

# Okanagan Basin Water Board Meeting Agenda



**Okanagan Basin**  
WATER BOARD

**DATE:** Tuesday, August 1, 2023

**TIME:** 10 a.m. – 2 p.m.

**PLACE:** Regional District North Okanagan  
9848 Aberdeen Road  
Coldstream, B.C.

## 1. CALL MEETING TO ORDER

1.1 Acknowledgement of First Nations Traditional Territory

*We acknowledge that we are holding this meeting on the unceded territory of the Syilx Okanagan Nation.*

## 2. INTRODUCTION OF LATE ITEMS

## 3. APPROVAL OF AGENDA

## 4. ADOPTION OF MINUTES

4.1 Minutes of the Regular Meeting of the Okanagan Basin Water Board of June 6, 2023 held Online *(page 1)*

## 5. DELEGATION

5.1 Mathew Keast, City of Vernon Water Resources Engineer, presenting on Vernon Creek Naturalization through Polson Park, funded in part with OBWB WCQI grant

## 6. STAFF REPORTS

- 6.1 Executive Director Report *(page 6)*
- 6.2 Deputy Administrator Report *(page 10)*
- 6.3 Water Stewardship Director Report *(page 14)*
- 6.4 Policy and Planning Director Report *(page 19)*
- 6.5 Climate Indicators Intern Report *(page 25)*
- 6.6 Communications Director Report *(page 29)*

## 7. CORRESPONDENCE

- 7.1 OBWB letter to B.C. Ministers Cullen and Heyman regarding Potential Economic Impacts of Zebra and Quagga Mussels in B.C. *(page 35)*
- 7.2 OBWB letter to B.C. Ministers Kahlon and Kang, regarding sewage pollution risks from the B.C. Homes for People action plan *(page 37)*
- 7.3 RDOS letter from Christopher Garrish, Senior Manager of Planning to OBWB regarding one-hectare policy for the Sewerage Facilities Assistance Grant Program *(page 40)*
- 7.4 Response letter from Ministers Cullen and Heyman *(page 41)*

## 8. NEXT MEETING

8.1 The next meeting of the Okanagan Basin Water Board will be an abbreviated meeting on Friday, Sept. 8 at 12 noon, following our annual meeting at Rotary Centre for the Arts in Kelowna.

## 9. ADJOURNMENT



**MINUTES OF A REGULAR MEETING OF THE OKANAGAN BASIN WATER BOARD  
HELD JUNE 6, 2023, ONLINE**

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**PRESENT**

Chair Sue McKortoff	Regional District Okanagan-Similkameen
Vice-Chair Blair Ireland	Regional District Central Okanagan
Director Victor Cumming	Regional District North Okanagan
Director Rick Fairbairn	Regional District North Okanagan
Director Christine Fraser	Regional District North Okanagan
Director Wayne Carson	Regional District Central Okanagan
Director Charlie Hodge	Regional District Central Okanagan
Alt. Director Adrienne Fedrigo	Regional District Okanagan-Similkameen
Alt. Director Subrina Monteith	Regional District Okanagan-Similkameen
Director Tim Lezard	Okanagan Nation Alliance (ONA)
Director Bob Hrasko	Water Supply Association of B.C.
Director Jeremy Fyke	Okanagan Water Stewardship Council (OWSC)

**REGRETS**

Director Tim Lezard	Okanagan Nation Alliance (ONA)
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**GUESTS**

Markus Schrott	BDO Canada
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**STAFF**

Anna Warwick Sears	Executive Director
Nelson Jatel	Water Stewardship Director
Corinne Jackson	Communications Director
James Littley	Deputy Administrator
Carolina Restrepo-Tamayo	Office and Grants Manager
Kellie Garcia	Policy and Planning Director
Sandra Schira	Climate Indicators Intern

**1. CALL MEETING TO ORDER**

Chair McKortoff called the meeting to order at 10 a.m.

Chair McKortoff respectfully acknowledged that the meeting was being held on the traditional and unceded territory of the Syilx Okanagan Nation.

**2. INTRODUCTION OF LATE ITEMS**

6.1.2 OBWB Budget 2024 Written Submission to B.C. Select Standing Committee on Finance and Government Services

**3. APPROVAL OF AGENDA**

***“THAT the agenda of the regular meeting of the Okanagan Basin Water Board of June 6, 2023 be approved as amended.”***

**CARRIED**

**4. ADOPTION OF MINUTES**

- 4.1 Minutes of the Regular Meeting of the Okanagan Basin Water Board of May 2, 2023, held at Manteo Resort.

***“THAT the minutes of the regular meeting of the Okanagan Basin Water Board on May 2, 2023, held at Manteo Resort, be approved.”***

**CARRIED**

**5. DELEGATION**

- 5.1 Markus Schrott, BDO Canada on the OBWB’s 2023 Audited Financial Statements

Dr. Sears introduced Mr. Schrott who noted that the audit came back with no issues reported.

Mr. Schrott responded to questions from directors and said that the OBWB benefits from having a robust finance team at RDCO which ensures appropriate controls and processes are in place.

**6. STAFF REPORTS**

- 6.1 Executive Director Report

The board was asked to accept the 2023 audited financial statements as presented.

***“THAT the Okanagan Basin Water Board approve the 2023 Audited Financial Statements as presented.”***

**CARRIED**

Dr. Sears spoke to the B.C. government’s recent release of its report on the Potential Economic Impact of Zebra and Quagga Mussels in B.C. and annual cost estimates ranging from \$64 to \$129 million.

The board discussed sending a response to the province and putting out a news release. Directors also discussed the possibility of talking with B.C. Premier David Eby, Minister of Water, Land and Resource Stewardship Nathan Cullen and Minister of Environment and Climate Change Strategy George Heyman, and their staff, at the Union of B.C. Municipalities conference in September. In addition to the economic report, Ms. Jackson noted that provincial staff have released inspection station information stating that there has been a decrease in inspectors and stations from pre-COVID levels due to hiring challenges. Mr. Littley added that he would be attending an upcoming Pacific Northwest Economic Region conference where invasive mussels would be discussed and that the information could help inform a response from the OBWB.

***“THAT staff send a letter to B.C. Minister of Water, Land and Resource Stewardship Nathan Cullen and Minister of Environment and Climate Change Strategy George Heyman regarding concerns about the province’s Potential Economic Impact of Zebra and Quagga Mussels in B.C. report, and send a media release.”***

**CARRIED**

After further discussion, Dir. Cumming suggested that the OBWB organize a meeting between the B.C. premier and Okanagan mayors, chairs and chiefs regarding invasive mussel concerns.

***“THAT OBWB organize a meeting between B.C. Premier David Eby and Okanagan mayors, chairs and chiefs regarding invasive mussel concerns.”***

**CARRIED**

Dr. Sears provided the board with the OBWB's draft submission to the Select Standing Committee on Finance and Government Services: Budget 2024 Consultation. Only three recommendations can be made, she said, adding that the submission calls for increased funding to address invasive mussels, the Okanagan Lake Regulation System review and update, and the Watershed Security Fund.

***"THAT the Executive Director's Report, dated May 31, 2023, be received."***

**CARRIED**

## 6.2 Water Stewardship Director Report

Dr. Jatel provided the board an update on council activities and noted that the June guest speaker is Pete Millard, General Manager of Science at Manaaki Wheuna Landcare Research. Dr. Millard oversees science delivery and excellence in biodiversity, biosecurity, climate change, and sustainable land use research and will be presenting on "Waiti: How Aotearoa New Zealand is Dealing with Water Quality and Other Environmental Issues."

The board was told that staff held the OBWB's annual Water Supply Webinar on May 9. At the time, there were concerns around low groundwater levels in the South Okanagan. While that seems to be rebounding as of early June, there are concerns about a hot, dry summer with the potential for drought this summer.

The Okanagan Hydrometric Monitoring program is looking at using new drone-boat technology to measure high streamflow levels which has the potential to offer more efficient and precise data collection.

***"THAT the Water Stewardship Director's Report, dated May 31, 2023, be received."***

**CARRIED**

## 6.3 Policy and Planning Director Report

Ms. Garcia updated the board on the May 17 spring kick-off meeting of the Thompson Okanagan Regional Drought Response Team. Most recent well data indicates South Okanagan groundwater levels are doing better than they were in early May, but that levels in the North Okanagan are a concern. The rapid snow melt in spring means that rainfall will be important. There are already concerns about water temperatures in some South Okanagan streams with low-flows.

***"THAT the Policy and Planning Director's Report, dated May 30, 2023, be received."***

**CARRIED**

## 6.4 Climate Indicators Intern Report

Ms. Schira introduced some of the work she is doing looking at climate change indicators in the Okanagan. The project is using historical climate and hydrological data throughout the Okanagan to create indicators to see what is happening to heatwaves, extreme precipitation events, freshwater resources, droughts, snowpacks, and more. The goal is to present these indicators in a manner that will inform the residents of the Okanagan and help decision-makers understand the current effects of climate change. She then shared some of her early findings, including that in Kelowna, Vernon, and Penticton, data between 1905 and 2022 indicates that almost all summers have been warmer since 2000 with 2021 being the warmest. As well, almost all seasons are warmer than normal in Vernon.

***"THAT the Climate Indicators Intern's Report, dated May 31, 2023, be received."***

**CARRIED**



## 6.5 Communications Director Report

Ms. Jackson gave an update on the OBWB-Okanagan WaterWise's two outreach and education campaigns, Make Water Work (MWW) and Don't Move a Mussel (DMM). With the early onset of warm temperatures and a heavy freshet, some Okanagan local governments have reported that they are dealing with flooding while also being taxed by increased irrigation demand. As such, staff are ramping up WaterWise messaging on social media, while working on the roll-out of the MWW campaign, using billboards, social media ads and more. Staff are also working with Global TV to create a new PSA to have ready and available should drought become a concern. Ms. Jackson told the board that the formal launch of the campaign, and the announcement of two new garden centre partners was held May 18, attended by chiefs, mayors and councillors from each Okanagan region. A contract is also now in place with the Okanagan Xeriscape Association to help with the delivery of the MWW campaign.

Ms. Jackson also reported that work is underway to develop updated creative messaging and designs for the DMM campaign. Updates are being made to the DMM website and ads will be placed on billboards, social media, radio and more. A contract is also in place with the Okanagan and Similkameen Invasive Species Society to extend the reach of the DMM message.

***"THAT the Communications Director's Report, dated May 31, 2023, be received."***  
**CARRIED**

## 6.6 Deputy Administrator Report

Mr. Littley presented on an amphibious harvester that the OBWB is looking to purchase following an extensive RFP process. The Germany-sourced machine will be able to remove invasive milfoil at 1.7 metres deep, slightly deeper than the current 1.5 metres, and hold 5.5 m3 compared to the current 2-3 m3. In addition, the new machine is less noisy, has greater capacity so fewer trips are required to offload cut milfoil, and the engine is cleaner and more efficient. Mr. Littley advised the board of the terms to purchase the machine, including the payment schedule and details about international money transfers and exchange-rate planning. Pending board approval, the amphibious harvester would be delivered in June 2024.

***"THAT the board authorize the Executive Director to execute the contract with Berky GMBH for the supply of an Amphibious Milfoil Harvester for the price of €466,912.24 (Approx. \$700,000 CAD) AND THAT the Milfoil Control Program Asset Replacement Plan 2023 be amended to defer other capital purchases in order to purchase the amphibious milfoil harvester for delivery in summer 2024."***

**CARRIED**

Mr. Littley also reported that staff have sent a letter to Okanagan local governments with an update on the Sewerage Facilities Assistance Grants Program review.

***"THAT the Deputy Administrator's Report, dated May 24, 2023, be received."***  
**CARRIED**

## 7. IN-CAMERA

7.1 In-camera session (under sec. 90(1)(c) of the Community Charter  
Move to in-camera at 11:59 a.m.

Come out of in-camera at 12:30 p.m.

**8. RISE & REPORT FROM IN-CAMERA**

*"THAT we acknowledge the excellent work of the OBWB Executive Director, and support a lift in salary to \$155,000 per year, beginning April 1, 2023; AND THAT the Chair and Vice-Chair of OBWB conduct a Performance Review of the OBWB Executive Director prior to the end of the year- 2023."*

**CARRIED**

**9. NEXT MEETING**

9.1 The next meeting of the Okanagan Basin Water Board will be Tuesday, Aug. 1, 2023 at 10 a.m. at Regional District of North Okanagan in Coldstream, B.C.

