

# **Title**

Canadian Wildlife Federation

25-06-2024

# Table of contents

<b>Acknowledgements</b>	<b>3</b>
<b>Project Overview</b>	<b>4</b>
Plan Purpose, Approach, and Scope . . . . .	4
Vision Statement . . . . .	4
Project Scope . . . . .	5
Target species . . . . .	6
Barrier Types . . . . .	6
<b>Connectivity Status Assessment and Goals</b>	<b>8</b>
Connectivity Status Assessment . . . . .	8
Goals . . . . .	8
<b>Barrier Prioritization</b>	<b>10</b>
Barrier Prioritization Summary . . . . .	10
<b>Work Planning</b>	<b>12</b>
Annual Progress Report . . . . .	12
Operational Plan . . . . .	12
Annual Work Plan . . . . .	13
<b>References</b>	<b>15</b>
<b>Version History</b>	<b>16</b>
<b>Appendices</b>	<b>17</b>
<b>Project Partners</b>	<b>17</b>
Planning Team . . . . .	17
Key Actors . . . . .	18
<b>Supplementary Information</b>	<b>19</b>
Situation Analysis . . . . .	19
Strategies & Actions . . . . .	20
Strategy 1: Crossing Remediation . . . . .	20

Strategy 2: Lateral Barrier Remediation . . . . .	20
Strategy 3: Dam Remediation . . . . .	21
Strategy 4: Barrier Prevention . . . . .	21
Strategy 5: Communication and Education . . . . .	21
Theories of Change & Objectives . . . . .	22
Operational Plan . . . . .	22
Funding Sources . . . . .	26
<b>Data Download and Methods</b>	<b>27</b>
Modelled Habitat Maps . . . . .	27
Connectivity Status Assessment Methods . . . . .	28

## Acknowledgements



# **Project Overview**

## **Plan Purpose, Approach, and Scope**

The following Watershed Connectivity Remediation Plan (WCRP) ...

WCRPs are long-term, actionable plans that blend local stakeholder and rightsholder knowledge with innovative GIS analyses to gain a shared understanding of where remediation efforts will have the greatest benefit for . The planning process is inspired by the [Conservation Standards](#) (v.4.0), which is a conservation planning framework that allows planning teams to systematically identify, implement, and monitor strategies to apply the most effective solutions to high priority conservation problems.

The planning team compiled existing barrier location and assessment data, habitat data, and previously identified priorities, and combined this with local and Indigenous knowledge to create a strategic watershed-scale plan to improve connectivity. To expand on this work the WCRP planning team applied the WCRP planning framework to define the “thematic” scope of freshwater connectivity and refine the “geographic” scope to identify only those portions of the watershed where barrier prioritization will be conducted, and subsequent remediation efforts will take place. Additionally, the team selected target fish species, assessed their current connectivity status in the watershed, defined concrete goals for gains in connectivity, and developed a priority list of barriers for remediation to achieve those goals. While the current version of this plan is based on the best-available information at the time of publishing, WCRPs are intended to be “living plans” that are updated regularly as new information becomes available, or if local priorities and contexts change. As such, this document should be interpreted as a current snap-shot in time, and future iterations of this WCRP will build upon the material presented in this plan to continuously improve barrier remediation for migratory fish in Bowron-Quesnel. For more information on how WCRPs are developed, see Mazany-Wright, Noseworthy, et al. (2021).

## **Vision Statement**

Vision statement here

## Project Scope

Connectivity is a critical component of freshwater ecosystems that encompasses a variety of factors related to ecosystem structure and function, such as the ability of aquatic organisms to disperse and/or migrate, the transportation of energy and matter (e.g., nutrient cycling and sediment flows), and temperature regulation Seliger and Zeiringer (2018). Though each of these factors are important when considering the health of a watershed, for the purposes of this WCRP the term “connectivity” is defined as the degree to which aquatic organisms can disperse and/or migrate freely through freshwater systems. Within this context, connectivity is primarily constrained by physical barriers, including anthropogenic infrastructure such as dams, weirs, and stream crossings, and natural features such as waterfalls and debris flows.



Figure 1: SAMPLE The primary geographic scope — the Horsefly River watershed — located in the Fraser River system.

The primary geographic scope of this WCRP is ...

## **Target species**

Target species represent the ecologically and culturally important species for which habitat connectivity is being conserved and/or restored in the watershed. The selection of these target species was driven primarily by the targets species of the primary fund supporting this planning work.

