

# British Columbia – Montana Cross Border Dreissenid Rapid Response Exercise Lake Koocanusa

June 2024

## After Action Report



Ministry of  
Water, Land and  
Resource Stewardship



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## Key Recommendations for Preparedness

All participants provided feedback on next steps that can be taken to improve preparedness for British Columbia and Montana regarding a detection of dreissenid mussels<sup>1</sup> occurring in Lake Kootenay. Several priority items are listed below. See *Next Steps* for a full list of recommendations.

- A. BC Ministry of Water, Land and Resource Stewardship (WLRS) to update the *British Columbia Zebra and Quagga Mussel Early Detection and Rapid Response Plan (QZM EDRR Plan)*, providing specificity to roles, responsibilities, and authorities. Special attention on who and who at WLRS makes the decision to classify a waterbody (e.g. designate the waterbody as “suspect” or “positive” for zebra or quagga mussels).
- B. WLRS to determine if presence of dreissenid mussels is considered a trigger for a provincial and/or regional “state of emergency”.
- C. Outline the process for designating who will assume the role as lead agency between the Province of BC and Fisheries and Oceans Canada when unified command has **not** been activated. Specific attention is needed with respect to establishing a clear process for designating the decision maker for enabling authorities under the Aquatic Invasive Species Regulation of the Fisheries Act.
- D. WLRS to work with DFO to determine process to enable deposit of deleterious substance in response situations that overlap with identified critical habitat for species listed on Schedule 1 of the Species at Risk Act.
- E. WLRS to finalize 1) 24-hour detection contact list, and 2) post-confirmation contact list.
- F. WLRS and Ktunaxa Nation should engage in dialog that results in a shared understanding regarding chemical use in Kootenay.
- G. Montana Fish, Wildlife & Parks (FWP) to initiate discussions with WLRS about the need for an MOU for resource sharing in the event of an emergency response associated with invasive mussels. The scope of this MOU may be expanded to include other neighboring provinces and states.
- H. WLRS and Montana FWP to explore waterbody closure authorities (i.e. Regional District East Kootenay (RDEK)) to ensure a shared understanding of ability for partial and full closures and delineation of limited access areas.
- I. Explore how Canada and the United States would address waterbody closures if only one country declared the waterbody closed to public use.

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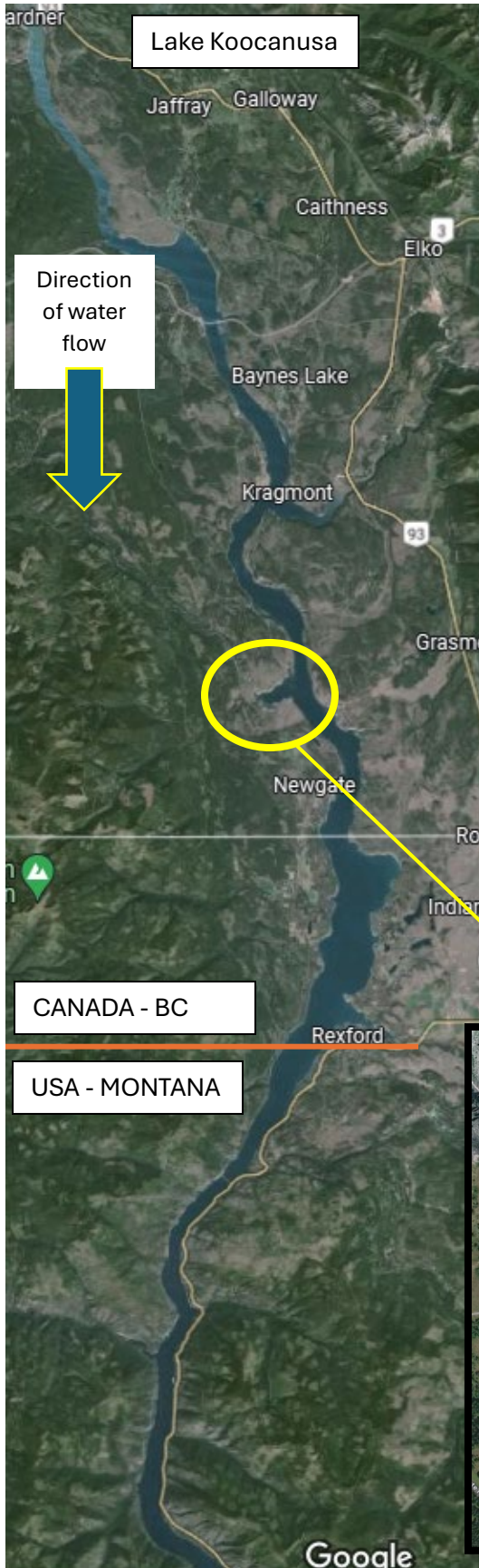
<sup>1</sup> Note: In this report, the terms “invasive dreissenid mussel” and “invasive mussel” are used interchangeably.

## Introduction

Since 2007, the Pacific States Marine Fisheries Commission (PSMFC) has facilitated and supported numerous exercises to improve regional response preparedness for dreissenid mussels in the Columbia River Basin. On June 19-20, 2024, aquatic invasive species management partners gathered to discuss preparedness options regarding an invasive dreissenid mussel detection and response for Lake Koochanusa, a waterbody that spans the United States and Canada border. This exercise was the first exercise in the Columbia River Basin to explore cross-boundary response preparedness for dreissenids. A steering committee with representatives from PSMFC, WLRS, Montana Fish, Wildlife and Parks (FWP), and BC Ministry of Environment and Climate Change Strategy / Conservation Officer Service (COS) determined the logistics to conduct the exercise and guided the parameters of the exercise. The exercise was hosted by PSMFC, WLRS and FWP. A webinar was hosted in advance of the exercise to explain the process and intention of the Montana/British Columbia exercise for various entities across BC.

Exercise Goal: Develop and improve preparedness for dreissenid rapid response mechanisms in the international waterbody of Lake Koochanusa.

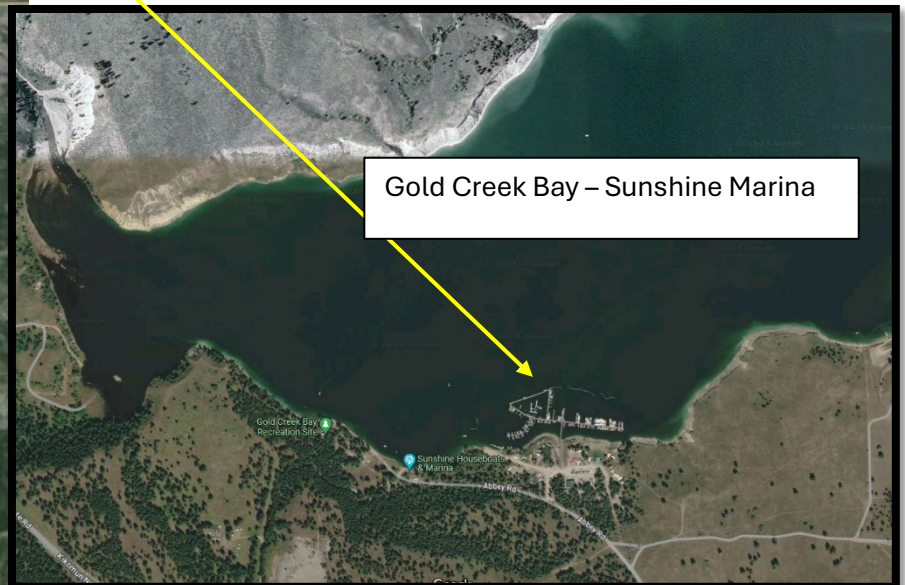
The two-day exercise used a realistic scenario of a dreissenid mussel detection in Lake Koochanusa (see Appendix A for exercise agenda). Through facilitated participant discussion, the rapid response elements were explored.



## Scenario

A scenario guided the discussions and focused identification of regional entities that may be directly involved in the proposed scenario.

*On June 15, 2024, BC Ministry of Water, Land and Resource Stewardship collected water samples at Gold Creek Bay in Lake Kooacanusa to be screened for dreissenid DNA. The environmental DNA (eDNA) samples are positive for dreissenids. This eDNA detection was followed-up with targeted plankton net sampling in Gold Creek Bay that led to a positive veliger detection at Sunshine Houseboats and Marina. At the start of the exercise Lake Kooacanusa was classified as a suspect waterbody based on a single positive veliger detection. As the exercise progressed, additional veliger sample results came back positive from multiple locations and verified by two separate labs. This met the criteria for changing the waterbody classification to “positive”.*



## Participants

Entities with jurisdictional authority based on the scenario, as well as those affected by potential management response, were the focus for participation in the exercise. Multiple agencies and organizations were identified for participation; see Appendix B for a full participant roster.