**10. ADJOURNMENT**

*"THAT there being no further business, the regular meeting of the Okanagan Basin Water Board of June 6, 2023 be adjourned at 12 p.m."*

**CARRIED**

Certified Correct:		
Chair		Executive Director

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
August 1, 2023  
Agenda No: 6.1

To: OBWB Directors  
From: Anna Warwick Sears  
Date: July 26, 2023  
Subject: **Executive Director Report**

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### **Upcoming OBWB annual meeting**

The September OBWB meeting will be held on Friday, September 8<sup>th</sup>, after lunch following the OBWB's annual meeting. As usual in September, the meeting is shorter than normal, with fewer staff reports. We hold our annual meetings on Fridays, to increase public attendance. It will be held at the Rotary Centre for the Arts in downtown Kelowna, and we will provide all directors with a code to park for free in the nearest parkade.

### **Annual Report and Tracking Measures**

Staff have been working on the OBWB's 2023 annual report, which will be released to the public at our annual meeting. The annual report provides context to the audited financial statements, which are included in the report. We are also working on our tracking measures, which is an internal document, regarding our 2022-23 work to move the OBWB's strategic plan forward.

### **UBCM Flood Clinic**

My proposal for a flood policy clinic has been accepted by UBCM. I organized the session to bring together the best examples I've found where communities are putting in flood bylaws and incorporating flood vulnerability into their long-term planning. Although we've had lakeshore flood maps for three years, and the height of the flood of 2017 took place more than six years ago, very few Okanagan communities have updated their development and land use policies to reflect our new understanding of flood risk. I'm hoping that this session helps communities get over barriers to implementing flood policy.

TITLE: Building Housing (Safely) in Floodplains

#### **SESSION DESCRIPTION:**

B.C. has a housing shortage, but how do we plan development in flood hazard areas? This session profiles large and small community solutions, balancing growth with safe development policies.

Many B.C. communities already have significant development on floodplains. After recent intense floods, a number of these communities created digital maps delineating their flood hazard areas. With the current housing shortage, communities want to densify and build out where they can, but don't want to increase their vulnerability to catastrophic flooding. This session profiles

examples of B.C. small and mid-sized cities, towns, and rural areas that are using planning tools to guide the form and direction of new development – reducing flood risks while growing their neighbourhoods. From the coast to the interior, across a range of population sizes, there is no one-size-fits-all solution, and each community can consider a portfolio of good options. This session demystifies best practices and next steps for building out flood-resilient communities.

#### **Proposed Workshop on Mission Creek**

I had a meeting in June with Kelowna MLA Renee Merrifield, who wanted information about water issues on Mission Creek. She has been getting many requests from a variety of constituents, wanting changes to water and land management around the creek. We are tentatively hoping to hold a workshop about Mission Creek in early December, to bring together all the different interests, including Joe Rich residents, water purveyors, farmers, Westbank First Nation, Okanagan Nation Alliance's Fisheries Department, Mission Creek Restoration Initiative, City of Kelowna, and residents and businesses along the creek. The goal of the workshop would be for each group to learn about the concerns of the others, and begin to develop a plan to resolve differences. There is a graduate student from UBCO who is interested in studying Mission Creek water conflicts for her thesis, and she will be assisting with the organization of the event.

#### **Indigenous Engagement Institute**

On July 25 – 27, I will be attending a workshop on reconciliation, held by the Indigenous Engagement Institute and taking place in the Similkameen. I'll be able to make a more detailed verbal report at the OBWB meeting. This workshop is geared toward senior leadership in government agencies and not-for-profits, with attendees from both the U.S. and Canada.

#### **Syilx Language Training for OBWB Staff**

In June, we had two excellent two-hour workshops with Jasmine Peone, a language teacher and trainer from Westbank First Nation. We had asked for sessions focused on pronunciation, and words about water and geography. These sessions were fun and effective for reducing the awkwardness and barriers that come from not knowing how to pronounce the various symbols in the written Syilx language, as well as the sounds that do not occur in the English language. Having taken these, I believe they would benefit anyone working in the public service in the Okanagan, and could arrange further lessons for the board or council if there is interest.

#### **Herbicide treatments in U.S. portion of Osoyoos Lake**

I received a notice from the Noxious Weed Control Manager from Okanogan County, WA, saying that they have scheduled herbicide treatments on July 26th to control milfoil in the U.S. portion of Osoyoos Lake. The herbicide they are using, ProcellaCOR EC, has been approved for use in Canada, without any water use restrictions for potable or domestic water withdrawals from the treatment area, or swimming, boating, or fishing. There is a short 24-hour restriction on pulling irrigation water for some broadleaf species directly from the treatment areas.

On the Canadian side of Osoyoos Lake, our main milfoil control method is rototilling, and it is not considered acceptable to use herbicide. On the U.S. side of Osoyoos Lake, their main control method is herbicide, and it is not considered acceptable to rototill. I don't believe that we would ever be permitted to use aquatic herbicide in Okanagan lakes, so this will not influence our milfoil control

program. However, now that this treatment is approved in Canada, it may begin to be used for milfoil in small lakes where there is no feasible mechanical treatment option.

The same afternoon that I received the information about the herbicide application, I received a call from a Canadian who has a property on the U.S. portion of Osoyoos Lake, just south of the border. He was concerned about the heavy milfoil growth, and frustrated that he couldn't find anyone who could address the problem. I was able to share the information with him about the upcoming treatment, and he was greatly relieved. This illustrates the wide range of opinions people may have about different control options.

### **OBWB Staff Compensation Review**

I am working with a local human resources company to undertake a compensation review for the OBWB staff, as there has not been a comprehensive review since 2015. This will be completed before I prepare the 2025 OBWB budget, which will be presented to the board on November 7, 2023.

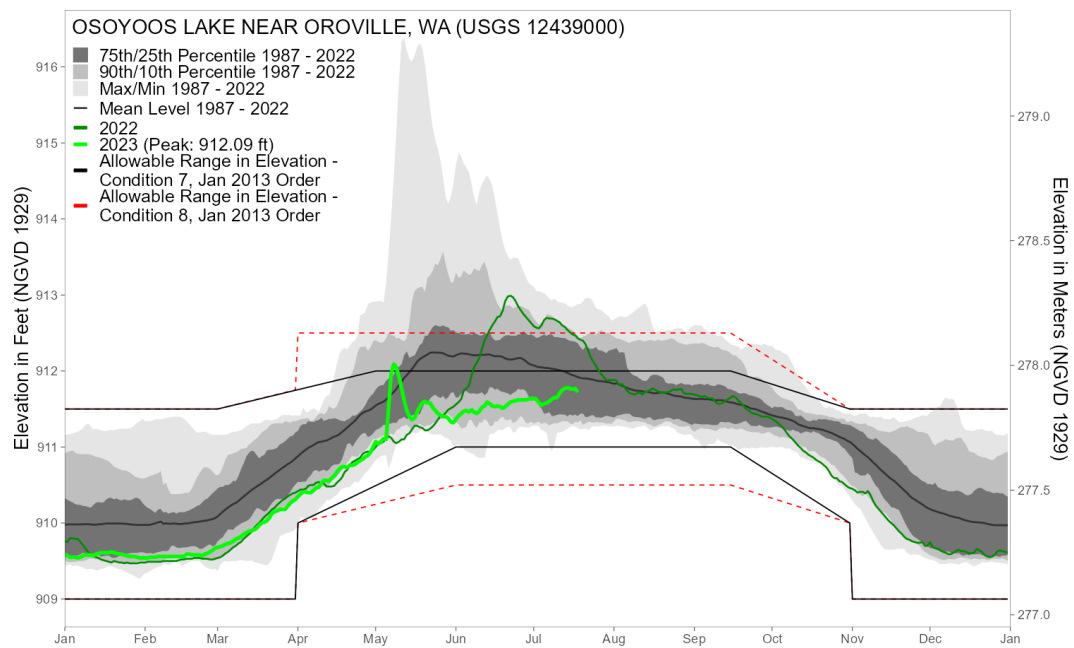
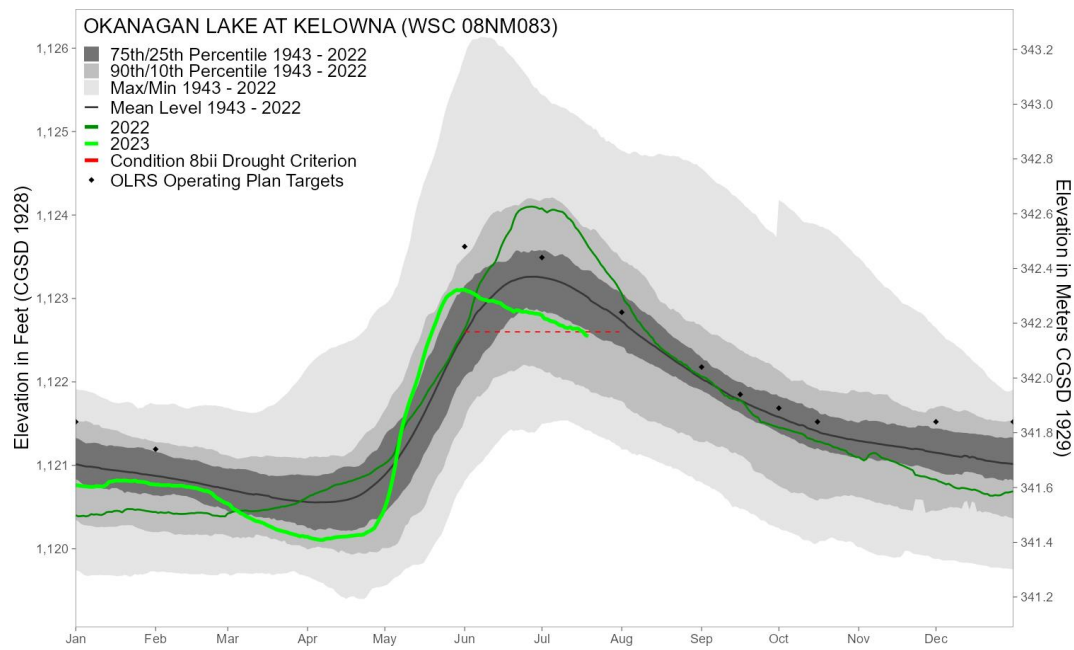
### **Federal Budget consultation**

A number of other watershed groups in B.C. are contributing letters to the Government of Canada's budget consultation process (open until August 4<sup>th</sup>), requesting that the federal government match the B.C. Watershed Security Fund. I intend to send a similar request, like that I submitted from the OBWB to the B.C. budget consultation process. As currently structured and funded, the B.C. Watershed Security Fund is inadequate to meet the goals of the B.C. Watershed Security Strategy.

### **Weather Report**

The El Nino is affecting weather around the globe, creating extreme heat events and exacerbating wildfires, as well as contributing to the regional drought here in the B.C. Interior. Meteorologists are predicting more extreme weather in the weeks to come.

The following graphs were created on July 19 by staff from Environment Canada, to update the International Osoyoos Lake Board of Control. The International Osoyoos Lake Board of Control is interested in Okanagan Lake because it strongly influences Osoyoos Lake levels. Okanagan Lake is now somewhat below-normal height for this time of the year. The dam operator is trying to maintain lake levels, but must continue to release a certain volume to meet fish, recreation, irrigation and other water needs downstream.



## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
August 1, 2023  
Agenda No: 5.2

To: OBWB Directors  
From: James Littlely  
Date: May 24, 2023  
Subject: Deputy Administrator Report

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### Invasive Mussel Update

#### Pacific NorthWest Economic Region (PNWER) Invasive Species Working Group

On July 18<sup>th</sup> I attended the PNWER Invasive Species Working Group annual meeting. The invasive mussel meeting this year did not include updates from jurisdictions on the status of inspection programs, but focussed on rapid response plans in the case of a mussel detection. The main message around response was to create plans to ensure resources are available as soon as possible after a detection of invasive mussels. The calls to action provided below are informed by information from the meetings.