### **SAMPLE Anadromous Salmon**

Anadromous salmon are cultural and ecological keystone species that contribute to productive ecosystems by contributing marine-derived nutrients to the watershed and forming an important food source for other species. Salmon species are sacred to the NStQ, having sustained life, trading economies, and culture since time immemorial (W. L. F. Nation. (2021), X. F. Nation. (2021), N. Singi pers. comm.). The stewardship of the resources and fisheries in their traditional territories are imbued in the spirit of the NStQ through a symbiotic relationship based on respect – the NStQ never take more salmon than is needed and there is no waste. The entirety of the salmon is used - smoked and dried to sustain the NStQ through the winter months, the roe harvested for consumption, salmon oil rendered to be stored and traded, and the skin used to store the oil (Wilson, Twohig, and Dahlstrom (1998), X. F. Nation. (2021), N. Singi pers. comm.). The salmon runs begin to return to the Horsefly River watershed in early August, and the NStQ traditionally celebrate and feast at this time. The harvest of the salmon strengthens the cultural connection to the land and the waters, providing an important food source for communities and the opportunity to pass knowledge and ceremony to future generations through fishing and fish processing (W. L. F. Nation. (2021)', X. F. Nation. (2021)).

Anadromous salmon populations in the Horsefly River watershed have declined significantly in the past few decades, with the populations of all three focal species being listed as Threatened or Endangered by the Committee On the Status of Endangered Wildlife In Canada (COSEWIC). This has been exacerbated by the Big Bar landslide on the Fraser River in 2019, leading the four NStQ communities to voluntarily close the salmon fishery from 2019-2022. The stewardship of their waters continues through the work of the NStQ member communities and the Northern Shuswap Tribal Council.

## **Barrier Types**

The following table highlights which barrier types pose the greatest threat to in the watershed. The results of this assessment were used to inform the subsequent planning steps, as well as to identify knowledge gaps where there is little spatial data to inform the assessment for a specific barrier type.

Table 1: SAMPLE Connectivity status assessment for linear habitat (spawning and rearing).

Barrier Types	Extent	Severity	Irreversibility	Overall Threat Rating:
Road-Stream Crossings	Low	Very High	Medium	Very High
Lateral Barriers	High	Very High	High	High
Small Dams(<3m height)	Low	Medium	High	Medium
Trail-stream Crossings	Low	Low	Medium	Low
Natural Barriers	Medium	High	Low	Low

### **Small Dams (<3 m height)**

There are 9 mapped small dams on “potentially accessible” stream segments in the watershed, blocking a total of 7.91 km (~2.23% of the total habitat) of modelled spawning and rearing habitat for , resulting in a extent. The extent rating of these structures was confirmed by the planning team.

### **Road-stream Crossings**

There are 18 assessed and modelled crossings located on stream segments with modelled habitat. Demographic road crossings (highways, municipal, and paved roads) block 7.91 km of habitat (~2% of the total blocked habitat), with 67% of assessed crossings having been identified as barriers to fish passage. Resource roads block 7.91 km of habitat (~2%), with 67% of assessed crossings having been identified as barriers.

### **Trail-stream crossings**

There are ...

### **Lateral Barriers**

There are ...

### **Natural Barriers**

Natural barriers to fish passage can include debris flows, log jams, sediment deposits, etc., but natural features that have always restricted fish passage (e.g., waterfalls) are not considered under this barrier type. Natural barriers are difficult to include in a spatial prioritization framework due to their transient nature.

# Connectivity Status Assessment and Goals

## Connectivity Status Assessment

(see Table 2).

The current connectivity status assessment relies on GIS analyses to map known and modelled barriers to fish passage, identify stream reaches that have potential spawning and rearing habitat, estimate the proportion of habitat that is currently accessible to target species, and prioritize barriers for field assessment that would provide the greatest gains in connectivity. To support a flexible prioritization framework to identify priority barriers in the watershed, two assumptions are made: 1, any modelled (i.e., passability status is unknown) or partial barriers are treated as complete barriers to passage and 2, the habitat modelling is binary, it does not assign any habitat quality values. As such, the current connectivity status will be refined over time as more data on habitat and barriers are collected. For more detail on how the connectivity status assessments were conducted, see Data Download and Methods.

Table 2: SAMPLE TABLE Connectivity status assessment for spawning and rearing habitat.

Target Species	KEA	Indicator	Poor	Fair	Good	Very Good
Andromous Salmon	Available Spawning Habitat	% of total habitat Current Status:	<50%	51-75%	76-90%	>90% 91

## Goals

Table 3: SAMPLE TABLE Goals to improve spawning and rearing habitat for target species in the watershed. The goals were developed by the planning team and represent the resulting priorities for the watershed. The goals are subject to change as new information becomes available over the course of the plan timeline (e.g., the percentage of habitat accessible may change based on barrier field assessments).

Goal #	Goal
1	By 2040, the percent (%) of total linear habitat accessible to anadromous salmon will increase from 91% to 95%.

