that lead the SWC's programs and initiatives.

Our Vision

Enhanced water quality that supports human and ecosystem health and the local economy in the Shuswap watershed.

The Shuswap Watershed

The Shuswap watershed is a very special place.

It is within Secwepemc'ulecw, the traditional unceded territory of the Secwepemc Peoples and the homeland of the Neskonlith, Skw'lax, Adams Lake, and Splatsin te Secwepemc First Nations. The Shuswap watershed —including Shuswap Lake, Mara Lake, Mabel Lake, Adams Lake, and many more lakes and rivers—is about 1.5 million hectares. Shuswap Lake itself is 310 square kilometres, with hundreds of kilometres of shorelines. It is known for its pristine water and beautiful beaches. These attributes make the Shuswap one of the most popular recreation destinations in BC, and contribute to a desirable lifestyle for residents and a significant tourism economy. The Shuswap is a nursery watershed for four species of Pacific salmon, and provides important habitat for a variety of plants and wildlife. The Shuswap is a vitally important source of water for drinking for many communities and rural residents, and for agriculture.

Working together on water

The management and decision-making for water is complex, and many different governments and organizations have roles and responsibilities related to water. The Shuswap Watershed Council convenes these organizations to work on water quality together. Through collaboration, we can build relationships, increase engagement, improve communication, share and learn from each other, and achieve efficiencies and synergies —all for the betterment of the watershed. The Council itself has representatives from 10 organizations that include regional districts, municipalities, First Nations, and Provincial government agencies. Additionally, regular meetings of the Shuswap Water Quality Monitoring Group—a group of scientists and water monitors-enable dialogue, data and information sharing, and planning water quality monitoring across the Shuswap watershed.

The watershed is our main priority

While the Shuswap boasts abundant, clean water in many parts of the watershed throughout the year, there are emerging concerns about the water quality and health of the ecosystem. Algal blooms have the potential to impact our enjoyment of the lake, tourism, and the availability of healthy drinking water. Additionally, there is an ongoing threat of invasive zebra and quagga mussels being introduced to BC from Eastern Canada or the USA. If invasive mussels were to arrive in the Shuswap, they would impact water quality, ruin beaches, compete with native species for food and habitat potentially decimating Pacific salmon populations, and managing the infestations would cost up to \$129 million annually for BC residents and tax-payers.

To address these concerns and threats, the SWC's role is to provide financial incentives for water quality protection and improvement; to support water quality monitoring and research to achieve a greater understanding of the watershed; to educate residents about best practices, stewardship and invasive species prevention; and to advocate to policymakers for better protection and management of the Shuswap watershed.

In the following pages of our 2023–24 Annual Report, you can learn more about what the SWC has done to address these priority issues, and more, in the Shuswap watershed.



different organizations participate in the Shuswap Watershed Council plus community representatives In 2023, **19** fferent organizations

different organizations participated in the Monitoring Group including municipal, regional, Indigenous, Provincial, and non-government organizations $\widehat{\textcircled{O}}$

Protecting

and improving

water quality



Water monitoring

and research



Educating and

advocating for better

protection

against invasive mussels



Promoting safe boating and recreation 3



Water Quality Grant Program

2023 was the fourth year the SWC offered its **Water Quality Grant Program**. The grant program provides financial support to farms, stewardship groups, and landowners in the Shuswap watershed for projects that improve on-farm nutrient management, increase soil health, or restore wetlands and riparian areas. This helps protect and improve water quality in creeks, rivers, and downstream to Shuswap and Mara Lakes. By taking care of the landscape, we take care of water quality.

"Agriculture is a significant part of the economy in the Shuswap and contributes greatly to local food security. We want to support the adoption of new and improved nutrient management practices by local farms to help protect our water quality."

—SWC Chair Rhona Martin

The SWC's grant program supports watershed restoration and targets a significant threat to water quality.

Five grants were awarded in 2023 worth a total of \$52,760. The grant funding leveraged an additional \$56,869 cash and in-kind contributions from the grant recipients for a total investment of \$109,629 in new water quality protection projects.