#### Invasive Mussel Vulnerability Assessment Guide for Raw Water Infrastructure

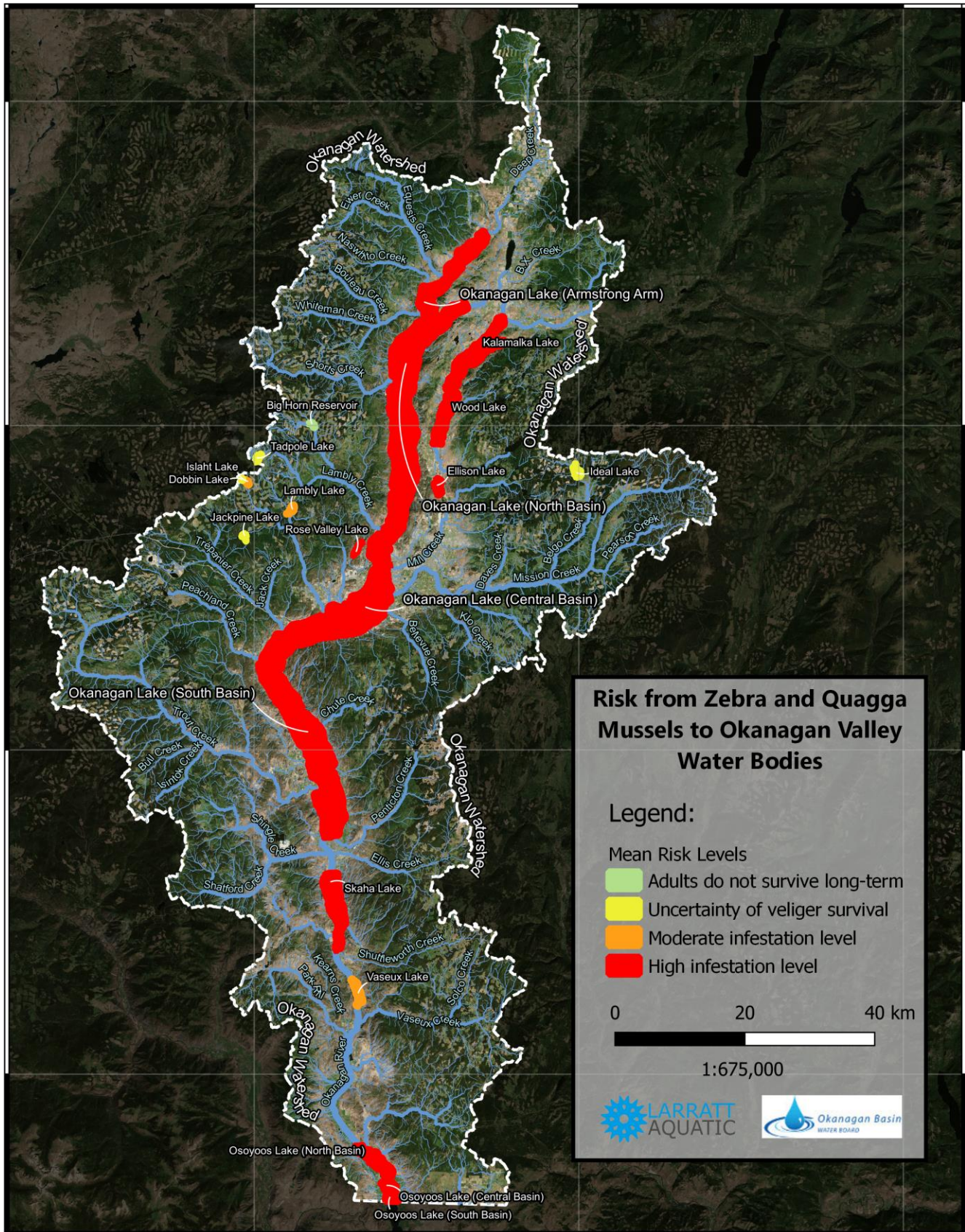
This year at PNWER I was invited to speak as a panelist to discuss OBWB's ongoing work to create an Invasive Mussel Vulnerability Assessment Guide for water infrastructure. Several organizations and jurisdictions are interested in receiving the guide once complete, and I received offers to provide technical review from others who have expertise with vulnerability assessments.

The guide is currently in draft form, and will undergo one more round of technical review, an internal editorial review, and design before it is final. I have incorporated new information from the recent report "Potential Economic Impact of Zebra and Quagga Mussels in B.C.," including a table to calculate an expected range of costs by facility type. Another section of the guide can be used to determine if source water is at risk, and what level of infestation is expected based on water chemistry.

#### Water-body Risk Map

OBWB hired Larratt Aquatic Consultants to analyze the existing water quality database against criteria used in determining levels of infestation by invasive mussels, included in the Vulnerability Assessment Guide. Larratt produced the map on the following page, showing the expected level of infestation by water body where water chemistry data was available. A similar map could be produced showing the expected infestation level for specific streams, and by sections of the lakes, since not every site is expected to have the same level of infestation throughout a given lake. This analysis shows that the large valley-bottom lakes are generally expected to experience a more severe infestation than higher mountain lakes and reservoirs.





### Invasive Mussel Policy Update

The board last sent calls to action for invasive mussel prevention to the province (and subsequently received a response) in March 2022. Since then, the province has released their updated economic impact assessment showing an annual expected cost range from an invasive mussel introduction of \$64 to \$129 million. At the same time, funding and staffing for the Invasive Mussel Defense Program (IMDP) have diminished. In 2022, the province ran only six inspection stations, compared to 12 in 2019, employing only 32 inspectors, compared to 64 in 2019. In addition, inspection station hours have been reduced, and OBWB receives multiple reports each year from the public about inspection stations being closed during advertised hours of operation. It is not surprising that **the number of inspections dropped to 20,100 in 2022 compared to 52,000 in 2019, a 61% drop.**

Provincial staff and Conservation Officers continue to do exceptional work with the resources they have, identifying efficiencies in the program that allow them to make it as effective as possible. Since the program was introduced in 2015, the province has also made significant advances in communications with neighbouring jurisdictions, monitoring water bodies for infestation, purchasing equipment for inspections and decontaminations, updating legislation, and supporting regional invasive species groups. However, serious gaps remain representing a significant risk to much of the province, including the Okanagan.

It is unclear from published information what the provincial budget for the IMDP was in 2022, or what it is for the current season in 2023. The highest funding year was 2017 with \$3.8 million, while the year with the highest number of watercraft inspections was 2019 with a budget of \$3.5 million. **Given inflation, an equivalent budget in 2023 would need to be \$4.04 million.**

The funding that is in place is also supported by multiple private and crown corporations, as well as multiple ministries and Fisheries and Oceans Canada. While these partnerships are beneficial to reducing the overall cost to the province, they are based on short-term (often annual) agreements, which take time to negotiate, and **create annual uncertainty.** As invasive mussels continue to spread from the east and south, the IMDP program gets even more important each year. **The IMDP needs stable, sufficient, and long-term funding to ensure prevention efforts are successful as long as possible.**

In the past, OBWB has also called on the government to introduce “pull-the-plug” legislation, requiring all watercraft to have the drain plug removed during transport on roads. This would reduce the risk of mussel survival in standing water in a vessel and is an indication that the owner is aware of the Clean, Drain, Dry message. **B.C. is the last remaining western province without this legislation in place.**

The OBWB also called for an update to the 2015 provincial Early Detection, Rapid Response (EDRR) plan for invasive mussels. The existing plan was published before the IMDP was operational. Since 2015, the province has gathered significant information on watercraft travel patterns, lakes at-risk, economic factors, and has had to respond to infested moss balls, and other near misses with contaminated vessels. Further, the federal government has now approved the use of potash as a rapid response tool for invasive mussels; a tool that has proven ineffective in large water bodies like Lake Winnipeg. Since 2015, other jurisdictions have also gained significant experience in rapid response, as others had to adjust to living with invasive mussels when prevention and response efforts fail. **The new EDRR should incorporate all the lessons learned and should look to longer-term implications for ongoing regional quarantines and control methods.**

Based on recent infestations in Manitoba and a number of southwestern states, it is important to have plans in place should an infestation be detected within the province. Lakes and watersheds may need to be quarantined with enforcement in place to separate contaminated lakes from clean lakes. No process currently exists to determine how a quarantine could be accomplished, how inspections and decontaminations would be enforced, if that authority exists, or if an introduction would qualify as a provincial emergency, triggering extra resources and funding for response. Regional plans could be developed, prioritizing areas at high risk of introduction from water-based recreation, and high risk of infestation due to vulnerability based on water chemistry. This would be a new call to action that goes beyond defence at the provincial border and a potentially ineffective rapid response using potash. Regional rapid



response plans would guide local actions in case of an invasive mussel detection. Further, **local governments, First Nations and citizens could have a say in what type of response is socially acceptable, whether it is restricted lake access, or introducing potash into our waters.**

I recommend that the board send another open letter to the province, and specifically to B.C.'s Minister of Environment and Climate Change Strategy, Minister of Water, Land and Resource Stewardship, Minister of Energy, Mines and Low Carbon Innovation, and copy Okanagan MLAs, MPs, local governments, ISCBC, OASISS, the Shuswap Watershed Council, and other partners, with updated calls to action including the following:

1. Commit funding to the IMDP of no less than \$4 million per year (all sources), indexed to inflation for at least 10 years.
2. Provide enhanced support to recruit and retain provincial Auxiliary Conservation Officers and other staff as needed to 2019 levels of 64 inspectors annually to ensure sufficient staffing for the IMDP.
3. Commit to introducing "pull-the-plug" legislation to be in effect prior to the 2024 boating season.
4. Update the provincial Early Detection, Rapid Response Plan, including a round of consultation with partner organizations prior to finalization.
5. Introduce a provincially-led process to create long-term response, containment and control plans in regions at high risk of introduction from water-based tourism, and high risk of infestation from water chemistry, including the Okanagan, Shuswap and Kootenay Regions, working with regional partners.

#### **Milfoil Control Program**

Milfoil harvesting is now complete in Wood Lake and continues in Osoyoos Lake. The harvester from Wood Lake will be launched early next week into Okanagan Lake to start work on the Vernon arm. In late June, Pat Field and I surveyed the North arm of Okanagan Lake, finding significant milfoil beds in several locations outside of our permitted areas. In one bay, Mr. Field indicated that the milfoil was as bad as he has seen it in 30 years. I am working with Ecoscape Consulting to develop new comprehensive permits to give us additional flexibility to address new areas. The new permitting process will depend on provincial and federal approval.

In reviewing public information for invasive mussels, I also noted that the Ministry of Fisheries, Oceans and the Canadian Coast Guard 2023-24 Departmental Plan says, "the Department will also finalize a policy statement for the management of invasive aquatic plants." There is no other context given for this statement, so I have reached out to DFO for more information.

#### **Sewer Grants Application – Vernon**

We have received an application for a grant to the City of Vernon for the extension of sewer in the Okanagan Landing area. This project was approved in principle for SFA funding in February 2022 by the board. The annual SFA grant value for this project is \$15,342.86 using the project budget, and today's interest rate as established by the Municipal Finance Authority. The project will service 94% pre-1978 development.

**Recommended motion:** That the SFA grant for the City of Vernon - Okanagan Landing 2021 sewer extensions project be approved.

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
August 1, 2023  
Agenda No: 6.3

To: OBWB Directors  
From: Nelson R. Jatel  
Date: July 24, 2023  
Subject: Water Stewardship Director's Report

### Okanagan Water Stewardship Council (OWSC)

At our most recent council meeting on June 6<sup>th</sup>, we hosted Dr. **Pete Millard**. He is the General Manager of Science at Manaaki Wheuna Landcare Research, overseeing science delivery and excellence in biodiversity, biosecurity, climate change, and sustainable land use research. Dr. Millard's presentation, entitled "Waiti: How Aotearoa New Zealand is Dealing with Water Quality and Other Environmental Issues," was an excellent talk that sparked significant conversation. Also at the meeting, the council leadership team presented a draft two-year work plan and workshopped several operational aspects of the council, including introducing four committees: Policy, Agricultural Irrigation and Environmental Flow Needs, Water Quality, and Organizational Readiness.



Our next meeting is Thursday, Sept 14, 12 noon to 4 p.m. at the Capri Hotel, Kelowna. **Erin Vieira**, Fraser Basin Council's Associate Regional Manager and Program Manager for the Shuswap Watershed Council (SWC) will present on the work of the SWC. Discussion will focus on the value of sharing information and how we can collaborate on mutual issues and challenges.

A significant portion of the September council meeting will be devoted to finalizing our work plan for Term 11, which spans the upcoming two years. Board members' attendance is highly encouraged to ensure active participation in shaping our future strategies.

### Okanagan Hydrometric (stream flow) Monitoring

The Hydrometric Technical Advisory Committee convened on July 12<sup>th</sup>, allowing project partners to share updates on the 2023 hydrometric installations and field work status. We have made significant progress in enhancing the efficiency and accuracy of our hydrometric monitoring program, as I outline below. This data is instrumental in refining the region's water management strategies.

As part of the development of the Okanagan Hydrometric Monitoring service, we recently hosted a three-day workshop with the Okanagan Nation Alliance (ONA), focusing on Acoustic Doppler Current Profiler (ADCP) training and its application in field measurements. The ADCP measures real-time water levels.



The workshop started Wednesday, July 5<sup>th</sup> with an introduction to ADCP and an overview of the training agenda. Participants then set up the ADCP in the office, preparing the unit for field measurements. In the afternoon, we moved to the field for practical application and hands-on experience with the ADCP.