- BC Ministry of Water, Land and Resource Stewardship (WLRS)
- BC Ministry of Environment and Climate Change Strategy (ENV)
  - BC Parks
  - Conservation Officer Service
  - Recreation, Sites and Trails
- Ktunaxa Nation
- Kenpesq't (Shuswap Band) of the Secwépemc Nation
- Department of Fisheries Oceans Canada (DFO)
- East Kootenay Regional District (EKRD)
- Confederated Salish and Kootenai Tribes (CSKT)
- Montana Fish, Wildlife & Parks (FWP)
- US Army Corps of Engineers (USACE)
- US Department of Agriculture - Forest Service (USFS)
- US Fish and Wildlife Service (USFWS)
- BC Hydro
- Emergency Management and Climate Readiness (EMCR)
- Environment and Climate Change Canada (ECCC)
- Health Canada, Pesticide Management Regulatory Agency (PMRA)
- Western Canada Directors Working Group for Aquatic Invasive Species
- Pacific States Marine Fisheries Commission (PSMFC)



## Response Plans and Resources

British Columbia developed the *Zebra and Quagga Mussel Early Detection and Rapid Response Plan for British Columbia* (ZQM EDRR Plan) in 2015. The ZQM EDRR Plan is structured around six steps and processes for dealing with the introduction of invasive dreissenid mussels into BC (Figure 1). These steps describe the operational components of an EDRR response for discovering, identifying, evaluating risk, treating, and monitoring the introduction and treatment of new invasive dreissenid mussel incursions. The Plan is currently under review and this exercise is meant to inform revisions to the plan as well as current knowledge.

Montana last revised their *Dreissenid Mussel Rapid Response Guidelines* in 2018. Items identified in this exercise will be included in the next revision of the plan.

In 2007, regional AIS managing entities in the Columbia River Basin created a regional dreissenid rapid response plan: *Columbia River Basin Interagency Invasive Species Response Plan: Zebra Mussels and Other Dreissenid Species*. This plan has undergone multiple revisions, however the 2019 revision resulted in a comprehensive online resource: Columbia River Basin Dreissenid Incident Response Toolkit<sup>2</sup>. This online platform provides detailed up-to-date information associated with incident command system resources, consultation process, impacts to listed species and critical habitats to various control methods, available control methods, and other resources for managers faced with rapid response decision making.

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<sup>2</sup> Columbia River Basin Dreissenid Incident Response Toolkit [www.crbdirt.com](http://www.crbdirt.com)



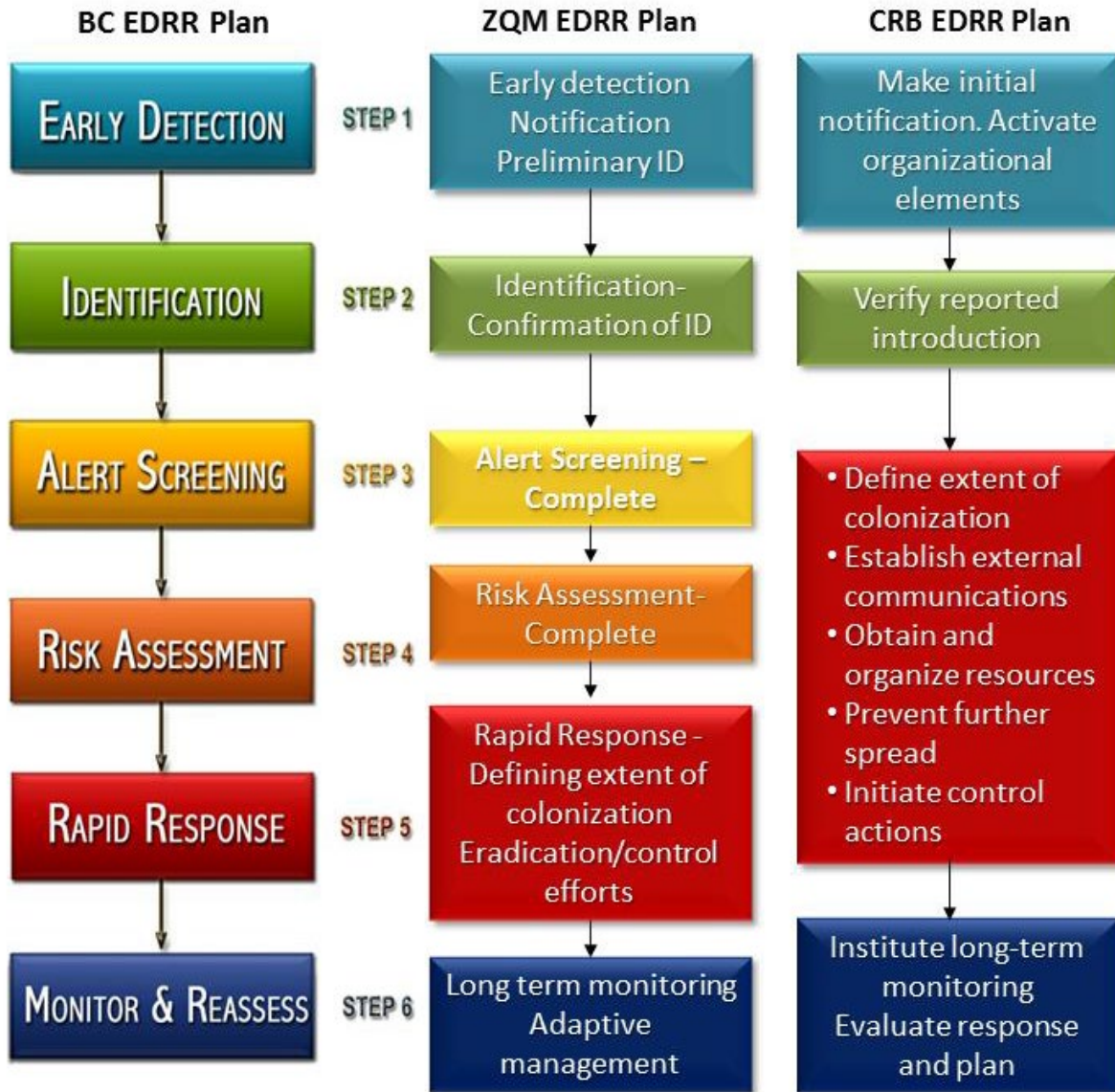


Figure 1. Six steps and processes to address the introduction of invasive dreissenid mussels into BC as identified in the BC ZQM EDRR Plan. A comparison of rapid response plan steps clarifies terminology and associated actions for the BC ZQM EDRR Plan and Columbia River Basin Dreissenid Mussel Rapid Response Plan.

## Roles and Responsibilities

### Identification of Key Canadian Agencies & Roles

The primary entities, and in many cases the primary roles of entities, that may be engaged in a response to dreissenids were explored and identified.

Entity	Role
BC Ministry of Water, Land and Resource Stewardship	Sole media contact for any dreissenid mussel incursion events in BC. Government of BC lead on detection confirmation, verification, notification, activation of Incident Command Team (with Response Team), define extent of distribution, part of response team. WLRS will identify water license holders upstream or downstream of dams and reservoirs and coordinate actions.
BC Environment and Climate Change Strategy – Integrated Pest Management Group	Provincial pesticide use permits.
BC Ministry of Environment and Climate Change Strategy – Conservation Officer Service	Conservation Officer Service is the operational lead for response for the Government of BC. Regional support through BC Parks and Rec, Sites and Trails.
First Nations	Participate in decision making associated with response. Survey and report potential invasive mussels in traditional territories and/or part of treaty agreements/negotiations. Assist in response planning and actions.
Regional District East Kootenay	Regional monitoring, mapping and response. Lead agency for declaring a local state of emergency.
Department of Fisheries and Oceans	Detection in waterbody with anadromous species or species at risk, DFO may assume a lead or shared role in response with WLRS and First Nations. Permitting authority if species present that are listed under the Species at Risk Act.
Health Canada, Pest Management Regulatory Agency (PMRA)	Regulates pesticides in Canada—emergency registration or research trial permit needs for molluscicides.
Transport Canada	Assist with waterbody closures and access.
Canada Border Services Agency	Intercept watercraft at Canada-US border crossing.