Goal #	Goal
2	By 2024, the total area of overwintering habitat accessible to Anadromous Salmon will increase by 1

# Barrier Prioritization

## Barrier Prioritization Summary

The primary conservation outcome of the WCRP will be ... To achieve this, it is necessary to prioritize and identify a suite of barriers that, if remediated, will provide access to a minimum of 19.45 km of spawning or rearing habitat (Table 4):

Table 4: SAMPLE Spawning and rearing habitat connectivity gain requirements to meet WCRP goals in . The measures of currently accessible and total habitat values are derived from the Intrinsic Potential habitat model.

Habitat Type	Currently accessible (km)	Total	Current Connectivity Status	Goal	Gain required
Spawning and Rearing	320.9	354.53	91%	96%	19.45

The barrier prioritization analysis ranked barriers by [...] A longer list of barriers is needed due to the inherent assumptions in the connectivity model, habitat model, and gaps in available data. Barriers that have been modelled (i.e., points where streams and road/rail networks intersect) are assumed to be barriers until field verification is undertaken and structures that have been assessed as “potential” barriers (e.g., may be passable at certain flow levels or for certain life history stages) require further investigation before a definitive remediation decision is made. Additionally, the habitat model identifies stream segments that have the potential to support spawning or rearing habitat for target species but does not attempt to quantify habitat quality or suitability (see Appendix B), which will require additional field verification once barrier assessments have completed. Data deficient structures represents structures that are a priority to evaluate further through barrier assessment and habitat confirmations because some structures will likely be passable, others will not be associated with usable habitat, and others may not be feasible to remediate because of logistic considerations (Table 6). Some barriers were moved forward to the “priority barrier list” (see Table 5) and others were eliminated from consideration due to one or more of the considerations discussed above (see Table 7). The priority barrier list represents structures that were confirmed to be partial or full barriers to fish passage and that block access to confirmed habitat. Barriers on the priority list were reviewed by planning team members and selected for inclusion for proactive pursuit of remediation. For more details on the barrier prioritization model, please see Mazany-Wright, Norris, et al. (2021).

ID	Watercourse name	Road name	Location/coordinates	Barrier type	Barrier owner
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ID	Watercourse name	Road name	Location/coordinates	Assessment step completed	Reason for exclusion	Method of exclusion
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Table 7: List of barriers that were prioritized as part of the first iteration from consideration for pursuit of proactive remediation following planning team due to these structures not existing, being passable with usable habitat, or deemed not feasible to remediate because of actions.

ID	Watercourse name	Road name	Location/coordinates	Reason for exclusion	Method of exclusion
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ID	Watercourse name	Road name	Location/coordinates	Type of rehabilitation - cover new
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# Work Planning

## Annual Progress Report

### Operational Plan

The operational plan represents a preliminary exercise undertaken by the planning team to identify the potential leads, potential participants, and estimated cost for the implementation of each action in . The table below summarizes individuals, groups, or organizations that the planning team felt could lead or participate in the implementation of the plan and should be interpreted as the first step in on-going planning and engagement to develop more detailed and sophisticated action plans for each entry in the table. The individuals, groups, and organizations listed under the “Lead(s)” or “Potential Participants” columns are those that provisionally expressed interest in participating in one of those roles or were suggested by the planning team for further engagement (denoted in bold), for those that are not members of the planning team. The leads, participants, and estimated costs in the operational plan are not binding nor an official commitment of resources, but rather provide a roadmap for future coordination and engagement to work towards implementation of the WCRP.

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#### Strategy / Actions

##### Strategy 1: Crossing Remediation

- 1.1 – Remediate crossings that are acting as barriers
- 1.2 – Lobby that the government enforce their regulations
- 1.3 – Initiate a barrier owner outreach program for locations on the barrier remediation shortlist
- 1.4 – Knowledge Gap: Continue updating the barrier prioritization model
- 1.5 – Knowledge Gap: conduct field assessments on updated preliminary barrier list using the provincial fish p
- 1.6 - Update longitudinal connectivity goal if additional barriers are added to the barrier remediation shortlist
- 1.7 – Knowledge Gap: Identify and map crossing ownership for barriers on the barrier remediation shortlist
- 1.8 – Knowledge Gap: Compile road maintenance schedules
- 1.9 – Knowledge Gap: Survey trail-stream crossings to confirm low pressure rating values

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## Strategy / Actions

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### Strategy 2: Lateral Barrier Remediation

- 2.1 – Remediate dikes / berms / other structures that are acting as barriers
- 2.2 – Initiate a barrier owner outreach program
- 2.3 – Knowledge Gap: Identify and map year-round lateral habitat, as well as overwintering habitat
- 2.4 – Knowledge Gap: Map lateral barriers and barrier ownership
- 2.5 – Knowledge Gap: Develop a framework to assess and prioritize between different lateral barrier remediations