On Thursday, we dedicated the morning session to reviewing the previous day's measurements and addressing questions. The afternoon was spent in an open discussion about different types of equipment and their alignment with the Resource Information Standards Committee (RISC) standards. The Ministry of Environment (MOE) led this session, providing valuable insights into the new data collection methods and their application.

Friday was reserved for addressing additional questions and providing further practice on the ADCP. Frank van der Have, from Hoskin Scientific, was available until the early afternoon to assist and guide the participants.

This workshop provided a comprehensive understanding of ADCP, its setup, and its practical application in field measurements. It also offered an opportunity to discuss equipment types and their adherence to RISC standards, enhancing our collective knowledge and skills.

#### **Okanagan Real-Time Environmental Flow Needs (EFN) Explorer Web Application Project Update**

We have now completed the initial version of the Okanagan Real-Time EFN Explorer Web Application, a project developed in collaboration with Ecofish Research Ltd. This tool is designed to provide real-time hydrometric data about EFNs and Critical Environmental Flow Thresholds (CEFT) for key watersheds throughout the Okanagan Basin.

The EFN Explorer provides maps that allow users to navigate 12 sub-basins within the Okanagan watershed. Of these, nine basins contain hydrometric stations that report real-time flow data. These sub-basins are colour-coded based on their proximity to the EFN thresholds and CEFTs established by the Okanagan Nation Alliance (ONA).

One of the critical features of the EFN Explorer is the Hydrograph Viewer. This tool provides a detailed view of streamflow levels concerning EFNs. It displays a hydrograph that includes recent real-time daily flow data, the EFN, and the CEFT; all overlaid on daily percentiles of naturalized flow.

Looking ahead, we have proposed several enhancements to the EFN Explorer, including:

- aesthetic and functionality updates;
- app optimization;
- hover capabilities;
- adding an "About" tab; and
- incorporating:
  - water licensing data;
  - upland reservoirs real-time data;
  - reporting;
  - temperature real-time data;
  - fish data, and
  - cumulative effects metrics.

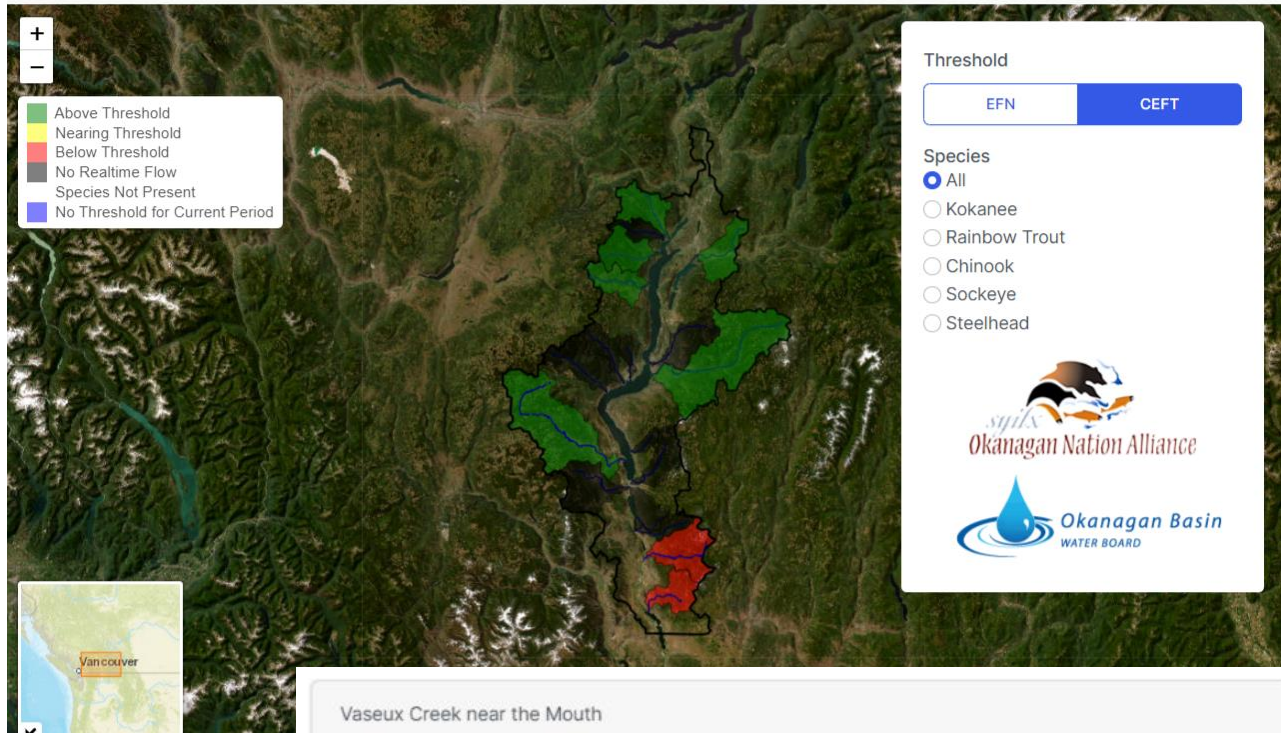
The EFN Explorer is a significant step forward in our ability to monitor flows and support water use discussions and decision-making for streams in the Okanagan Basin. We look forward to discussing how we can further develop this tool to meet our needs and support environmental management efforts in Okanagan watersheds and for fish populations.



Okanagan Real-time EFN Explorer

Home

ECOFISH



Vaseux Creek near the Mouth

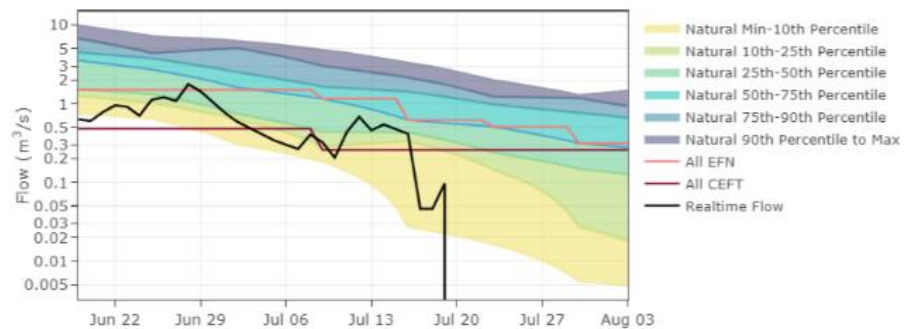


Current Discharge  
**0 m<sup>3</sup>/s**  
0% LTMAD (1.29 m<sup>3</sup>/s)



Supported Species

Chinook - EFN 0.15 m<sup>3</sup>/s,  
CEFT 0.26 m<sup>3</sup>/s  
Rainbow Trout - EFN 0.15  
m<sup>3</sup>/s, CEFT 0.06 m<sup>3</sup>/s  
Steelhead - EFN 0.15 m<sup>3</sup>/s,  
CEFT 0.06 m<sup>3</sup>/s  
Sockeye - EFN 0.32 m<sup>3</sup>/s,  
CEFT NA m<sup>3</sup>/s



Dismiss



Through this collaborative effort, OBWB, ONA, Water Survey of Canada and other project partners are dedicated to advancing our hydrometric monitoring program, ensuring we stay at the cutting edge of sustainable water management in the Okanagan.

Figure 1 presents an updated hydrograph of Mission Creek, which provides up to 30% of annual water into the Okanagan system, reflecting the influence of recent rain events and a smaller and faster-melting-than-normal snowpack.

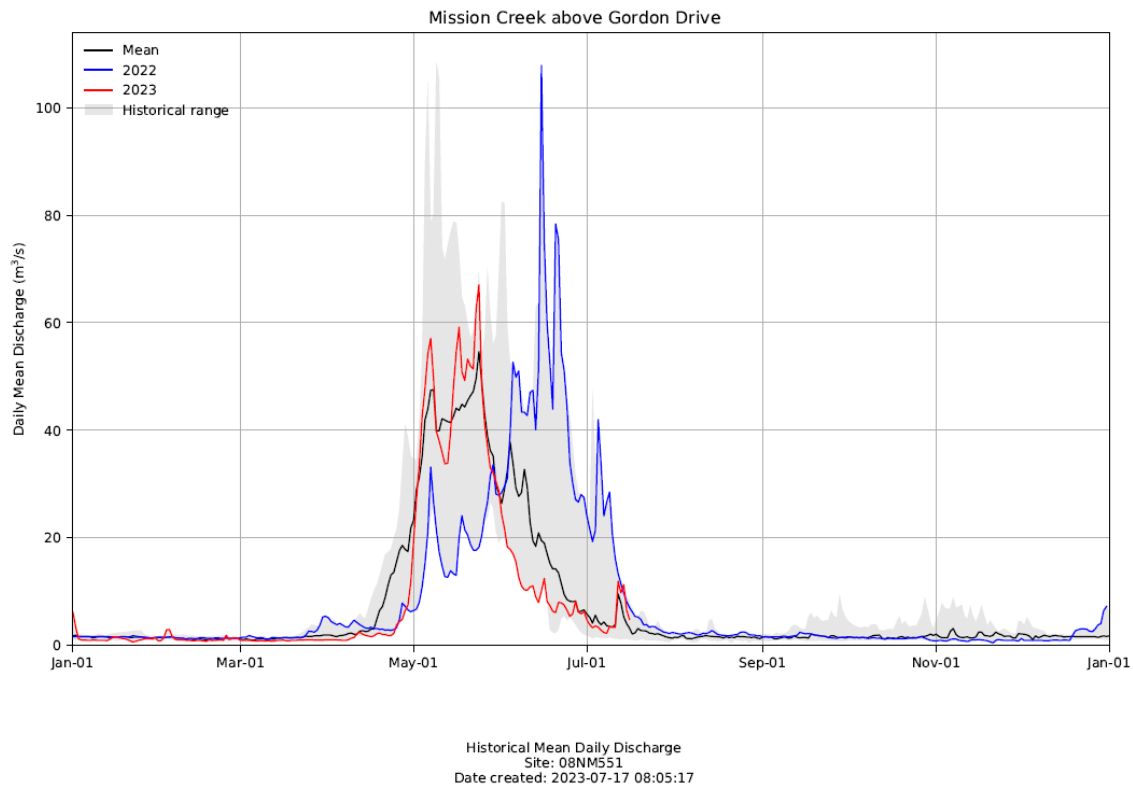


Figure 1. OBWB Hydrometric station readings for July 17, 2023.

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
August 1, 2023  
Agenda No: 6.4

To: OBWB Directors  
From: Kellie Garcia  
Date: July 25, 2023  
Subject: Policy and Planning Director Report

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### Drought Management

The Thompson Okanagan Regional Drought Response Team met weekly over the last two months to report on water supply conditions and discuss drought levels. The team is comprised of provincial staff, including fisheries biologists, ecosystems officers, hydrogeologists, hydrologists, agrologists, and district water officers, and advisors from Fisheries and Oceans Canada, Agriculture Canada, First Nations organizations, and local governments. I encourage all Okanagan water suppliers to attend the meetings, especially in a year like this.

In the Okanagan, lingering effects from a late 2022 drought, record-setting spring temperatures, an early freshet, and a lack of precipitation have resulted in low stream flows and rising water temperatures. While the scattered showers and cooler temperatures in June gave some reprieve, it was not enough to overcome the precipitation deficit from previous months. British Columbia ranks drought levels from 0 to 5, with Drought Level 5 rated as the most severe with adverse impacts to socio-economic or ecosystem values being almost certain. With the support of the Drought Response Team, the Government of B.C. declared the Okanagan as “Very Dry” (Level 2) in mid-June and “Severely Dry” (Level 3) in early July.

It is important to note that local water restrictions (stages) are set using different indicators than provincial drought levels and water supply conditions vary across the region. Whether a community moves to a higher restriction stage depends on several factors, including customer demand, infrastructure capacity, and local water supply conditions (e.g., reservoir storage). A quick scan of water restrictions across the valley show that most communities are in Normal or Stage 1, except for West Kelowna (Stage 2), RDCO (Stage 3), RDOS (Stage 2), Oliver (Stage 2), and Osoyoos (Stage 2).

Ms. Jackson and I wrote two bulletins to correspond to these elevations in drought levels (see next pages). The bulletins provide a valley-wide perspective of current drought impacts on water supply, fish, agriculture, firefighting, and domestic use, and response. They are part of the OBWB’s Okanagan Drought Response Strategy, which is aimed at ensuring stronger communication and valley-wide coordination during a drought, recognizing that the water of the Okanagan is all connected.

## OKANAGAN DROUGHT BULLETIN #2023-1

**June 23, 2023**



### OKANAGAN MOVED TO DROUGHT LEVEL 2

Lingering effects from a late 2022 drought, an early freshet, warm and dry spring conditions, and declining streamflows have prompted the Government of B.C. to move the Okanagan to a Level 2 drought. While the recent cooler conditions and localized rain have brought some reprieve, drought conditions will persist unless we have prolonged rain.