^{\$}52,760 5

grants awarded



^{\$}56,869

other funds and resources leveraged for better nutrient management and watershed restoration



Fresh Valley Farms (Spallumcheen)

installed a new enclosed and automated pastured livestock system to manage livestock rotations across pastures and improve manure deposition, resulting in improved soil health and decreased nutrient loss through leaching and run-off.



Shuswap Organics (Grindrod) introduced

new regenerative agriculture practices including cover cropping and no-till to improve soil health on the farm and improve the soil's ability to store and cycle nutrients.

2

Iron Horse Ranch (Celista) installed new paddock cross fencing to better manage animals on the property, improve the distribution of manure, and keep animals off wet areas of the property during the spring. Riparian fencing and off-stream waterers were installed to keep animals out of a creek that runs through the property.



Rivershore Nursery

(Mara) introduced cover crops and new organic soil amendments. They replaced overhead sprinkler irrigation with a more efficient drip system to improve soil health and reduce surface run-off to ditches and the Shuswap River. The nursery also introduced mycorrhizal inoculation to new planting stock to reduce the need for phosphorus fertilizers.



Crystal Lake Ranch (Malakwa) installed new fencing adjacent to the riparian area along the Eagle River to control livestock access and installed new off-stream livestock waterers on the ranch.



Photo credit: Valerie Walsh

A wetland strategy for the Shuswap watershed

In 2023, the SWC began to develop a wetland strategy for the Shuswap watershed. Ultimately, a wetland strategy will help protect and improve water quality in the Shuswap watershed through policies and guidelines to conserve, manage and restore wetlands as vital components of a healthy watershed.

Initially, the wetland strategy is focusing on the Salmon River and Salmon Arm Bay regions of the Shuswap watershed. The first two phases of a multi-phased process to create the strategy were completed. This involved desk-top GIS data-gathering and analysis to gain an understanding of the current distribution and ecological functions of wetlands in the study area. These data will help inform the development of the strategy. The SWC is grateful to Environment & Climate Change Canada for funding that supported this work!

Did you know?

Wetlands are natural wonders. They filter and improve water quality, provide habitat, support biodiversity, mitigate flooding and drought, and store carbon!



The Water Quality Grant Program was developed by the SWC in response to the findings of a three-year research project done in partnership with UBC-Okanagan (2016–2019). Research results showed that the greatest proportion of nutrients in Shuswap and Mara Lakes originate from the agricultural landscapes in the valley bottoms of the Salmon and Shuswap Rivers. These are the areas where better nutrient management and watershed restoration will have the most impact in improving water quality in the lakes.

Find the research summary report on the SWC website



We are all stewards of the watershed, and we can all play a part in protecting our water quality whether we are agriculturalists or silviculturists; building or maintaining roads; tending to parks, lawns and gardens; choosing household products and minding what we flush down our drains; properly maintaining septic systems, and more. Learn more in our Phosphorus Action Plan! The Shuswap Watershed Council partnered with the Columbia Shuswap Invasive Species Society (CSISS) to monitor the Shuswap watershed for invasive zebra and quagga mussels (ZQM) from spring to fall. This **early detection monitoring program** is critical to ensure that the Shuswap watershed is still invasive mussel-free.

Additionally, the SWC delivered educational campaigns to residents and visitors about preventing the spread of ZQM. These campaigns focus on the importance of **watercraft inspection** for travellers and **Clean-Drain-Dry** practices for all watercraft users. The SWC delivered these campaigns through the news and travel literature, print media, social media, and signage.



The SWC's educational campaigns had:

Over 64.3,000 Impressions in the news and travel literature Up to **200,000** Impressions on radio

listeners

1.6 million

Over

on travellers through billboards 23,000 Impressions on social media

Laura (Columbia Shuswap Invasive Species Society) and Erin (Shuswap Watershed Council) are pictured at a monitoring site in Blind Bay on Shuswap Lake. Laura is holding a phytoplankton net which would capture microscopic mussel larvae if they were present at this site. Samples are collected according to a Provincial protocol and then sent to a laboratory for analysis.