## Identification of Key United States Agencies & Roles

Entity	Role
Montana Fish, Wildlife & Parks	Lead on detection confirmation, verification, notification, activation of Incident Command Team (with Response Team), define extent of distribution, part of response team
Montana Department of Environmental Quality	Receive Notice of Intent to apply pesticides into or over state surface waters to obtain a Pesticide General Permit
Montana Department of Agriculture	Provide approvals to use certain pesticides for "unspecified pests"
US Fish and Wildlife Service	Endangered Species Act Consultation
Environmental Protection Agency	Emergency Exemption – Section 18 of Federal Insecticide, Fungicide, and Rodenticide Act– for unregistered use of pesticides to address emergency conditions.
US Army Corps of Engineers	Management of reservoir
Bonneville Power Administration	Collaborate on response actions
USDA Forest Service	Access restrictions to waterbody
Department of State	Liaise between US and Canada entities

## Identification of Key First Nations and Tribes & Roles

Entity	Role
Ktunaxa Communities <ul style="list-style-type: none"> <li>• Yaq̓it ʔa-knuq̓i 'it First Nation (Tobacco Plains Indian Band)</li> <li>• ʔAqam (St. Mary's Indian Band)</li> <li>• Yaqan NuʔKiy (Lower Kootenay Band)</li> <li>• ʔAkisq'nuk First Nation (Columbia Lake Band)</li> </ul>	Consult on proposed roles and actions Provide support for potential control use type
Secwépemc Nation <ul style="list-style-type: none"> <li>• Shuswap Band</li> </ul>	Consult on proposed roles and actions
Confederated Salish and Kootenai Tribes	Consult on proposed roles and actions

## Exploration of Values, Priorities, and Needs of First Nations and Tribes

First Nations and Tribes shared their perspectives, values, priorities, and needs when considering management actions associated with dreissenid response.

Bull trout (*Salvelinus confluentus*) are species of significance to the Ktunaxa Nation and the Confederated Salish and Kootenai Tribes of the Flathead Reservation (CSTK). The focus of conservation for Ktunaxa is the preservation of native fish species and habitats. Tribal members shared the importance of preserving aquatic habitats and protecting all living things/native species. They noted water is the lifeblood of all living beings.

The CSTK manage the flow of water from Flathead Lake via the dam (hydrologically not connected to Kooocanusa).

Both the Ktunaxa and CSTK in principle support eradication of non-native species for the benefit of all native species. However, greater discussion on actions and impacts would be needed in all situations.

Depending on future scenarios of dreissenid detection in this waterbody, there will likely be up to four First Nations that will require consultation and involvement.

## Incident Command System

The Incident Command System (ICS) is a standardized management structure that provides hierarchy and can encompass multiple agencies to address the coordination of an emergency response. ICS is a valuable framework for organizing people and systems for fast-acting responses to emergencies.

Responses to natural resource emergencies such as invasive species detections which do not present imminent life-safety hazards, are often better served by a longer timeline and more flexible framework for response. The Columbia River Basin Incident Management System (CRB-IMS) resources are intended to provide a comprehensive, systematic approach scaled to respond to a dreissenid introduction - including command and coordination of the initial incident response, coordination of response resources (including personnel), and information management

## Unified Command

Discussion among the participants determined that based on the scenario, unified command may not be needed at the outset for this response scenario.

BC Ministry of Water, Land and Resource Stewardship, likely the Assistant Deputy Minister for Water, Fisheries and Coast (to be confirmed), would be the lead agency that confers with First Nations, local and federal governments. WLRS is the entity that would be the recipient of the lab results and is the authority for the sampling protocol and contract holder for the designated lab where all monitoring samples (from partners or governments) would be tested with.

The Regional Director General would be the lead that organizes the federal communication and actions within Fisheries and Oceans Canada. Based on lessons learned in past joint response

scenarios, the designation of ICS needs to be empowered by their respective governments to give the ICS team clear decision-making authorities to respond to emergency situations.

The Ktunaxa Nation Fisheries Guardian is the primary Ktunaxa contact who would inform their leadership.



## Step 1: Early Detection Monitoring

### Detection and Delineation

There was general discussion on tools that may be needed to further verify the initial detection and define the scope of the dreissenid detection. The use of remotely operative vehicles (ROVs), bio boxes, or artificial substrates may be considered in addition to plankton tow net samples, K9 detection dogs, shoreline surveys, divers, and environmental DNA. Other areas of discussion focused on timelines for additional sampling, lab processing time, lab capacity for increased volume of samples and the need for back lab services. See Appendix for brainstorm session details.

### Waterbody Classification

Under the exercise scenario, WLRS assumed responsibility for the samples taken and the data results. Based on this information, a classification may be given to the waterbody to reflect the status of the waterbody on dreissenid monitoring results. Following the *Building Consensus in the West* waterbody classification<sup>3</sup> (see

definitions and criteria in the side text box) and considering the scenario, Lake Koocanusa would initially be characterized as suspect. As the exercise evolved, additional veliger sample results were received from multiple locations and two separate labs that came back positive. These additional results met the criteria for changing the waterbody status from suspect to positive.

Under this scenario of detection in Canada, BC WLRS would be responsible for determining the status of the Canadian portion of the waterbody based on the sampling results. In the United States, Montana's FWP would be responsible for determining the status of the waterbody based on BC's data. Additionally, FWP would expedite exhaustive sampling to characterize the nature and extent of the detection in US waters.

Waterbody classification based on sampling results will be determined by WLRS in British Columbia and FWP in Montana.

#### **Definitions**

- **Not Sampled**—Waters that have not been monitored for invasive mussels.
- **Undetected/Negative**—Sampling/testing is ongoing and nothing has been detected or nothing has been detected within the time frames for delisting.
- **Inconclusive** (temporary status)—Waterbody has not met the minimum criteria for detection.
- **Suspect**—Waterbody that has met the minimum criteria for detection.

#### **Triggers for management action**

- **Positive**—A minimum of one subsequent sampling event that meets the minimum criteria for detection. Positive must include the initial detection plus at least one subsequent detection for a total of two verified detections.
- **Infested**—A waterbody that has an established (recruiting or reproducing) population of ANS.

<sup>3</sup> See the Western Regional Panel on Aquatic Nuisance Species, Building Consensus in the West Report (2011-2019), <https://westernregionalpanel.org/key-documents/>

## Communication / Notification

At this stage, prior to species confirmation and waterbody classification, information is kept confidential. Communication is limited to key agencies involved in the immediate response including:

- WLRS
- ENV (e.g. BC Conservation Officer Service)
- East Kootenay Regional District
- Montana FWP
- PSMFC
- DFO
- First Nations
- USACE
- BC Hydro

## Step 2: Identification – Confirmation of Identification

Sharing dreissenid detection information requires an understanding of the key entities that need to be kept informed as additional data is gathered about the situation. Maintaining comprehensive communication contact lists is needed. Some entities will need information earlier in the response phase than others.

At this stage, there is confirmation of positive detection and waterbody classification has been determined as suspect. Information sharing at this stage is broad and informational. A dedicated communication manager issues a press release, and the following groups would be prioritized:

- All regional/local, provincial and federal agencies
- All First Nations and Tribes
- All hydro managers in BC
- CRB Multi-Agency Coordinating Group
- Local community and businesses
- Regional and provincial stakeholder organizations

## Step 3: Alert Screening

In the case of dreissenid detection, a risk assessment was completed by WLRS in 2014. Dreissenids have been identified as a priority EDRR species in BC, therefore the alert screening step is not necessary.

## Step 4: Risk Assessment

Post confirmation of dreissenid presence, it is critical to ensure authority is granted by the identified lead agency (and designated decision maker) to trigger the state or provincial rapid response plan that will enable response actions. This will then be followed by the lead agency inviting other entities to the response.

Workshop participants identified the need for establishing a decision process for identifying who will be the lead agency(ies) between federal, provincial and First Nation governments.

## Step 5: Rapid Response

### Activating ICS

The decision to activate the incident command system (ICS) to structure a response is determined as the situation evolves. The framework for ICS forms once the detection is confirmed; it can then be scaled as needed.

### Containment

Some of the key areas of containment that were discussed by workshop participants included:

- Site mobilization with local support from EDRK
- Area isolation (setting up barriers around the bay)
- Waterbody/access closures
- Establishing watercraft inspection/decontamination stations at pinch points into Lake Koochanusa to cover all boat launches on the Canadian side of the international border

See Appendix C for the results from the brainstorming session on this topic.

### Delineation

The same sampling tools that were discussed for use in Step 1 for verification were also discussed for the delineation surveys to assess the extent (e.g. ROVs, bio boxes, artificial substrates, plankton tow net samples, K9 detection dogs, shoreline surveys, divers, and eDNA).