*Okanagan water purveyors should closely monitor supplies and customer demand and consider ramping up communication with customers in preparation for potentially worsening drought conditions this summer.*

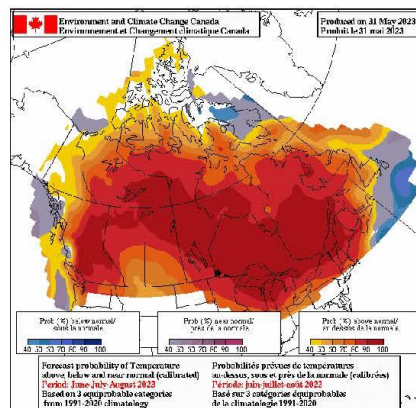
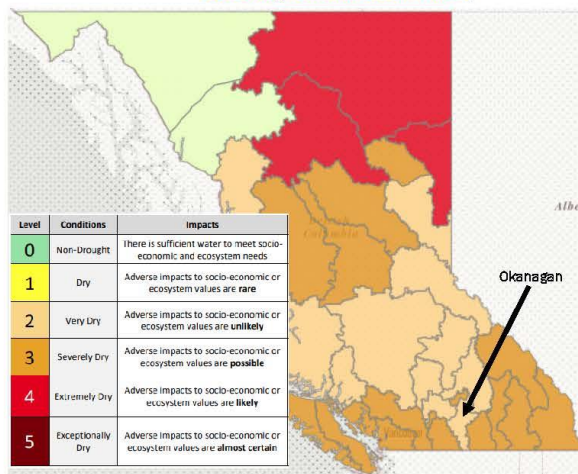
Drought levels have been elevated to "Very Dry" (Level 2) or "Severely Dry" (Level 3) for most of British Columbia. In the Okanagan, record-setting warm temperatures in May resulted in an early freshet. The snowpack in the Okanagan region is completely melted and precipitation has been lower than average in some areas this spring.

Streamflows have declined significantly over the last few weeks, with many flows reaching the lower end of the historical range for this time period. Water temperatures are also increasing, which can be lethal for fish. Water purveyors with upstream storage should closely follow their release schedule requirements to avoid low flows downstream. Flows in some streams can change rapidly during hot, dry conditions.

Local water regulations (stages) are set using different indicators than provincial drought levels and water supply conditions vary across the region. Whether a community moves to a higher restriction stage depends on several factors, including customer demand, infrastructure capacity, and local water supply conditions. That said, everyone should be using water wisely.

Customers of water utilities should comply with all watering restrictions and advice from their supplier. Water licence holders on streams and wells who are not customers of local water utilities should adhere to conservation measures communicated by the Government of B.C.

Provincial drought level map on June 22, 2023  
Source: [BC Drought Information Portal](https://www2.gov.bc.ca/gov2/serv/bc/drought/)



The long-term forecast is for [above normal temperatures](#) this summer.





## WATER FOR FISH

By using water efficiently on our farms and in our yards now, we can help keep enough water in the streams and aquifers to support fish spawning later in the year.

The Okanagan basin is the most northern extent accessible by anadromous (returning from the sea to spawn in rivers and streams) salmon in the Columbia River system. Sockeye, Chinook, Steelhead and Coho (in small numbers) use Okanagan tributaries for spawning and rearing. Okanagan streams and lakes are also home to resident Kokanee, Rainbow Trout and Whitefish. These fish species are culturally important to the Syilx Nation, support a vibrant fishery, and are critical for healthy freshwater systems.

The early freshet, warm temperatures, and lack of rain this spring are leading to an earlier than normal onset of low streamflows. Low streamflows can impede fish passage to spawning and feeding areas, increase susceptibility to disease and predation, cause stranding, or result in fish kills due to low oxygen and high water temperatures. Fisheries biologists are very concerned, reporting similar conditions to 2015 when more than 90 percent of Okanagan Sockeye that entered the Columbia River died before reaching their spawning grounds.

Having sufficient groundwater is also important for fish. When high air temperatures warm surface flows, groundwater upwelling in streambeds creates cool areas where fish can survive. Provincial staff are closely monitoring groundwater levels and will be asking groundwater users to curb their use if needed.



## WATER FOR FOOD PRODUCTION

While agriculture is the number one use of water in the Okanagan, it is important because it feeds our community and our economy. Prolonged periods of dry weather can cause crop damage and shortages in water supply for livestock. When it's hot and dry, both need more water to survive. Good water management by farmers is essential to making sure our limited and stressed water supply lasts throughout the growing season. Visit [www.obwb.ca/ag](http://www.obwb.ca/ag) for resources for agricultural water users.



## RESIDENTIAL WATER CONSERVATION



OBWB's Okanagan WaterWise program launched its annual "Make Water Work" campaign on May 18 with Okanagan chiefs, mayors and others, at Kelowna's UnH2O Xeriscape Garden, speaking on the importance of water conservation. The gathering came as the Okanagan continued to smash temperature records and smoke, from an earlier-than normal fire season in B.C. and Alberta, blanketed the valley.

Make Water Work (MWW) is aimed at tackling the second largest use of water in the valley – household lawns and gardens. The campaign begins in May when residents begin to turn on their taps, and runs until early October as water supplies drop and water is still needed for fall harvest crops, fish returning to local creeks to spawn, and increasingly, for firefighting.



The campaign is developed and delivered in partnership with local government and utility partners throughout the region. This year, business partnerships have blossomed to include one irrigation and nine garden centres promoting conservation and the *Make Water Work Plant Collection*.

This year's campaign includes:

- an interactive [MakeWaterWork.ca](http://MakeWaterWork.ca) website where residents can find watering restrictions for their community, tips to make water work better, the *Make Water Work Plant Collection*, a contest to encourage pledges to conserve with the chance to win WaterWise yard prizes, and more;
- advertising on billboards, TV and radio, vehicle wraps, digital and social media;
- business partners promoting MWW;
- materials for partners to distribute that include MWW tips, plant collection and contest info;
- MWW gardening gloves; and
- a friendly challenge, encouraging residents to pledge to help their community win the title of "Make Water Work Champions."

Interested in becoming a Make Water Work partner? Email [corinne.jackson@obwb.ca](mailto:corinne.jackson@obwb.ca) or call 250-469-6271.



## OKANAGAN DROUGHT BULLETIN #2023-2

**July 11, 2023**



### OKANAGAN MOVED TO DROUGHT LEVEL 3

Lack of precipitation, declining streamflows, rising water temperatures, and forecasts for above normal temperatures this summer have prompted the Government of B.C. to move the Okanagan to Drought Level 3.

*Okanagan water purveyors should closely monitor supplies and demand and ramp up communication with customers in preparation for potentially worsening drought conditions.*

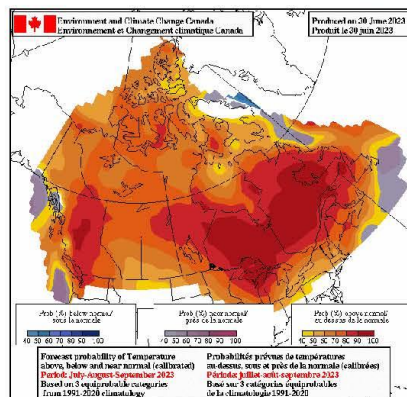
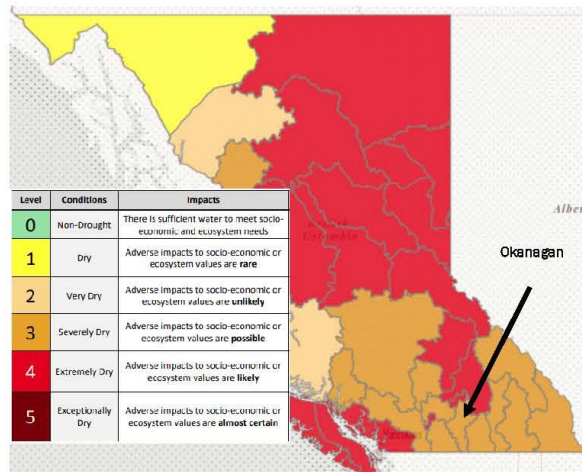
Provincial drought level map on July 6, 2023  
Source: [BC Drought Information Portal](https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/drought)

British Columbia ranks drought levels from 0 to 5, with Drought Level 5 rated as the most severe with adverse impacts to socio-economic or ecosystem values being almost certain. Currently, drought levels have been elevated to "Severely Dry" (Level 3) or "Extremely Dry" (Level 4) for most of B.C. In the Okanagan, record-setting warm temperatures this spring resulted in an early freshet. Precipitation has also been lower than average in many areas this year. While the scattered showers and cooler temperatures in June gave some reprieve, it was not enough to overcome the precipitation deficit from previous months.

Many streamflows are at the lower end of the historical range for this time period. Water temperatures are also increasing, which can be lethal for fish. Water purveyors with upstream storage should closely follow their release schedule requirements to avoid low flows downstream. Flows in some streams can change rapidly during hot, dry conditions.

Everyone is responsible to do their part to conserve water and reduce the risk of negatively affecting the environment and other water users. People and businesses in affected areas should reduce water use wherever possible and observe all watering restrictions from their water purveyor. Please note, local water restrictions (**stages**) are set using different indicators than provincial drought **levels** and federal drought **ratings**, and water supply conditions can vary across the region. (Learn more at <https://www.obwb.ca/drought-classification-systems-used-in-b.c.>.) Whether a community moves to a higher restriction stage depends on several factors, including customer demand, infrastructure capacity, and local water supply conditions (e.g. reservoir storage).

Water licensees who are not customers of local water purveyors should adhere to conservation measures communicated by the Government of B.C.



The long-term forecast is for above normal temperatures. Precipitation is more difficult to forecast and no clear trends are showing up for the Okanagan at this time.





## REGULATORY TOOLS TO PROTECT FISH

The Province continues to work with communities to encourage voluntary conservation. If conservation measures do not achieve sufficient results and drought conditions worsen, temporary protection orders under the *Water Sustainability Act* may be issued to water licensees to support drinking water for communities and avoid significant or irreversible harm to aquatic ecosystems. The protection orders give the province the ability to restrict water withdrawals if streamflow drops below environmental flow needs or to completely stop withdrawals if flows drop below critical flow thresholds.

An environmental flow need (EFN), or in-stream flow need, is the volume and timing of streamflow required for proper functioning of an aquatic ecosystem. A critical environmental flow threshold (CEFT) is a short-term flow threshold, below which significant or irreversible harm to the stream's aquatic ecosystem is likely to occur. Low water levels can impede fish passage to spawning and feeding areas, increase susceptibility to disease and predation, cause stranding, or result in fish kills due to low oxygen and high water temperatures.

The Okanagan basin is an extremely important region for fish. It is the most northern extent accessible by anadromous (returning from the sea to spawn in rivers and streams) salmon in the Columbia River system. Sockeye, Chinook, Steelhead and Coho (in small numbers) use Okanagan tributaries for spawning and rearing. Okanagan streams and lakes are also home to resident Kokanee, Rainbow Trout and Whitefish. These fish species are culturally important to the syilx nation, support a vibrant fishery, and are critical for healthy freshwater systems.



## RESIDENTIAL WATER CONSERVATION



The OBWB's outreach and education program Okanagan WaterWise has now fully launched its annual outdoor water conservation campaign "Make Water Work." This campaign is delivered in partnership with local governments and utilities throughout the Okanagan. It includes an updated

interactive website at [www.MakeWaterWork.ca](http://www.MakeWaterWork.ca). The website includes a quiz to learn more about the water of the Okanagan, as well as reasons and ways to conserve. The website encourages pledging to conserve and a friendly pledge competition between communities, as well as a contest to win WaterWise yard upgrades. Visitors to the site can also find up-to-date water restrictions for their neighbourhood and information about the *Make Water Work Plant Collection*.



This year's campaign is supported by advertising on social media, billboards, radio, TV, and wrapped vehicles. Handouts, social media graphics and more are provided to Make Water Work utility and business partners for use to help extend the reach of the

messaging. In addition, a partnership has been developed with the Okanagan Xeriscape Association to conduct outreach at Make Water Work garden centre partners to promote the plant collection and WaterWise gardening.

The plant collection includes 105 plants, grasses, trees and shrubs that will do well in the Okanagan's climate and this year is focusing on native plants, recognizing the numerous benefits that they provide. The collection was updated this year to include the syilx name for local plants on the list. The plant collection list is available for download from the Make Water Work website at [www.MakeWaterWork.ca/plants](http://www.MakeWaterWork.ca/plants). Gardeners are encouraged to visit partner garden centres, or to visit a favourite garden centre of their choice and ask for the plants listed.