Zebra and quagga mussels are not native to North America. ZQM have infested waters in Eastern Canada as far west as Manitoba, and many states including as nearby as Idaho. The mussels are very destructive and would negatively impact so much of what we all love about the Shuswap: clean water, beaches, fish and wildlife, and recreation. The mussels can attach and grow on anything below the water's surface including essential infrastructure such as water and irrigation pipes, hydro-electric facilities, on boat hulls and docks pilings, and more. The mussels grow in colonies and removing them would require ongoing maintenance estimated at a cost of up to \$129 million per year for BC taxpayers and property owners.



This photo shows how quickly quagga mussels have colonized on pieces of pipe in Lake Mead (Nevada) over different periods of time. This imposes very costly ongoing maintenance to rid pipes and other infrastructure of mussel colonies.

The Shuswap needs your help!

Lakes in the Shuswap—and all of British Columbia —remain invasive mussel-free. We all must be diligent to prevent the spread of invasive mussels to BC. Here's what you need to do:

- always clean, drain, and dry watercraft when you remove it from the water, before re-launching
- stop for watercraft inspection and pull out your watercraft's drain plug when travelling
- avoid using invasive species as fishing bait
- never release aquarium contents (plants, animals, or water) into the environment
- report invasive species for suspected zebra and quagga mussels, phone the Provincial RAPP hotline immediately (1-877-952-7277) and for all other invasive species use the Report Invasives BC app

RAPP



Safe Boating and Recreation

Photo credit: Viktoria Haack / Shuswap Tourism

The SWC's safety messaging had up to...

Over 42,000 Impressions on social media

194,000 Impressions in the news and in print Up to 450,000 Impressions on the radio The SWC is grateful to Transport Canada for funding that supports this work!



The Shuswap is a wonderful watery playground ideal for thrilling water sports, fishing, swimming, playing on the beach, and self-propelled activities such as kayaking and paddle-boarding. The SWC wants everyone in the Shuswap to be safe on and near the water. In 2023, the SWC promoted 8 tips for water safety including the importance of life jackets, boating sober, and boating preparedness. The SWC also promoted national campaigns such as Lifejacket Day, Water Safety Week, and Drowning Prevention Week. Additionally, the SWC partners with the Royal Canadian Marine Search & Rescue, Station 106 Shuswap (based in Sicamous) to raise awareness of the availability of lifejacket loaner kiosks for children and life ring stations at several locations throughout the Shuswap.

Rack cards and posters describing 8 top tips for safety were distributed to over 50 locations throughout the Shuswap.



Did you know there are **20 lifejacket loaner kiosks** around the Shuswap, equipped with child-sized lifejackets to borrow for free on the honour system? The kiosks are provided by the Royal Canadian Marine Search and Rescue, Station 106 Shuswap, with support from several community sponsors. The SWC has proudly sponsored the installation of three kiosks.

Residents and visitors are encouraged to borrow a lifejacket for a child from any one of 20 lifejacket loaner kiosks across the Shuswap watershed, such as this kiosk located in Blind Bay at the Harbour Road boat launch.

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Watershed Research

Adams River headwaters glacier research

The Shuswap Watershed Council partnered with a research team from Thompson Rivers University (TRU) to research the effects of climate change on glaciers and local hydrology within the Adams River sub-basin. The Adams River is a large tributary to Shuswap Lake. It is important for fish habitat and domestic water, and it has a significant influence on the water quality of the lake. Glaciated mountains in the upper reaches of the river supply source water to the Adams River. The glaciers are not well understood, and they may be under stress due to climate change.

Other studies in Western Canada have shown increased rates of glacier area loss and fragmentation since the early 2000s. The research project with TRU is the first of its kind in the Shuswap watershed. The research will validate glacier coverage in the Adams River basin, quantify historical glacier change, and model future glacier run-off. Research outcomes will ultimately reveal if new water management regimes may be needed for the Adams River as climate change and glacier melt affect the river's hydrological cycle. It is a two-year project that will wrap up in late 2024. The project has funding support from the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Shuswap Watershed Council.