Discussions were focused on how increased quantities of critical equipment would be resourced for monitoring (e.g. boats, plankton nets, divers). The idea of having a trailer filled with known emergency response essentials that would not 'expire' was discussed, as was the idea of resource sharing agreements between jurisdictions. Exercise participants discussed monitoring needs during a response:

### Treatment Options

A broad discussion with regulatory agencies was had to inform and contrast the regulatory context and available options on each side of the international border.

#### *Chemical Treatment Options*

Chemical and mechanical methods have been used to address dreissenid populations, however each situation and circumstances will guide the use of specific methods. Participants discussed a variety of chemical and mechanical methods with consideration of the exercise scenario. It was recognized that chemical treatments, such as potash and copper, are important but blunt tools in the chemical control toolbox that would not necessarily be effective in all response scenarios. Efficacy of chemicals varies with waterbody characteristics, including temperature, depth, water chemistry, flow rates and stratification of the waterbody.



See Appendix F for key considerations for the different chemical treatment options described below.

### **Potash** (used as a biocide)

United States: Not labeled for control of dreissenids – requires a Section 18 FIFRA Emergency Exemption – Special Local Need.

Canada: Registration Decision RD2022-07, Potassium chloride and Potash Molluscicide - granting registration for the sale and use of Potassium Chloride Technical and Potash Molluscicide, containing the technical grade active ingredient potassium chloride, for control of zebra and quagga mussels in water reservoirs and other water bodies as well as in water pipelines and closed systems, including fire suppression systems in hydroelectric plants.

### **Zequanox®**

United States: EPA-registered biocide for mussels.

Canada: Health Canada Pest Management Regulatory Agency (PMRA) registered product for zebra mussel control in enclosed, semi-enclosed, and confined flowing water in infrastructure within dams and associated hydroelectric power plants but not in open waters.



### **Copper compounds**

United States: Natrix - chelated copper, Earthtec® QZ – cupric ions - only in water bodies with non-salmonid/trout species. Both Earthtec® QZ and Natrix are registered for use in Montana. In the United States, special local needs are defined as existing or imminent pest problems for which there is no appropriate federally registered pesticide available.

Canada: Not registered for control of dreissenid mussels.

It's important to note that chemicals not registered by PMRA in Canada can be authorized by PMRA under a Research Permit or Emergency Use Permit. The timelines for receiving a permit for non-registered products can vary (up to 18 months) and will depend on the availability of information to complete the application process. Preparing background information in advance may help to expedite the permitting process in an emergency situation.

### *Mechanical Options*

**Drawdown:** Exposes shoreline and mussels to freezing temperatures (winter), but water flow obligations will need to be considered.

Other mechanical methods include benthic mats and manual removal of mussels but these are very labor intensive and have not been successful in fully eradicating invasive mussel populations.

### Addressing Federal Species at Risk Act/ Endangered Species Act

Drawing a polygon around the potential action area, considering potential upstream and downstream effects from the control action, is a key critical first step in determining species at risk and associated critical habitats that may be affected by a proposed action. Drawing the polygon and determining what species and critical habitats are within the action area is also an important first step in consultation with federal agencies, First Nations, and Tribes.

- United States—The U.S. Fish and Wildlife Service hosts a website, Information for Planning and Consultation (<https://ipac.ecosphere.fws.gov>), that allows a user to draw a polygon and then receive a list of threatened and endangered species and critical habitats for which the USFWS has trust responsibilities. The National Marine Fisheries Service produces an ESRI-based mapping program that delineates all listed anadromous fish species and their associated critical habitats (<https://maps.fisheries.noaa.gov/portal/apps/webappviewer/index.html?id=e8311ceaa4354de290fb1c456cd86a7f>).
- Canada—DFO produces Species at Risk Distribution maps (<https://search.open.canada.ca/openmap/e0fabad5-9379-4077-87b9-5705f28c490b>) to identify locations of species at risk (e.g., vulnerable, special species of concern, etc.) and their associated critical habitats.

The use of these databases can help to inform emergency consultation and other discussions with federal agencies as well as inform best management practices that should be implemented during the action. Once a definitive list of species at risk/listed species and their associated critical habitats are identified, steps must be taken to articulate potential effects on those species and critical habitats must be considered.

Steps in the US consultation process (<https://www.crbdirt.com>) can then be followed to obtain additional guidance from the federal agencies.

## Permitting

Exercise participants discussed the permits that would be needed should chemical or mechanical removal of dreissenids be considered in the response.

Health Canada (Pest Management Regulatory Agency) (PMRA) regulates pesticides in Canada and works closely with Environmental Protection Agency in the United States. The PMRA will be important in the permitting approval process to use specific chemicals that are not already registered for use in Canadian open waters to attempt control or eradication of invasive mussels.

In British Columbia, for the use of a registered pesticide, such as potassium chloride (KCl), the province does not need a separate federal permit because the province already has delegated authority under the Aquatic Invasive Species Regulation under the federal Fisheries Act. If a registered product such as KCl is identified for use, then clarification on the required advance notifications from the province of BC to DFO is needed. For unregistered products, such as copper-based Earthtec® QZ or Natrix, the PMRA could consider supporting an emergency use registration, however this request may be challenged because KCl is a product already registered for use to control molluscs in Canada. Earthtec® QZ is a registered molluscicide product in the United States but is not a product registered as a molluscicide in Canada.

In BC, a Pesticide Use Permit (PUP) is required to apply pesticides in BC waters. The BC Ministry of Environment and Climate Change Strategy's Integrated Pest Management group authorizes the PUPs. Applicator training and certification is required to apply chemicals as part of the PUP. The PUP application process requires public and First Nation consultations and the development of a treatment plan that outlines pre- and post-treatment monitoring, mitigation and safety strategies.

There may be a mechanism to expedite the PUP consultation requirements under an emergency situation, but further clarification is needed about what would constitute an emergency. Public and First Nations consultation must be completed prior to any permit issuance. It may be possible to obtain permission on specific chemicals from the Nations in advance (e.g., a letter of support). The mechanism for seeking this support will vary by individual Nation and will require two-way discussion in advance with Nations on concerns and consideration about potential chemical use.

Note: The Canadian Fisheries Act – Subsection 34.4 - prohibits activities that result in the death of fish; Subsection 35 (1) - prohibits activities that result in harmful alteration, disruption or destruction of fish habitat – Minister of Fisheries and Oceans may authorize exceptions for both non-emergency and emergency situations. If death of fish occurs through direction or authorization under the Canadian Fisheries Act Aquatic Invasive Species Regulations, authorization under other sections (35) of the Fisheries Act are not required.

Note: [Permitting under the Species at Risk Act](#)

## Cultural Resources

Review and consideration of cultural resources must be completed prior to response. In British Columbia, the *BC Heritage Conservation Act* – Heritage and Archeological Sites provides the regulatory mandate for those considerations. The *BC Heritage Conservation Act* recognizes the

historical, cultural, scientific, spiritual and educational value of archaeological sites to First Nations, local communities and the public. BC Hydro maintains a Reservoir Archaeology Program in association with their hydro facilities. Additionally, the Ktunaxa Nation has a team that is dedicated to cultural resources within the traditional territory.

In the United States, several state and federal agencies (e.g., Bureau of Land Management) have staff dedicated to locating cultural and heritage resources and maintaining private databases on those resources.

## Consultation

A discussion with the primary consultation agencies allowed workshop participants to explore possible permitting needs, timing, and other considerations. The following agency representatives participated in the consultation: 1) Scott Couture, Health Canada, 2) Renny Talbot, Department of Fisheries and Oceans, Aquatic Invasive Species, 3) Oliver Barker, Department of Fisheries and Oceans, Species at Risk, 4) Chelsea Eby, BC Ministry of Environment and Climate Change Strategy's Integrated Pest Management Group, 5) Emily Carmichael, BC Ministry of Environment and Climate Change Strategy's Integrated Pest Management group, and 6) Brian Ham, US Fish and Wildlife Service, Ecological Services.

WLRS provided a brief overview of the scenario and proposed response actions that the exercise participants developed for feedback and discussion from the consultation agency representatives. See Appendix C for details from the consultation discussion.

### *Consultation Responses*

#### Canadian Response:

PMRA would need strong rationale for why an emergency use permit should be pursued for copper when KCl is already registered for use in Canada. Emergency registrations can be processed in 1–2 weeks but can take 8–12 months depending on the amount of information received to conduct the risk assessment. It can take a total of 4 weeks to process an emergency use request. Providing risk analyses that have been conducted in the United States to date would be helpful to include with an emergency use request. Gathering the necessary background information that is needed for the application in advance could help speed up the process.