Interested in becoming a Make Water Work partner? Email [corinne.jackson@obwb.ca](mailto:corinne.jackson@obwb.ca) or call 250-469-6271.

### **Okanagan Flood Story Website Updates**

OBWB staff are currently working on a simplified and streamlined version of the Okanagan Basin Flood Story website ([www.okanaganfloodstory.ca](http://www.okanaganfloodstory.ca)) for the public. The site includes maps that show which areas might flood under specific circumstances, how deep the floodwaters would be, and the recommended flood construction levels along the shorelines, among other things. Flood construction levels are an important tool for local governments because they dictate the elevation that structures are recommended to be built at to reduce flood risk. The website also includes photos and stories about flood history in the Okanagan, information about how climate change is impacting flooding, and resources to help property owners prepare for, respond to, and recover from floods. The “power user” portal is still available on the Flood Story Website for people who are interested in the more technical aspects of flooding, such as local government engineers and planners and provincial staff.

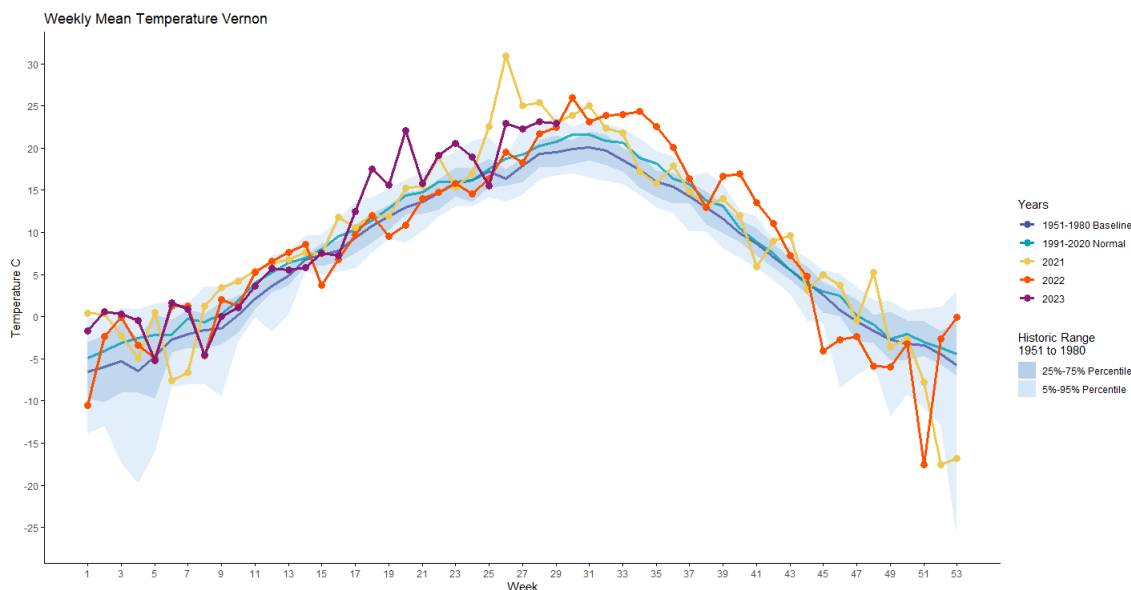


## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
August 1, 2023  
Agenda No: 6.6

To: OBWB Directors  
From: Sandra K. Schira  
Date: July 25, 2023  
Subject: Climate Indicators Intern Report

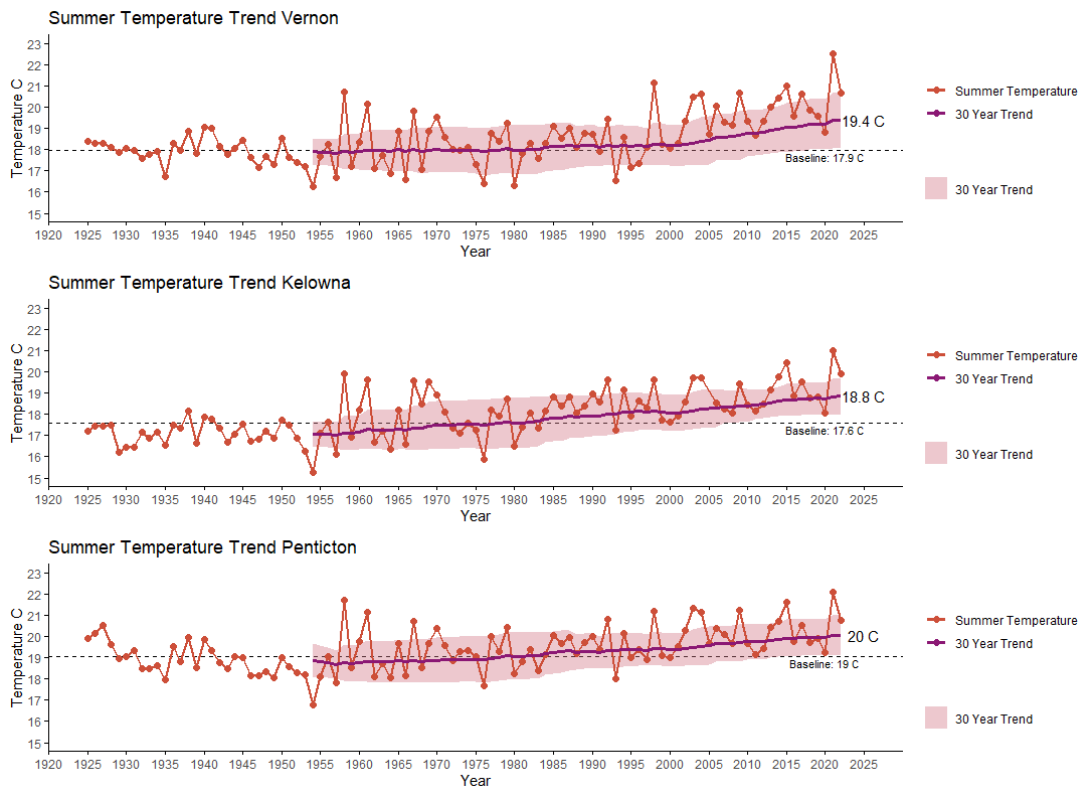
In the midst of a drought in the Okanagan and a July that is breaking global temperature records, work continues on the ***Okanagan Basin Climate Change Indicators Project***. The current phase has focused on indicators for temperature, precipitation, and snow. The last few weeks have been spent identifying and vetting potential long-term datasets, consulting with experts, and conducting literature reviews to identify methods. To draw conclusions about climatic changes, a site needs at least a 30-year data record. Thanks to long-term monitoring efforts there is good long-term data (i.e. 100 years) for temperature and total precipitation for several locations in the Okanagan. Data records are not as good for snow accumulation, which is unfortunate given that the hydrology of the Okanagan is strongly influenced by the timing and volume of snow melt.



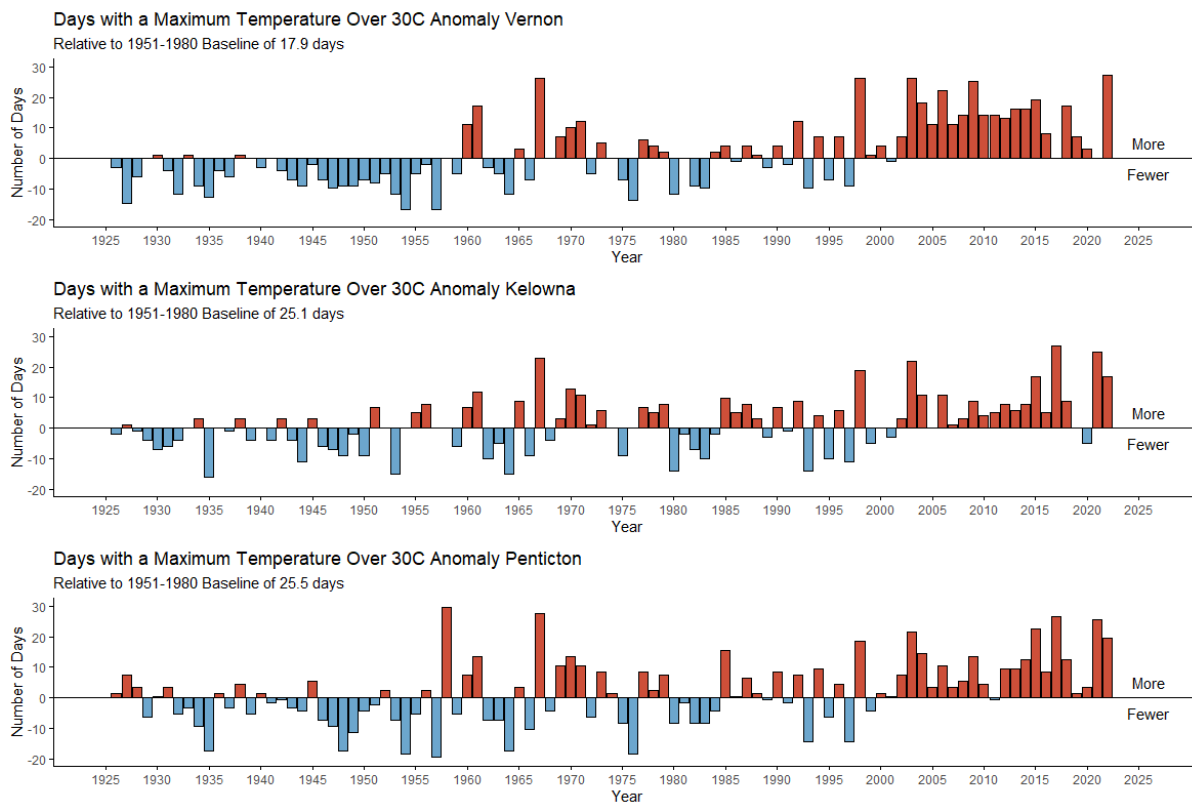
**Figure 1 Weekly average temperature for Vernon.** The baseline period is taken from 1951 to 1980 and with the 25<sup>th</sup> to 75<sup>th</sup>, and 5<sup>th</sup> to 95<sup>th</sup> percentiles for that time period displayed. The most recent climate normal (1991 to 2020), and the years 2021, 2022, and 2023 are also displayed. **The figure shows a clear over all shift to warmer temperatures and highlights the occurrence of unusually extreme hot weeks in the last 3 years.** Kelowna and Penticton show similar patterns.

Based on excellent temperature records, we have been able to identify a clear change in both average and extreme temperatures across the Okanagan. “Climate normals” are used by Environment and Climate Change Canada to describe normal climate conditions for a specific location. Normals are calculated at the end of each decade and use 30 years of data to calculate average temperature and precipitation for a location. In order to detect changes in climate it is vital to establish a baseline to compare the current climate. Across different organizations and even within ECCC there is no standard baseline (e.g. two different reports by ECCC use 1961 to 1990 and 1948 to 2016 respectively). In lieu of a standard baseline, for this project we use 1951 to 1980 to define normal conditions. This range was selected to balance data accuracy and minimize data with human influence. The climate change signal typically emerges in the 1970s meaning there is some signal present in the baseline, however there is still significant natural variability. Since this study focuses on observed data, we must work with what data we have and some locations do not have data that goes back past the 1950s. Furthermore, a more recent baseline will maximize data quality as data collection methods vary over time. The goal of the project is to communicate if a trend is present, to that end it is most important to be consistent, and select a base period that is representative. However, since the climate change signal is present in the baseline, bear in mind that the trends reported here are conservative.

In the Okanagan, the most recent climate normal (1991 to 2020) shows an increase in average temperature for almost every week compared to the baseline (1951 to 1980) (Figure 1). Furthermore, the last three years have all had multiple weeks that are not just warmer than normal but also outside of the historic range (Figure 1). Although we continue to have winter cold snaps, the shift is clearly to warmer conditions across the whole Okanagan and across all seasons. For example, the 30-year trend shows average summer temperatures shifting by more than 1C from the baseline (Figure 2). Hotter summer temperatures come with more extreme hot days and since 2000 almost every year has more days with a maximum of 30C or hotter (Figure 3); and in some years there are twice the normal amount. Although in the past there were years with long hot spells (days over 30C), these consistently occurred during El Nino years. Now, hot spells also take place in La Nina years, which was not the case in the past. Overall, there is a clear shift to warmer average temperatures and the number of extremely hot days is increasing for the Okanagan. These observed changes in temperature have significant and wide-ranging implications for human health, ecosystem health, infrastructure, and extreme events like fire.