The research team and equipment at Gold Peak Glacier in the headwaters of the Adams River. Photo Credit: Tay Powrie

"By studying the glaciers in the headwaters of the Adams River, we hope to understand the influence that glacial melt is having on the hydrology of the river system. There could be impacts to salmon habitat, domestic water use, and water quality."

-Tay Powrie, graduate student, Thompson Rivers University.





Floating Treatment Wetlands in the Salmon River

In early 2024, the SWC approved funding support for a research partnership with Royal Roads University to research how 'floating treatment wetlands' (FTWs) may help to improve water quality in the Salmon River. The Salmon River is important for fish and wildlife habitat, domestic and livestock water, and irrigation for agriculture. Earlier studies have shown that the river carries a significant load of phosphorus and other nutrients to the lake which have contributed to nuisance algal blooms in Salmon Arm Bay. FTWs are a nature-based solution that can improve water quality by absorbing nutrients and contaminants from a waterbody. They are simple, low-cost, and can have many ecological benefits. Graduate student and biologist Margot Webster will build and install multiple floating treatment wetlands in the lower reach of the Salmon River in 2024. She will monitor water quality and analyze plant tissue samples to determine how much nutrients that FTWs take up from river water. The field season will conclude later this year, with results anticipated in 2025.

An example of floating treatment wetlands. Photo credit: International Institute for Sustainable Development.





Throughout the year, the SWC publishes various communiqués about its work, accomplishments, decisions and expenditures. It also strives to engage Shuswap residents and visitors in important issues and announcements relevant to the Shuswap watershed. These communiqués include: shuswapwater.ca

- A FAQ document
- Completion and distribution of the SWC's seventh annual water quality report, the 2022 Shuswap Water Quality Summary
- SWC Meeting Highlights Summaries
- Media releases about the SWC's activities and achievements
- The SWC maintains an informative website and an active presence on social media



Follow us and stay up to date with our work! Local voices for local issues

Nobody cherishes the Shuswap watershed more than locals do. That is why the SWC-a collaborative partnership of 20 people who live, work and play in the Shuswap and represent different organizationsplays an important role as an advocate for the Shuswap. Over the past several years, the SWC has urged regional, provincial and federal authorities to take further action and allocate more resources to ensure the long-term well-being of the Shuswap watershed.

In 2023, the SWC wrote to Provincial and Federal agencies regarding its dire concern about the threat of invasive zebra and guagga mussels (ZQM) to BC, and to ask for greater investments and new actions to prevent such an invasion. The SWC recommended that government funding be significantly increased to allow for more watercraft inspection and decontamination stations at entry-points to BC and at all Canada Border Services Agency locations in Western Canada, new pullthe-plug legislation requiring watercraft to have their drain plugs pulled out prior to travelling on BC roads, new measures to ensure floatplanes aren't transporting invasive ZQM, more early detection monitoring, more education and outreach, and new containment measures for invasive mussels in Manitoba and Ontario.

Success! In May 2024, the Province of BC issued a new order requiring watercraft owners/operators to pull out the drain plug and drain all compartments onto dry land before travelling on BC roads.

The Provincial network of watercraft inspection stations is a very important part of BC's defense against invasive mussels. The SWC remains concerned about watercraft entering BC via an unchecked route or outside of inspection station hours.

2023 CSRD referendum for Shuswap Watershed Council funding

Since 2016, the SWC has received core funding from three partners: the Columbia Shuswap Regional District, Thompson-Nicola Regional District, and City of Salmon Arm. In 2017, Adams Lake Indian Band also become a funding partner. Additionally, the SWC has received project-specific grant funding from federal agencies.

The CSRD funding was established as a set term with an end date. In order to renew the funding, the CSRD opted to hold a referendum to determine public support of the funding. The referendum was scheduled for August 2023 but due to

a large wildfire in the region the referendum was re-scheduled to February 3rd 2024. The referendum results indicated that the majority of voters do not support the continuation of CSRD funding for the Shuswap Watershed Council, with 982 against and 364 for the funding.