Based on the scenario, DFO would not be considering *Species at Risk Act (SARA)* unless effects downstream were realized. Downstream in the Kooecanusa system there are white sturgeon and white sturgeon critical habitat. Canada's laws state that one cannot harm fish or destroy critical habitat (spatially, abundant food source – treatments that affect food source would be considered

destroying critical habitat). Permits can be issued for harm to individuals, etc., however, pre-conditions include (1) scientific research related to conservation of species (2) benefits to species and (3) incidental to the activity (latter applies). Measures should minimize impact to species and will not affect recovery or survival of the species. Allowable harm (take) is none. There must be a public account for why the permit is issued – exemptions can be made for activities related to public safety, health, or national security. Further clarification is needed on whether exemptions for allowable harm can be made for treatments of invasive mussels given the significance of potential long-term implications of not taking response action.

Permitting requirements would be 90-day service standard, but the Federal Government would share a sense of urgency with province. Further work is needed to understand if there are mechanisms to expedite the SARA permitting process.

Recommendation: Don't mix and match who will assume the lead statutory decision-making authority for the Incident Command response. If there are measures that need to be taken, it would be cleaner if all done by the lead agency during a response versus mixing and matching between DFO and the province. In some cases, there may need to be a dual role. Therefore, a process needs to be outlined within the BC EDRR plan for how the lead agency will be defined.

#### United States Response

The action leads would engage with the US Fish and Wildlife Service, and if relevant, National Marine Fisheries Service, to discuss potential effects to listed species and critical habitats, achieve consensus on the optimal action that would address the dreissenid introduction while minimizing take and effects on listed species and critical habitats, and determine best management practices to be used during action implementation.

## Next Steps

All of the participants provided the identification of tasks, areas to explore post-exercise, clarifications and ideas for further development. Several specific items were identified for plan revision needs to add to the existing BC and MT plans. Note: the roles identified below are focused on the workshop participants, but it was acknowledged that additional agencies will be involved, and further work is needed to expand these roles.

<b>British Columbia</b>	<ul style="list-style-type: none"> <li>• Identify roles and responsibilities within the BC Government and then expand to identify roles and responsibilities for key agencies.</li> <li>• Provincial scale vs waterbody scale plan lens for identifying entities and associated process/legislative provisions, e.g., contact with EMCR.</li> <li>• Develop resource lists, e.g., dive teams, supplies, contact list, etc.</li> <li>• Look to existing collaborations on different watersheds that may have some mechanism to draw from.</li> <li>• Update list of partners and agencies plus contact information             <ul style="list-style-type: none"> <li>○ 24-hour detection contact list</li> <li>○ Post-confirmation contact list</li> </ul> </li> <li>• Follow up with EMCR regarding if invasive mussels meet the definition for provincial emergency declaration.             <ul style="list-style-type: none"> <li>○ Clarify process for provincial recommendation to regional district for a local emergency declaration</li> </ul> </li> <li>• Contracts/permissions in advance for dive teams, etc.</li> <li>• WLRS to identify a second dreissenid laboratory for expedited processing of veliger samples as and when needed.</li> <li>• Follow up on potential role of International Joint Commission.</li> <li>• Determine if/when additional First Nations/tribes should be consulted upon a dreissenid confirmation in Lake Koochanusa.</li> <li>• Determine what training and materials are needed for lead agencies involved in response and other key partners.</li> <li>• Confirm use and applicability of eDNA sampling and include Western Invasive Species Coordinating Effort (WISCE) consensus statements in EDRR plan that eDNA positive detection is not sufficient to meet the criteria for a confirmed positive detection.</li> <li>• Identify full suite of tools available for delineation (e.g., ROVs, bio boxes, etc.).</li> <li>• Follow up on pesticide use permit emergency provisions for consultation requirements.</li> <li>• What information would PMRA need to review emergency use permits for unregistered projects that can be prepared in advance.</li> <li>• Follow up on funding through ECCO and USACE to support further rapid response exercises and planning and supporting prevention efforts at the US-Canada border.</li> <li>• Who will make the determination for waterbody classification, and mechanisms for local declaration emergency needs for process</li> </ul>
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	<ul style="list-style-type: none"> <li>• WLRS working with DFO to determine process to enable deposit of deleterious substance in response situations that overlap with SAR critical habitat.</li> </ul>
<b>Montana</b>	<ul style="list-style-type: none"> <li>• Reference international coordination in the plan.</li> <li>• Explore potential to liaison with State Department on international dreissenid response.</li> <li>• Follow up with IJC.</li> <li>• Discuss a potential MOU with province in the future for information and equipment sharing; how is that different from any CRB commitments.</li> </ul>
<b>Conservation Officer Services</b>	<ul style="list-style-type: none"> <li>• Assist with logistics, operations and source contractors for EDRR, deploy decontamination units and provincial lead for compliance and enforcement.</li> <li>• Cross appointed as federal Fisheries Officers with delegated authorities under the federal Fisheries Act.</li> </ul>
<b>BC Hydro</b>	<ul style="list-style-type: none"> <li>• Update their AIS action plan.</li> <li>• Increase monitoring.</li> <li>• Education internally.</li> </ul>
<b>Ktunaxa</b>	<ul style="list-style-type: none"> <li>• Confirm contact for response operations and associated decision making.</li> <li>• Discussions with leadership on the use of chemical treatment options (KCl and copper).</li> </ul>
<b>CSTK</b>	<ul style="list-style-type: none"> <li>• Funding needs if detection confirmed.</li> </ul>
<b>East Kootenay Regional District</b>	<ul style="list-style-type: none"> <li>• Internal conversations on support and understanding of what can be provided and process for local state of emergency.</li> </ul>
<b>USACE</b>	<ul style="list-style-type: none"> <li>• Understand operational capabilities from Libby Dam to support response effort.</li> <li>• Explore cost share methods to support cross border watercraft inspection and decontamination (WID) (look to wildfire mechanisms as a model).</li> </ul>
<b>DFO</b>	<ul style="list-style-type: none"> <li>• Outline the process for designating who will assume the role as lead agency between the Province of BC and DFO when unified command has not been activated. Specific attention is needed with respect to establishing a clear process for designating the decision maker for enabling authorities under the Aquatic Invasive Species Regulation of the Fisheries Act.</li> <li>• Identify federal roles and responsibilities.</li> <li>• Create a DFO plan that considers items in advance, BC focused.</li> <li>• Explore how Canada and the United States would address waterbody closures if only one country declared the waterbody closed to public use. Follow up with Transport Canada regarding waterbody closure authorities.</li> <li>• The Aquatic Invasive Species Regulation under the Fisheries Act Canada may need to enable closure to access points to limit the</li> </ul>

	<p>spread of AIS. Need to seek clarification on how far the closure would extend via an order.</p> <ul style="list-style-type: none"><li>• Work with WLRS to determine process to enable deposit of deleterious substance in response situations that overlap with SAR critical habitat.</li><li>• Establish an appropriate protocol with Canada Border Services Agency and work with US counterparts regarding the movement of resources associated with response activities.</li></ul>
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## Appendix A. Exercise Agenda

### British Columbia and Montana Dreissenid Rapid Response Exercise Cranbrook, BC June 19-20, 2024

Dreissenid mussels pose a threat to ecosystems and freshwater resources of the Pacific Northwest. Dreissenid mussel preparedness strategies can help protect and sustain ecosystem services, recreational opportunities, energy generation, and infrastructure.

Goal: Develop and improve the dreissenid preparedness response mechanisms of Lake Koochanusa international waterbody managers.

#### Core Capabilities and Evaluation

- A. Convene staff from the following organizations and entities to identify and refine core components of a dreissenid mussel response:
  - a. BC Ministry of Water, Land and Resource Stewardship,
  - b. Fisheries Oceans Canada,
  - c. Montana Fish, Wildlife & Parks,
  - d. U.S. Army Corps of Engineers, USDA Forest Service, U.S. Fish and Wildlife Service
  - e. Regional Tribes/First Nations
  - f. Area partners

Evaluation: Complete exercise event. All participants contribute to post-event evaluation that identifies strengths, challenges, and opportunities for collaboration, and informs both the *Montana Rapid Response Plan and British Columbia Dreissenid Mussel Plan*.

- B. Harmonize management response relationships, roles, and responsibilities among Montana and British Columbia agencies, Tribes, First Nations, and partners.

Evaluation: Solutions are suggested to build capacity, and dreissenid response role and responsibilities are discussed and affirmed. Formal or informal agreements among entities may be created where needed to support enhanced cooperation.

- C. Confirm and refine effective methods, tools, and techniques to prevent the spread of dreissenid mussels in Montana and British Columbia.

Evaluation: Solutions are developed to address response possibilities that influence long-term containment or control options.