**Figure 2 Summer (JJA) temperatures trend 1922 to 2022.** The 30-year trend for Vernon, Kelowna, and Penticton is calculated using a rolling average and is plotted with its standard deviation. **The baseline is calculated from the summers of 1951 to 1980.** The figure shows the shift towards warmer summer temperatures by at least 1C from the respective baseline. Since this is a conservative estimate this is a significant change. The impacts of such a shift are wide ranging and include ecosystem health, changes in extreme events like fires, human health, and more



**Figure 3 Days over 30C anomaly 1922 to 2022.** This figure shows the number of days with a maximum temperature above 30C for Vernon, Kelowna, and Penticton. Normal is defined as the average days from 1951 to 1980 and the anomaly is the deviation from that normal. **For all 3 cities since 2000, almost all years have a positive anomaly and in some cases over twice the normal number of days.**

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
August 1, 2023  
Agenda No: 6.6

To: OBWB Directors  
From: Corinne Jackson  
Date: July 26, 2023  
Subject: Communications Director Report

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### Drought Communications & Make Water Work 2023

Since my last report for the June 6 board meeting, the Government of B.C. has moved the Okanagan from Drought Level 2 on June 8 to Level 3 on July 5. In response, I have been following up with local government and utility Make Water Work (MWW) partners, providing campaign updates and recommendations for use of the MWW materials. I have also been working with Corus and Global Okanagan on a TV PSA regarding the drought and the importance of following local watering restrictions. A radio ad has also been developed and is ready for use as required.

As noted in Ms. Garcia's report, we wrote and distributed two "Drought Bulletins" to reflect these changes in Okanagan water conditions. The bulletins are distributed to local utility and government staff and electeds, local MLAs and MPs, staff in water-related ministries, Okanagan Water Stewardship Council members and media. Some of the news coverage regarding the increase in drought levels is noted further down in this memo. The bulletins were also posted on our Facebook, Twitter, Instagram and LinkedIn pages.

Our MWW partner, the Okanagan Xeriscape Association has attended a number of gardening-related events and conducted outreach at some of our partnering garden centres, encouraging customers to use plants from the *Make Water Work Plant Collection* and others that are more suitable to our climate.

There has been much interest and support for the Make Water Work program with requests for materials from local gardening groups and others. We have also provided support to the City of Armstrong to develop a Make Water Work garden at their new city hall site.

A few photos are provided below.





Photo top left – *Make Water Work Plant Collection* display at GardenWorks Penticton; Top right: City of Kelowna's Ed Hoppe shows off some *Make Water Work* gardening gloves being distributed by partners this summer; Bottom left: Armstrong Mayor Joe Cramer shows OBWB staff the site of a *Make Water Work* demonstration garden being installed this summer in front of the city's new municipal hall; Bottom right: Heather Doheny with the Lake Country Garden Club proudly displays *Make Water Work* signage at the municipality's WaterWise demonstration garden, the site of a garden tour held June 10.

### **Don't Move A Mussel 2023**

Work on this year's Don't Move A Mussel (DMM) campaign has included a refreshed website at [www.DontMoveAMussel.ca](http://www.DontMoveAMussel.ca) (partial screenshot of homepage provided below) with updated information. Billboards, social media ads and more have also been developed and are now running.

I have also provided the Okanagan and Similkameen Invasive Species Society with DMM sandwich boards, posters, rack cards, newly designed mussel/muscle shirts and other materials for distribution to 2023-08-01\_CD Report\_Memo



Okanagan tourist information centres, water-recreation related businesses and groups (e.g. marinas and yacht clubs), and for outreach at events and at boat launches.

A few images are provided below.

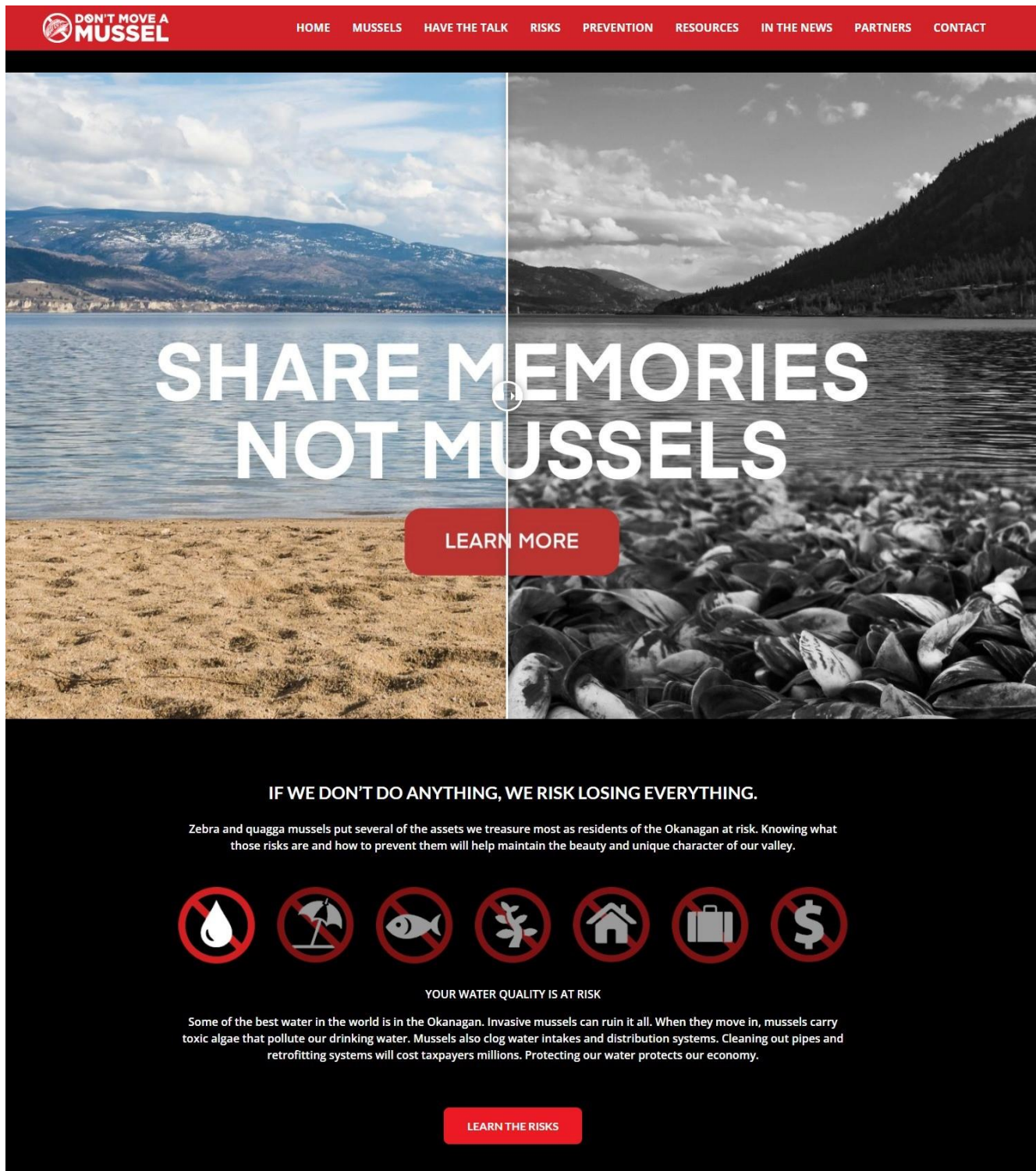


Image above: A partial screenshot of the Don't Move A Mussel homepage with refreshed visuals





Photos top: OASISS Aquatic Invasive Species (AIS) Assistant Nina shows off the new Don't Move A Mussel 2023 edition muscle shirt and dry bag. Bottom: OASISS's AIS Assistant Katie at an outreach event, "spreading the message, not the mussels!"

### Other communication initiatives

I am very pleased to announce that we have hired Amanda Burnett as our Communications Coordinator. Ms. Burnett grew up in the South Okanagan and is a marketing and communications specialist, savvy in social media, and with experience working in the Okanagan food and wine sector as well as with non-profits. She is passionate about environmental issues, and has worked with grass roots advocacy movements to help raise awareness about important issues impacting underserved communities. Ms. Burnett joined us on July 17.

Additional communication support was provided editing and sending letters to the province regarding their invasive mussel economic report and Homes for People action plan, and organizing two two-hour syilx language lessons for staff, held June 22 and 26.

### Summary of OBWB-Related News Coverage

June 9	<a href="#">“New report details massive cost of invasive mussel infestation,”</a> <i>Castanet.net</i>
June 9	“Okanagan water board sounding alarm for potential mussel infestation,” <i>KelownaNow.com</i>
June 9	“Results of invasive mussel report ‘deeply troubling’ Okanagan water board,” <i>Vernon Morning Star, Summerland Review, Salmon Arm Observer, Golden Star, Kelowna Capital News, Lake Country Calendar, Eagle Valley News</i>
June 17	“Okanagan Basin Water Board says invasives report ‘deeply troubling,’” <i>Castanet.net</i>
June 21	“Column - Gardening with Nature: Weather wreaks havoc on plants throughout the region,” <i>Castanet.net</i>
June 23	<a href="#">“‘Very dry’ – Okanagan elevated to drought level 2,”</a> <i>KelownaNow.com</i>
June 23	“Okanagan drought level increases,” <i>VernonMatters.ca</i>
June 23	“Okanagan drought level rising after early melt,” <i>Castanet.net</i>
June 23	“Okanagan watershed drought rating elevated,” <i>Penticton Western News, Kelowna Capital News, Vernon Morning Star</i>
June 23	“With snowpack in Okanagan gone, drought level on the rise,” <i>InfoNews.ca</i>
June 24	<a href="#">“Okanagan Valley moves to level two drought,”</a> <i>Global Okanagan, Global BC</i>
June 27	“Level two drought declared in Okanagan,” <i>Kelowna Daily Courier</i>
July 11	“Okanagan moved to Drought Level 3 rating,” <i>Vernon Morning Star, Kelowna Capital News, Summerland Review, Trail Times, Saanich News, Williams Lake Tribune, Nelson Star</i>
July 11	“Osoyoos consumes water at seven times the national average,” <i>Castanet.net</i>
July 11	“Residents asked to conserve water as Okanagan moves to Drought Level 3,” <i>Global Okanagan</i>
July 11	<a href="#">“Okanagan moved to Drought Level 3,”</a> <i>VernonMatters.ca</i>
July 18	“Call for volunteers to help monitor for invasive mussels,” <i>Castanet.net</i>
July 18	<a href="#">“Okanagan’s biggest threat is actually tiny,”</a> <i>Castanet.net, Okanagan Edge</i>
July 18	“Volunteers needed to monitor invasive mussels in Okanagan waterways,” <i>KelownaNow.com</i>
July 18	“Volunteers wanted in Okanagan to monitor invasive mussels,” <i>Global Okanagan</i>
July 18	<a href="#">“Volunteer ‘mussel’ needed to protect Okanagan lakes,”</a> <i>Penticton Western News, Vernon Morning Star, Revelstoke Review</i>
July 19	“Column – Gardening With Nature: Tips to keep your plants alive in scorching summer heat,” <i>Castanet.net</i>
July 19	<a href="#">“Lower Chute Creek Restoration Project”</a> <i>CBC Radio One Daybreak South</i> (clip runs 1:41:44 – 1:49:49)
July 23	“Volunteers needed to help monitor for invasive mussels,” <i>VernonMatters.ca</i>

### **Recent Presentations**

- June 14        “Tapping into Water Sustainability - Watershed Management in the Okanagan” to UBC-UVic Water WEST (Water & Environment Student Talks) Conference – Nelson Jatel, James Littlely, Corinne Jackson
- June 21        Kelowna Water Sustainability to Kelowna South-Central Association of Neighbourhoods – Anna Warwick Sears
- July 18        “Protect our Water: Aquatic Invasive Species” panel at Pacific NorthWest Economic Region Invasive Species Working Group – James Littlely



Honourable Nathan Cullen  
Minister of Water, Land and Resource Stewardship  
PO Box 9012 Stn Prov. Govt.  
Victoria, BC V8M 9L6  
[WLRS.Minister@gov.bc.ca](mailto:WLRS.Minister@gov.bc.ca)

June 8, 2023

Okanagan Basin Water Board Regular meeting August 1, 2023 Agenda No: 7.1
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Honourable George Heyman  
Minister of Environment and Climate Change Strategy  
PO Box 9047 Stn Prov Gov  
Victoria, BC V8W 9E2  
[ENV.Minister@gov.bc.ca](mailto:ENV.Minister@gov.bc.ca)

**Re: Report on the Potential Economic Impact of Zebra and Quagga Mussels in B.C.**

Dear Ministers,

The Okanagan Basin Water Board (OBWB) is a partnership of the three regional districts of the Okanagan Basin, with external board directors from the Okanagan Nation Alliance, the Water Supply Association of B.C., and the Okanagan Water Stewardship Council. Directors appointed by the regional districts include mayors and other elected officials from Armstrong in the north to Osoyoos in the south. Our mandate is to protect and enhance the quality of life in the Okanagan through sustainable water management.