What's next for the SWC?

SWC members and staff are considering next steps. Prioritizing fund development in 2024 and beyond will be key to ensuring the SWC's work can continue.

The Shuswap Watershed Council is grateful to the CSRD for eight years of core funding that was critical to leverage funds from other partners and agencies, and support the important work of the SWC.

Four Council meetings were held throughout the year to approve projects and work plans, receive operational updates from staff, hear informative presentations from partners and other groups, and discuss arising issues.

2023-24 Budget (April 1st 2023-March 31st 2024)

The SWC's work in 2023–24 was supported by contributions from the following organizations:

Contributor	Amount (\$)
2022–23 operational surplus (carried forward from March 31 st , 2023)	47,656
2022–23 funds allocated and carried forward to 2023–24 projects	53,004 ¹
Per Contribution Agreement:	
Columbia Shuswap Regional District (Areas C, D, E, F and the District of Sicamous)	160,000
Thompson-Nicola Regional District	53,600
City of Salmon Arm	40,000
Adams Lake Indian Band	1300
Federal grant funding:	
Transport Canada—Boating Safety Contribution Program	24,025
Environment & Climate Change Canada —Fraser River Freshwater Ecosystem Initiative	40,000
Revenue	419,585

Operational Expenses

Program	Budgeted (\$)	Expenses (\$)	Variance (\$)
Water Quality Monitoring Program	44,300	42,412	1888
Water Quality Protection Program	200,064	118,516	81,548 ²
Zebra & Quagga Mussel Prevention Program	39,900	41,051	-1151
Safe Recreation Program	30,000	23,845	6155
Communications & Advocacy	40,600	43,108	-2508
Management & Administration	40,100	40,958	-858
Sub-total operational expenses	394,964	309,890	85,074
2023–24 contribution to Operating Reserve	24,621	24,621	0
Summary of expenses	419,585	334,511	85,074

Operating Reserve ³	(\$)
Balance at April 1 st 2023 (carried forward from March 31 st)	150,366
2023–24 contribution	24,621
Balance as at March 31 st 2024	174,987

1 The Water Quality Protection Program often ends the year with a surplus due to funds that have been approved for spending but not carried out until the following year. \$53,004 were carried forward from March 31st 2023, dedicated to projects that were completed in 2023-24. Also see note #2.

2 Of the \$81,548 surplus in the Water Quality Protection Program as of March 31st 2024, \$59,961 is allocated to projects that will be completed in 2024–25.

3 The Operating Reserve has been growing since 2016 as a result of annual surpluses.

Photo credit: Valerie Walsh



Council Membership —as at March 31, 2024

Chair—Rhona Martin Columbia Shuswap Regional District, Area E

Vice Chair—Natalya Melnychuk Columbia Shuswap Regional District, Area G

Council Members:

Director Marty Gibbons Columbia Shuswap Regional District, Area C

Director Dean Trumbley Columbia Shuswap Regional District, Area D

Director Jay Simpson Columbia Shuswap Regional District, Area F

Director David Lepsoe Thompson-Nicola Regional District, Village of Chase

Director Reid Hamer-Jackson Thompson-Nicola Regional District, City of Kamloops

Councillor Debbie Cannon City of Salmon Arm

Councillor Pam Beech District of Sicamous

Councillor Howard Nordquist Adams Lake Indian Band

Robyn Laubman Splatsin te Secwepemc

Director Rick Fairbairn Regional District of North Okanagan, Area D

Director Brian Schreiner Regional District of North Okanagan, City of Enderby

Erik Kok Community Representative

Kimm Magill-Hofmann Community Representative

Phil Owen Community Representative

Kym Keogh BC Ministry of Environment & Climate Change Strategy

Lindsay Benbow BC Ministry of Agriculture & Food

Kelly Chiatto BC Ministry of Forests

Dennis Einarson Senior Scientific Advisor

/ShuswapWater