- D. Identify internal operational response procedures to protect natural resources and associated ecosystem services.

Evaluation: Interim operational plan(s) are developed that incorporate dreissenid prevention activities and support operational objectives.

- E. Develop effective communication strategies that enhance the ability to prepare for a dreissenid response including, fostering increased awareness the need for preparedness activities.

Evaluation: Multiple communication hubs are created that raises awareness of the needs for dreissenid mussel preparedness.

Scenario: On May 15, 2024, BC Ministry of Water, Land and Resource Stewardship collected water samples in Lake Koochanusa, Gold Creek Bay to be screened for dreissenid DNA. The environmental DNA (eDNA) samples are positive for dreissenids. Targeted plankton net sampling in Gold Creek Bay results in veliger detection at Sunshine Houseboats and Marina.

Homework for exercise participants:

Review current dreissenid response plans for [Montana](#) and [British Columbia](#) and Columbia River Basin Dreissenid Incident Response Toolkit ([crbdirt.com](http://crbdirt.com)).

Basics on [dreissenid mussels](#)

Lessons Learned on open water control projects, [Dahlberg et al. 2023](#)

Exercise Location:

Cranbrook British Columbia

Junior Ballroom at the Prestige Hotel, 209 Van Horne St. South

## Day 1 Dreissenid Mussel Rapid Response Exercise

### Mountain Time

9:00 AM	<b>Welcome &amp; Land Acknowledgement</b>	Manjit Kerr-Upal and Martina Beck, BC Ministry of Water, Land and Resource Stewardship Tom Woolf, Montana Fish Wildlife & Parks and Stephen Phillips, Pacific States Marine Fisheries Commission Ktunaxa Nation
9:15 – 9:30 AM	<b>Exercise Goals &amp; Expectations Introductions</b>	Leah Elwell, Conservation Collaborations and Lisa DeBruyckere, Creative Resource Strategies

9:30 – 9:45 AM	<b>Dreissenid Mussel Regional Threats, Response and Coordination</b>	Leah Elwell
10:00 – 10:30 AM	<b>Introduction to Cross-Border Rapid Response</b> <ul style="list-style-type: none"> <li>• Purpose of Columbia River Basin, Montana and British Columbia Rapid Response Plans</li> <li>• Review Rapid Response Elements</li> <li>• Key Authorities</li> </ul>	Stephen Phillips Tom Woolf Martina Beck Leah Elwell & Lisa DeBruyckere
10:30 – 10:45 AM	BREAK	
10:45 – 11:30 AM	<b>Review Scenario</b>  <b>Engaging with First Nations / Tribes</b> Perspectives from First Nations and Tribes regarding their interest and role in participation in a dreissenid response  <b>Identification of Shared Leadership Roles / Exploration of Unified Command</b> Group will discuss a suite of options for how a unified command might be formed	Discussion with all participants
11:30 – 12:00 PM	<b>Exploration of Response Steps</b> <ul style="list-style-type: none"> <li>• <b>Confirmation</b> of detection</li> <li>• <b>Waterbody Classifications</b> and Definitions</li> </ul>	Discussion with all participants
12:00 – 1:00 PM	LUNCH on site	
1:00 – 1:45 PM	<b>Exploration of Response Steps</b> <ul style="list-style-type: none"> <li>• <b>Delineation</b> of extent of infestation <ul style="list-style-type: none"> <li>○ Explore tools and mechanisms</li> <li>○ Activation of the FWP /USFWS Dive Teams</li> </ul> </li> <li>• <b>Communication</b> within and among entities <ul style="list-style-type: none"> <li>○ Identification of pathways and methods of communication and timing</li> </ul> </li> <li>• <b>Obligations to report</b> – Information sharing</li> <li>• <b>Declaration of emergency</b> – Explore processes of state/provincial and local declarations, and potential results</li> </ul>	Discussion with all participants
1:45 – 2:00 PM	<b>Response Structure and Organization</b> <ul style="list-style-type: none"> <li>• Triggers to Activate Incident Command System (ICS) – Exploration of adaptable ICS applications and activations appropriate for scenario</li> <li>• Designate entities and individuals on response teams - maximize skill sets and capabilities for response</li> </ul>	Discussion with all participants
2:00 – 2:15 PM	<b>Review CRBdirt.com and ICS Resources for use</b>	Leah and Lisa
2:15– 3:30 PM	<b>Exploration of Response Needs</b> Response teams identify potential actions based on scenario. Each group will consider logistics, compliance, safety, costs, and other considerations. Develop strategies to share.	Break Out Discussion among all participants

	<ul style="list-style-type: none"> <li>○ Operations and Planning for Monitoring and Water Quality</li> <li>○ Operations and Planning for Containment</li> </ul>	
3:30 – 4:15 PM	<b>Breakout group share strategies</b>	Discussion among all participants
4:15 PM	<b>Action Items to Add to Response Plans</b> Exercise participants discuss and recap details that should be added to response plans	Feedback from all participants
5:00 PM	ADJOURN	

## Day 2 Dreissenid Mussel Rapid Response Exercise

8:00 – 8:15 AM	<b>Day 1 Recap – Share Additional Perspectives</b>	
8:15 – 9:45 AM	<b>Exploration of control options</b> <ul style="list-style-type: none"> <li>● Chemical</li> <li>● Mechanical</li> <li>● Securing physical materials</li> <li>● Permitting</li> <li>● Addressing Sensitive Species/Species at Risk</li> <li>● First Nations and Tribes Considerations &amp; Cultural Resources</li> <li>● Elements of a Consultation</li> </ul>	Discussion among all participants Include remote participation as needed
9:45 – 10:00 AM	BREAK	
10:00 – 10:30 AM	<b>Discuss and resolve international response issues</b>	Discussion among all participants
10:30 – 11:30 AM	<b>Select and Propose Control Action</b> <b>Develop Script for Consultation</b>  As needed Expert Feedback on Chemical Use	Break out
11:30 AM – 12:30 PM	<b>Consultation</b> <ul style="list-style-type: none"> <li>● U.S. Fish and Wildlife Service</li> <li>● Fisheries and Oceans Canada and Health Canada</li> <li>● First Nations and Tribes</li> </ul>	Discussion among US and Canadian agencies and entities involved in consultation. Include remote participation from consultation agencies.
12:30 – 1:30 PM	LUNCH on site	
1:30 – 2:00 PM	<b>Internal Communication Strategies and Timing</b> <ul style="list-style-type: none"> <li>● British Columbia communications</li> <li>● Tribal and First Nations communications</li> <li>● Montana communications</li> <li>● State/provincial/First Nations/Tribe communications</li> <li>● Fisheries and Oceans Canada – USFWS</li> </ul>	Discussion among all participants
2:00 – 2:30 PM	<b>Activation of Columbia River Basin Multi-Agency Coordinating Group</b>	Remote briefing for CRB MAC

2:30 – 3:00 PM	<b>A Cross-Border Response Strategy</b> <ul style="list-style-type: none"><li>• Identify key gaps &amp; follow up items</li><li>• Recap specific actions to add to response plans</li><li>• Exercise participant evaluation</li></ul>	Feedback from all participants
3:00 PM	ADJOURN	

## Appendix B. Participant Contact List

All attendees that participated in the 2-day exercise are listed here. (R) indicates remote.

<b>Agency - Entity</b>	<b>Exercise participant</b>
BC Ministry of Water, Land and Resource Stewardship (WLRS)	Manjit Kerr-Upal
WLRS	Martina Beck
WLRS	Amalis Riera Vuibert
WLRS	Ken Walburger
WLRS	Matt Neufeld (R)
BC Ministry of Environment and Climate Change Strategy / Conservation Officer Service (COS)	Miles Grove
COS	Chris Doyle
COS	Denny Chretien
BC Ministry of Environment and Climate Change Strategy / Rec, Sites and Trails	Lisa Cox
BC Ministry of Environment and Climate Change Strategy's Integrated Pest Management group,	Chelsea Eby (R)
BC Ministry of Environment and Climate Change Strategy's Integrated Pest Management group	Emily Carmichael (R)
Ktunaxa Nation	Kenton Andreashuk
Ktunaxa Nation	Kiersten Vestergaard
Confederated Salish and Kootenai Tribes	Katie Finley-Squeque
Confederated Salish and Kootenai Tribes	Robert Howard
Montana Fish, Wildlife & Parks	Tom Woolf
Environment and Climate Change Canada	Darin Conroy
Fisheries Oceans Canada (DFO)	Brad Wattie
DFO	Brian Leavitt
DFO, AIS	Renny Talbot (R)
DFO, SARA	Oliver Barker (R)
US Army Corps of Engineers	Jonas Grundman
US Army Corps of Engineers	Tana Wilson
US Fish and Wildlife Service	Brian Ham (R)
East Kootenai Regional District	Simran Sandu
BC Hydro	Erin Stoddard
Health Canada	Scott Couture (R)
Pacific States Marine Fisheries Commission	Stephen Phillips
Creative Resource Strategies	Lisa DeBruyckere (facilitator)
Conservation Collaborations	Leah Elwell (facilitator)

<b>Columbia River Basin Multi Coordination Team</b>	<b>All virtual</b>
Washington Department of Fish and Wildlife	Justin Bush Eric Anderson
Idaho Department of Agriculture	Nic Zurfluh
Oregon Department of Fish and Wildlife	Keith DeHart
Columbia River Inter-Tribal Fish Commission	Blaine Parker

## Appendix C. Break Out Discussion Information

The following are brainstorming results from exercise. Note: this information has not been refined or filtered and is included to inform future thinking.