For more than 10 years, one of the board's gravest concerns has been a potential infestation of invasive zebra and quagga mussels establishing in B.C. waterways. Your latest report brings even more urgency to this matter, especially in the Okanagan. Mussels are most often spread via infested watercraft and provincial stats show a large proportion of mussel-fouled watercraft from out-of-province are headed to the Okanagan Valley. This, plus our warm, calcium-rich waters put us at high risk for an infestation and all the costs and impacts associated with them.

The OBWB recently received the B.C. Ministry of Water, Land and Resource Stewardship's report titled: *Potential Economic Impact of Zebra and Quagga Mussels in B.C.* We appreciate the level of detail given by your report, looking at the potential financial impacts of invasive mussels on hydro facilities, irrigation infrastructure, municipal water treatment facilities, domestic water intakes, losses in property values and property taxes, tourism, boats and marinas. However, the report does not, and probably could not calculate the terrible impacts these mussels would cause to our natural systems.

While the board had been waiting to see this updated report for a few years and had anticipated bad news, the research results were deeply troubling. Even more so, we recognize that the estimated costs, ranging from \$69 to \$129 million a year, do not include many of the priceless aspects to our environment and quality of life that would be lost if these mussels become established in B.C.



An economic study cannot quantify the impacts to our children and grandchildren who would grow up missing the experience of playing along the beaches and swimming in the lakes free from piles of razor-sharp mussel shells. It cannot quantify the harm the mussels will cause to the populations of sockeye and Chinook salmon, that are being restored back from the brink of extinction by the efforts of the Okanagan Nation Alliance and their partners. It cannot quantify the losses to the health and environmental quality of our beautiful lake system – also a critical source of drinking water to a growing population.

What is more, the report cannot qualify the disruption of life caused by the inevitable need to quarantine lakes, the required inspections of all watercraft (not just ones from out of province), or the delays and trouble to the general public – whether boat owners or not. Our international reputation for clean lakes with excellent water quality will be lost. For all these reasons, even given the extremely high financial costs of an invasion to the public and private sectors that your report notes, the true costs will be far higher.

The only way a mussel invasion will be prevented is through vigilant action by your ministries. The OBWB has provided many specific calls to action in the past. We are grateful for those you have acted upon, and we encourage you to go further and make this a top priority for both your ministries. We will be providing updated calls for action later this year, but felt it was appropriate to address the results of this study.

Yours truly,

**Anna Warwick Sears, Ph.D. — Executive Director**  
**Okanagan Basin Water Board**  
1450 KLO Road, Kelowna, B.C. V1W 3Z4  
Email : [anna.warwick.sears@obwb.ca](mailto:anna.warwick.sears@obwb.ca)  
Office: 250.469.6251

CC:

- Okanagan MLAs: Harwinder Sandhu, Norm Letnick, Renee Merrifield, Ben Stewart, Dan Ashton, Roly Russell
- Okanagan Nation Alliance, Chiefs Executive Council
- Okanagan Local Government Chairs and Mayors
- Okanagan MPs: Mel Arnold, Tracy Gray, Dan Albas, Richard Cannings
- Pacific NorthWest Economic Region: Matt Morrison, Chief Executive Officer
- Invasive Species Council of B.C.: Gail Wallin, Executive Director
- Okanagan Chambers of Commerce
- Thompson Okanagan Tourism Association
- Union of BC Municipalities
- Shuswap Watershed Council
- Okanagan and Similkameen Invasive Species Society



June 29, 2023

Honourable Ravi Kahlon  
B.C. Minister of Housing  
[HOUS.Minister@gov.bc.ca](mailto:HOUS.Minister@gov.bc.ca)

Honourable Anne Kang  
B.C. Minister of Municipal Affairs  
[MUNI.Minister@gov.bc.ca](mailto:MUNI.Minister@gov.bc.ca)

Okanagan Basin Water Board Regular meeting August 1, 2023 Agenda No: 7.2
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**Re: Homes for People, in the right form and location**

Dear Minister Kahlon and Minister Kang,

We strongly commend your efforts to address B.C.'s housing crisis, and we wish to bring two critical issues to your attention as the new Homes for People Action Plan moves forward. First, it is important that new homes are only built in areas with sufficient infrastructure for wastewater treatment, to avoid septic pollution, which is already a significant concern. Second, homes should not be constructed in areas at risk for flooding, without appropriate mitigation measures in place.

The Okanagan Basin Water Board (OBWB) is a partnership of the three regional districts of the Okanagan Basin, serving an area with 11 municipalities, five First Nation bands, and more than 390,000 people. Our board includes mayors and other elected officials from Armstrong in the north to Osoyoos in the south, and additional board directors from the Okanagan Nation Alliance, the Water Supply Association of B.C., and the Okanagan Water Stewardship Council. Our mandate is to protect and enhance the quality of life in the Okanagan through sustainable water management. For more than 50 years one of the board's central responsibilities has been to reduce pollution of our lakes from untreated wastewater. During this time, more than \$75 million of local tax dollars have been spent to address this issue through our Sewerage Facilities Grants Program. More recently, we have worked with member communities to create maps of flood hazard areas around the watershed.

**Concerns about densification on septic:** The Okanagan is growing rapidly. Many of the larger municipalities are focusing development in downtown areas, but there is also demand for housing in rural residential and agricultural areas. Many of these rural properties are on septic, without rules in place to ensure that these systems are properly maintained. Septic pollution is already a concern, flowing into our streams and lakes. On small lots, adding secondary suites or carriage houses can exacerbate the flow of nutrients into the environment, leading to algae blooms in our lakes, and an increase in polluting nutrients. New laws and policies to expand housing options should direct the development away from areas on septic, or communities should be given financial support to develop and implement Liquid Waste Management Plans, as well as bylaws and compliance and enforcement structures to ensure septic systems are maintained.



We understand that a lack of infrastructure, such as the presence of community sewer, drinking water pipe capacity, roads or schools can limit planning for affordable housing development options. If housing is to be placed in these areas, infrastructure development must also be a required component of the Homes for People Action Plan, with increased options for infrastructure funding by senior levels of government. There is a potentially grave risk to our water quality if unsewered densification and sprawl are allowed to take place without consideration of the capacity and maintenance of septic fields. The basic principle is that if the province is going to require densification on septic, it must take financial responsibility to mitigate pollution from this densification.

**Concerns about densification in flood-prone areas:** Since the significant flood years of 2017 and 2018, Okanagan communities, in collaboration with the province, have been creating flood hazard and risk maps. We now have maps for the lakeshore areas of the Okanagan mainstem lakes, and several creek floodplains. However, policies, plans, and bylaws that constrain construction in flood hazard areas are not yet in place. These will be needed to avoid future disasters such as the Okanagan experienced in 2017 and 2018, or like the Fraser Valley experienced in 2021. As a result, some construction has moved forward, building sizable developments in floodplains without flood-protective building practices or structural flood mitigation in place. In its current form, the Homes for People Action Plan may further perpetuate high-risk development in floodplains.

Homes for People Action Plan could initiate the largest housing boom in provincial history. Up-to-date flood construction levels and flood resistant building practices (e.g. building materials that can withstand being wetted, or building designs that place habitable areas above the flood construction level) should be required as part of the plan. The costs to restore or replace flood-damaged homes is enormous, and will be a setback to communities trying to increase their housing stock, as well as creating a blight on an otherwise positive housing legacy.

Thank you for considering these issues. Again, we are strongly in favour of your efforts to address B.C.'s housing crisis in a way that avoids unnecessary water pollution and that protects British Columbians from the risk of natural disasters.

Yours truly,

**Anna Warwick Sears, Ph.D. — Executive Director**  
**Okanagan Basin Water Board**  
1450 KLO Road, Kelowna, BC V1W 3Z4  
Email : [anna.warwick.sears@obwb.ca](mailto:anna.warwick.sears@obwb.ca)  
Office: 250.469.6251

CC:



- Okanagan MLAs: Harwinder Sandhu, Norm Letnick, Renee Merrifield, Ben Stewart, Dan Ashton, Roly Russell
- Okanagan Nation Alliance, Chiefs Executive Council
- Okanagan Local Government Chairs and Mayors



July 6, 2023



Anna Warwick Sears  
Okanagan Basin Water Board  
1450 KLO Road  
Kelowna, BC, V1W-3Z4

Okanagan Basin Water Board  
Regular meeting  
August 1, 2023  
Agenda No: 7.3

DELIVERED ELECTRONICALLY: [anna.warwick.sears@obwb.ca](mailto:anna.warwick.sears@obwb.ca)

Dear Ms. Warwick Sears:

**RE: Sewerage Facilities Assistance Grants Program and One-hectare Policy Review**

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I refer to your letter dated May 17, 2023, wherein you advised that the Okanagan Basin Water Board (OBWB) has been asked to provide clarity on the one-hectare policy that it uses for eligibility requirement to receive Sewerage Facilities Assistance grants (SFA) and requesting input from the Regional District Board on its review of the SFA Program.

In response, the Planning and Development (P&D) Committee of the Regional District Board considered your request at its meeting of June 15, 2023, and resolved the following:

***THAT the OBWB be requested to amend its interpretation of the "1.0 ha Policy" to allow detached accessory dwellings on parcels less than 1.0 ha when they are connected to the same on-site private sewage system servicing the principal dwelling.***

As you are aware, this is similar to the previous resolution passed by the Regional District Board on this matter and provided to the OBWB in our letter of November 19, 2014.

We look forward to further discussions with the OBWB on this matter as you proceed with the review of the SFA Program, including any response that may be received from the Ministry of Municipal Affairs staff in relation to the five questions that OBWB has posed on the "1.0 ha Policy".

Should you wish to discuss this further, I can be reached at 250-490-4101 or by email at [cgarrish@rdos.bc.ca](mailto:cgarrish@rdos.bc.ca).

Sincerely,

A handwritten signature in blue ink, appearing to read "CG", is written over a horizontal line.

Christopher Garrish MCIP, RPP  
Senior Manager of Planning





Okanagan Basin Water Board  
Regular meeting  
August 1, 2023  
Agenda No: 7.4

Reference: WLRS 30816 / ENV 401518

July 21, 2023

VIA EMAIL: [anna.warwick.sears@obwb.ca](mailto:anna.warwick.sears@obwb.ca)

Anna Warwick Sears, Ph.D. --- Executive Director  
Okanagan Basin Water Board  
1450 KLO Road  
Kelowna, B.C.  
V1W 3Z4

Dear Anna Warwick Sears:

Thank you for your letter of June 8, 2023, regarding the recently released report on the Potential Economic Impact of Zebra and Quagga Mussels in B.C. We appreciate the continued support provided by the Okanagan Basin Water Board to protect our water resources from invasive zebra and quagga mussels.

Zebra and quagga mussels pose significant potential economic risks due to their impacts on infrastructure and to native freshwater species. The Province completed the study to get a better sense of the economic impacts of zebra and quagga mussels across a broader range of sectors, including the potential impacts to tourism and property values. The study's findings detailed in the *Potential Economic Impact of Zebra and Quagga Mussels in B.C.* report are helpful to different sectors and industry to understand potential economic implications, should invasive mussels establish in the province.

As you noted, the costs presented in this report do not include impacts to many of the benefits of healthy aquatic ecosystems such as impacts on fish populations. The costs considered in this study are limited by the available data, particularly regarding impacts on freshwater ecosystems and fish species. Further research is needed to better understand the impacts of ZQM on recreational, cultural, traditional, and other non-market values related to healthy aquatic ecosystems in B.C.

Keeping B.C. waters free of invasive mussels is a priority for our government. The results from this report underscore the importance of continued investments in prevention activities such as the Invasive Mussel Defence Program to mitigate the risk of invasive mussel introduction into B.C. We will continue to monitor changes in information, knowledge and threats /every year as well as collaborate with neighbouring jurisdictions to ensure our prevention measures are equal to the threats posed on many levels by these invasive mussels.

Page 1 of 2

Anna Warwick Sears, Ph.D. --- Executive Director

Again, thank you for writing and highlighting the importance of this report.

Sincerely,

A handwritten signature in black ink that reads "Nathan Cullen". The signature is written in a cursive, slightly stylized font.

Nathan Cullen  
Minister  
Ministry of Water, Land and  
Resource Stewardship

A handwritten signature in blue ink that reads "George Heyman". The signature is written in a cursive, slightly stylized font.

George Heyman  
Minister  
Ministry of Environment and Climate  
Change Strategy