### Breakout Discussion On Monitoring and Water Quality Strategies

Exercise participants discussed monitoring needs during the verification stage of a response.

- Identify specific groups and entities to be involved and the best tools to incorporate in monitoring.
  - Existing plankton tow sampling
  - Detection dogs – where to prioritize canine resources?
  - Substrate sampling – for immediate or ongoing?
  - Shoreline surveys – with assistance from canines but consider fluctuating water levels. eDNA in parallel with plankton tows
  - Divers:
    - Low visibility in the lake will be a challenge but if deployed strategically, they can be helpful.
    - DFO has a team of divers, but availability will be dependent on other deployments at the time of a response.
    - Develop a list of dive team resources across the province that could be contracted.
    - What kind of specialized training will the divers need for conducting ZQM surveys?
- Timelines.
  - Veliger sampling must be done when water temperatures are suitable (>12°C). Fluctuating water tables and flows may affect timelines and methods.
  - Laboratory sample processing and capacity. WLRS has one designated lab on contract but should have a second lab identified that can process samples on short notice if volume of samples increases during a response situation.
  - Time to conduct sampling: 1-2 weeks for initial delineation surveys, depending on when samples are returned, and results are received.
  - Sampling turnaround time. Ideally, laboratory samples will need to be expedited (48-hour turnaround). A dedicated person within WLRS will be identified to receive results.
- Scope and Locations. Assessing priority locations for expanding monitoring to nearby water bodies considering inflows and outflows – pinch stations and mapping direction of flow and assessing watercraft movement data. Montana would be sampling much of U.S. portion of Lake Kocanusa. Point of origin for the detection will likely not be known during initial delineation surveys.
  - Create a systematic way to sample using different methods – avoid repetition and sampling in a systematic downstream direction.
  - Prioritizing sampling at boat launches and access points. Establishing dedicated equipment and decontamination of sampling equipment to prevent contamination and spread.



- Explore data points to consult from previous waterbody monitoring collections – repositories for hydro infrastructure, boat launches, flow, etc. Consider ingress and egress factors.
- There are 11 boat launches on the Canadian side of Lake Koochanusa – concentrate on high-risk spots and zones initially.
- Establishing watercraft inspection stations at key access points to Lake Koochanusa that will target all 11 boat launches. Inspect all boats in marinas.
- Keep in mind some river access (e.g. down river from Fort Steele) that is not linked to a road could allow watercraft access in and out of Lake Koochanusa, even during official closures.
- There may be considerations needed if plankton samples will be transported across the US-Canada border.
- All monitoring data results will be tracked by WLRS, who maintain custody of the data.
- Scale ICS to create a place to marshal people, equipment, gear, and trailer for command post. Regional District East Kootenay operates a municipal boat launch that may be utilized as a base.
- Funding. Emergency Management and Climate Readiness – If a local state of emergency is announced by the Regional District, this must be triggered by a recommendation by a subject matter expert (in this case it would be WLRS recommending declaring a local state of emergency). The trigger point is through the *Emergency Management Act* and confirmation is needed if dreissenid mussels meet the definition of an emergency under the Act. If the local state of emergency is declared, then will need to determine how to disburse funds to local entities.
  - In MT, the governor can declare an emergency to release funds.
- Equipment.
  - Need to determine how many boats will be required and where they will be sourced from. Ensure there are no boats moving between locations – who can operate the boats and what certifications do they need?
  - ROVs can be deployed with less human power but will need good visibility.
  - COS has 2 detection canines that could be used for marina and shoreline surveys.
  - Use dedicated nets specific to Lake Koochanusa to avoid contamination. Have an existing supply of plankton nets.
- Other Resources:
  - Consider training people to monitor/collect samples in advance (or have training materials in place).
  - Agencies can be a contact for resources in advance. Agreements to share resources may be developed in advance. Clearly list what is ready for use and what do we need to source? (e.g., sampling equipment, boats, divers).

## Break Out Discussion for Containment

Exercise participants explored the dynamics of containment needs during a response:

- Vessel inspections and decontaminations will be the primary activity.

- Closure / Limiting Access
  - All partners will need to support closures/limited access area delineations.
  - Implement limited closure and decontaminations around hot spot and then scale to entire Canadian side if necessary (11 boat launches).
  - Need to determine the initial extent of closures/limited access to the area of delineation.
    - Need to work with East Kootenay Regional District to determine if closures would be issued under an emergency declaration.
    - The Aquatic Invasive Species Regulation under the federal Fisheries Act may enable closures to access points to limit the spread of AIS. Need to seek clarification on how far the closure could extend via an order.
- Communications
  - BC WLRS Communication team would communicate via press releases in coordination with other lead response agencies.
  - Press releases, in addition to other announcements methods, will be made.
- Enforcement
  - The Conservation Officer Service will be the lead enforcement agency for the Province of BC.
  - People can access the lake via locations other than boat ramps (e.g., down river from Fort Steele). This will require additional law enforcement considerations.
  - Engineering controls – temporary barriers and signs for boat ramp closures (RDEK may have resources/equipment to support this). Security – use internal enforcement staff initially but recognize this may not be sustainable long-term and may require contracting an external agency.
- Authorities and Funding
  - Transport Canada – investigate the process for waterbody portion closure.
  - See above regarding triggers for declaring a State of Emergency
- Future exploration of what would happen if Canada closed the waterbody and Montana does not and vice versa.

## Appendix D: Proposed Response Scenario for Discussion with Permitting Agencies

Context: During the workshop, participants provided a verbal briefing to permitting agencies to inform immediate decisions. Below is a summary of the main points from the discussion.

- *Lead agency have been identified (WLRS)*
- *Initiate containment by establishing watercraft inspection and decontamination (WID) stations at launch/exit location(s). Mandatory decontamination at all key access points in Canada. MT would advocate for mandatory decontamination upon exit in the United States. This will require additional resources to maintain existing WID stations at the borders while standing up exit/containment WID stations around Lake Kooconusa.*
- *Houseboats will be removed if possible. Many will probably have to remain. Bay and marina will be restricted for access/closed. A secure lot will be needed to temporarily store houseboats that are removed from the marina. Other vessels will be removed from the water and decontaminated.*
- *Containment boom to be installed at the perimeter of the bay where the positive detections occurred if site conditions allow, based on flow etc.*
- *Work with Nations & Tribes to assess response options and obtain approval for dreissenid response actions including moving forward with closures, monitoring and treatment options. This may include a letter of support from the Nations to move forward with chemical treatment in Canada.*
- *WLRS Ministerial briefing and decision on control action and associated costs and impacts from dreissenids will be required (identification of mitigation costs that may be needed).*
- *Discussions with lead agency directors to commit staff, actions, quarantine authorities. A request for DFO resources for use and consolidated exits, and will need to maintain Invasive Mussel Defense Program watercraft inspection station resources at the borders.*
- *Initiate monitoring team to assess the extent of infestation. Monitoring will need to extend outside of the containment area. MT will be conducting monitoring in the waterbody.*
- *Assessment of potential treatment options will need to begin as the waterbody has now been confirmed as positive for dreissenid mussels. The two products being considered for treatment include KCl and Earthtec QZ (copper-based product). KCl is already registered for use in Canada but Earthtec QZ is not, and it is the opposite for Montana.*
- *Multi-agency press release (on containment, closures, and control options) will need to be issued to notify all water users of the immediate closures as a first step.*
- *There was discussion about whether the International Joint Commission could be a mechanism for streamlining communication and situational awareness in Lake Kooconusa, but it has since been confirmed that this would not be the appropriate mechanism.*
- *Liaison with law enforcement and RDEK and secure initial notification equipment.*
- *RDEK confirmed there are no municipal water intakes in the area*
- *Pre, during and post treatment monitoring will be needed as part of the treatment plan. This will need to include monitoring all species in addition to listed species (e.g. Burbot, whitefish, WSCT, bull trout, all fish species, other amphibians, vegetation, and native freshwater mussels). Salvage options have been identified.*
- *Physicochemical parameters will need to be collected to understand the best application for potential chemical options in terms of effectiveness and feasibility (how much product is needed and total cost). This includes identifying product availability and cost for both KCl and Earthtec QZ*
- *Cattle-use is important in the area and mitigation measures would need to be identified as part of the treatment plan.*

- *Timing of treatment, followed by seasonal low flow period/drawdown period with cold temperature was discussed as part of assessing the treatment plan.*
- *Use of tracer dyes to determine flows at treatment sites. There was discussion about whether permits will be required for tracer dyes in Canada and initial research indicates that more benign forms do not require a permit.*
- *Immediate treatment area will be the bay with the marina only but will need to consider all species and habitats both within and outside the treatment area and monitoring of product concentration will be needed both inside and outside the treatment area to assess containment and downstream dissipation of the product.*
- *RDEK boat launch area will be utilized as the main staging area for equipment.*
- *Discussion with PMRA was around what the process would be for requesting an Emergency Use Permit if EarthTecQZ was identified as the most suitable product*
- *Cultural resources staff onsite throughout project to monitor actions on the ground*
- *Potential use of sentinel cages for assessing impacts and chemical efficacy would be an important part of the pre and post treatment monitoring.*
- *Reference guidelines for in-water work timing windows:*
  - a. *Canada (<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water/regional-terms-conditions-timing-windows>)*
  - b. *Montana - The US Fish and Wildlife Service has established in-water timing work with the US Army Corps of Engineers. In bull trout feeding, migrating, overwintering habitat: In-channel work can only occur from July 1 to September 30. In bull trout spawning and rearing habitat: In-channel work can only occur from May 1 to August 31.*
- *Review and document best management practices to minimize effects to listed species and critical habitats, prevent the spread of invasive species, protect cultural and natural resources, etc.*

## Appendix E: Relevant sections of the Canadian Species at Risk Act

### Relevant SARA considerations:

#### General Prohibitions

##### Killing, harming, etc., listed wildlife species

- 32 (1) No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species.

##### Damage or destruction of residence

- 33 No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species, or that is listed as an extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.

#### Protection of Critical Habitat

##### Destruction of critical habitat

- 58 (1) Subject to this section, no person shall destroy any part of the critical habitat of any listed endangered species or of any listed threatened species — or of any listed extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada — if
  - o (a) the critical habitat is on federal land, in the exclusive economic zone of Canada or on the continental shelf of Canada;
  - o (b) the listed species is an aquatic species; or
  - o (c) the listed species is a species of migratory birds protected by the Migratory Birds Convention Act, 1994.

#### Agreements and Permits

##### Powers of competent minister

- 73 (1) The competent minister may enter into an agreement with a person, or issue a permit to a person, authorizing the person to engage in an activity affecting a listed wildlife species, any part of its critical habitat or the residences of its individuals.

##### Purpose

- (2) The agreement may be entered into, or the permit issued, only if the competent minister is of the opinion that
  - o (a) the activity is scientific research relating to the conservation of the species and conducted by qualified persons;
  - o (b) the activity benefits the species or is required to enhance its chance of survival in the wild; or
  - o (c) affecting the species is incidental to the carrying out of the activity.

##### Pre-conditions

- (3) The agreement may be entered into, or the permit issued, only if the competent minister is of the opinion that
  - o (a) all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;
  - o (b) all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and
  - o (c) the activity will not jeopardize the survival or recovery of the species .

##### Explanation in public registry

- (3.1) If an agreement is entered into or a permit is issued, the competent minister must include in the public registry an explanation of why it was entered into or issued, taking into account the matters referred to in paragraphs (3)(a), (b) and (c).

#### Agreements and permits under other provincial and territorial Acts

- 78 (1) An agreement, permit, license, order or other similar document authorizing a person to engage in an activity affecting a listed wildlife species, any part of its critical habitat or the residences of its individuals that is entered into, issued or made under an Act of the legislature of a province or a territory by a provincial or territorial minister with whom a competent minister has entered into an agreement under section 10 has the same effect as an agreement or permit under subsection 73(1) if
  - o (a) before it is entered into, issued or made, the provincial or territorial minister determines that the requirements of subsections 73(2), (3), (6) and (6.1) are met;

o (b) after it is entered into, issued or made, the provincial or territorial minister complies with the requirements of subsection 73(7).

#### Administrative agreements

- 10 A competent minister may, after consultation with every other competent minister, enter into an agreement with any government in Canada, organization or wildlife management board with respect to the administration of any provision of this Act for which that competent minister has responsibility, including the preparation and implementation of recovery strategies, action plans and management plans.

#### Project Review

##### Notification of Minister

- 79 (1) Every person who is required by or under an Act of Parliament to ensure that an assessment of the environmental effects of a project is conducted, and every authority who makes a determination under paragraph 82(a) or (b) of the Impact Assessment Act in relation to a project, must, without delay, notify the competent minister or ministers in writing of the project if it is likely to affect a listed wildlife species or its critical habitat.

##### Required action

(2) The person must identify the adverse effects of the project on the listed wildlife species and its critical habitat and, if the project is carried out, must ensure that measures are taken to avoid or lessen those effects and to monitor them. The measures must be taken in a way that is consistent with any applicable recovery strategy and action plans.

## Appendix F: Chemical Treatment Option Considerations

Treatment Product	Active ingredients	Registered for ZQM control in Canada in open water?	Registered for ZQM control in US in open water?	Efficiency	Treatment Considerations	Risks/Impacts to non-target species*
Potash	Potassium chloride	Yes	No	95-100%	Long treatment period (21 days) and large quantity of product may be required creating a challenge in large waterbodies	<p><b>Plants:</b> Low risk/limited impacts</p> <p><b>Amphibians:</b> No published data but could have indirect effects due to changes in water chemistry and habitat</p> <p><b>Fish:</b> Low risk for fish. Potential indirect effects from changes in water quality and fish habitat.</p> <p><b>Aquatic Invertebrates:</b> High risk – lethal to native freshwater mussels and sensitive aquatic invertebrates (e.g. water fleas). Lethal effects expected for the threatened Rocky Mountain Ridge mussel in BC.</p> <p><b>Birds:</b> No published data available</p>
EarthTec QZ	Copper	No	Yes	100%	Toxicity levels for different species varies depending on the water chemistry (e.g. pH, dissolved oxygen). Long treatment period (30 days)	<p><b>Plants:</b> Low risk/limited impacts</p> <p><b>Amphibians:</b> High risk/impacts for some amphibian species and at various life stages</p> <p><b>Fish:</b> High risk, lethal effects for many fish species</p> <p><b>Aquatic Invertebrates:</b> High risk, lethal effects for many aquatic invertebrate species</p> <p><b>Birds:</b> No published data available</p>

Treatment Product	Active ingredients	Registered for ZQM control in Canada in open water?	Registered for ZQM control in US in open water?	Efficiency	Treatment Considerations	Risks/Impacts to non-target species*
Natrix	Chelated copper	No	Yes	100%	Contact time can vary depending on water chemistry, treatment site and target species. Chelated copper does not breakdown as quickly in hard water so less product is needed	<p><b>Plants:</b> High risk as it is also used as an algacide</p> <p><b>Amphibians:</b> Unknown but likely impacts for some amphibian species and at various life stages</p> <p><b>Fish:</b> High risk - fish mortality expected, some species are more susceptible than others (e.g. sturgeon, suckers, perch)</p> <p><b>Aquatic Invertebrates:</b> High risk - lethal to other molluscs and bivalve species</p> <p><b>Birds:</b> No published data available</p>
Zequanox	Biopesticide (dead bacterial cells of <i>Pseudomonas fluorescens</i> )	No	Yes	70-100%	Requires use of a barrier system when applied to surface waters to maintain effective treatment concentrations	<p><b>Plants:</b> No published data available</p> <p><b>Amphibians:</b> No published data available</p> <p><b>Fish:</b> Could be lethal for some fish species in particular trout (rainbow, bull and brook trout). Additional fish species could be impacted as treatment could temporarily reduce the dissolved oxygen in the treatment area and increase turbidity levels.</p> <p><b>Aquatic Invertebrates:</b> Zooplankton and phytoplankton likely to recover quickly but declines in amphipods and gastropods have been observed</p> <p><b>Birds:</b> Low risk</p>

\*Visit: <https://www.crbdir.com/potential-effects> for more detailed information