### Strategy 3: Dam Remediation

- 3.1 - Remediate Dams
- 3.2 - Install Fish Passage
- 3.3 - Connect with Cattleman's Association to explore a partnership to remediate dams
- 3.4 - Knowledge Gap: Continue updating the barrier prioritization model
- 3.5 - Knowledge Gap: Assess dams to determine whether they exist and are truly blocking salmon habitat
- 3.6 - Knowledge Gap: Identify and map dam ownership

### Strategy 4: Barrier Prevention

- 4.1 – Explore potential partnerships with industrial companies
- 4.2 – Stabilize sediment sources that are explicitly linked to sediment wedges or erosion that are acting as barriers

### Strategy 5: Progress Tracking Plan

- 5.1 - Implement the WCRP Progress Tracking Plan
- 5.2 - Develop a communication action to raise awareness and support for this WCRP

Total:

Fundraising total:

Proponent/government contribution total:

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## Annual Work Plan



## References

- Mazany-Wright, N, S M Norris, N W R Lapointe, and B Rebellato. 2021. “A Freshwater Connectivity Modelling Framework to Support Barrier Prioritization and Remediation in British Columbia.” *Canadian Wildlife Federation*.
- Mazany-Wright, N, J Noseworthy, S Sra, S M Norris, and N W Lapointe. 2021. “Breaking down Barriers: A Practitioners’ Guide to Watershed Connectivity Remediation Planning.” *Canadian Wildlife Federation*.
- Nation., Williams Lake First. 2021. *Secwepemc Land Use Patterns*. <https://www.wlfn.ca/about-wlfn/history/>.
- Nation., Xat̄sūll First. 2021. “Traditional History.” *XFN*.
- Seliger, Carina, and Bernhard Zeiringer. 2018. “River Connectivity, Habitat Fragmentation and Related Restoration Measures,” 171–86.
- Wilson, I. R., K. Twohig, and B. Dahlstrom. 1998. *Archaeological Overview Assessment Northern Secwepemc Traditional Territory*. [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/archaeology/forms-publications/aoa\\_-williams\\_lake\\_-\\_northern\\_secwepemc\\_traditional\\_territory\\_-\\_1998\\_report.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/archaeology/forms-publications/aoa_-williams_lake_-_northern_secwepemc_traditional_territory_-_1998_report.pdf).

## **Version History**

# Project Partners

## Planning Team

Table 10: SAMPLE WCRP planning team members. Planning team members contributed to the development of this plan by participating in a series of workshops and document and data review. The plan was generated based on the input and feedback of the local groups and organizations listed in this table.

Name	Organization
Betty Rebellato	Canadian Wildlife Federation
Nick Mazany-Wright	Canadian Wildlife Federation
Nicolas Lapointe	Canadian Wildlife Federation
Sarah Sra	Canadian Wildlife Federation
Colin McGregor	Department of Fisheries and Oceans Canada
Guy Scharf	Department of Fisheries and Oceans Canada
Thomas Gristey	Department of Fisheries and Oceans Canada
Simon Norris	Hillcrest Geographics
Brian Englund	Horsefly River Roundtable
Helen Englund	Horsefly River Roundtable
Judy Hillaby	Horsefly River Roundtable
Mike Ramsay	Ministry of Forests, Lands and Natural Resource Operations
Kate Hewitt	Northern Shuswap Tribal Council
Edna Boston	Soda Creek Indian Band
Mike Stinson	Soda Creek Indian Band
John Walker	Williams Lake First Nation
Nishitha Singi	Williams Lake First Nation

Name	Organization
Josh Noseworthy	Global Conservation Solutions

## Key Actors

Table 1

Individual or Organization Name	Role and Primary Interest
Cariboo Mining Association	A mining company that has been
Consus Management Ltd.	Local wildlife consultants in the w
Dawson Road Maintenance Ltd	A road design and maintenance c
DWB Consulting Services Ltd.	Local wildlife consultants in the w
Freshwater Fisheries Society of British Columbia	This group can provide project as
Larry Davis	A biologist and local wildlife consu
Local ranchers	These individuals can facilitate co
Ministry of Forests, Lands and Natural Resource Operations (FLNRO)	FLNRO can assist with providing
Ministry of Transportation and Infrastructure (MOTI)	MOTI may own barriers and can p
Property owners along river and tributaries	These individuals can facilitate co
Quesnel River Research Centre	This group can help with field ass
Steve Hocquard	A local consultant (Steve Hocqua
Tolko Industries Ltd.	A privately owned Canadian fore
Upper Fraser Fisheries Conservation Alliance	This group can be contacted for a
West Fraser	A integrated forestry and diversifi

# Supplementary Information

## Situation Analysis

The following situation model was developed by the WCRP planning team to “map” the project context and brainstorm potential actions for implementation. Green text is used to identify actions that were selected for implementation (see Strategies & Actions), and red text is used to identify actions that the project team has decided to exclude from the current iteration of the plan, as they were either outside of the project scope, or were deemed to be ineffective by the planning team.

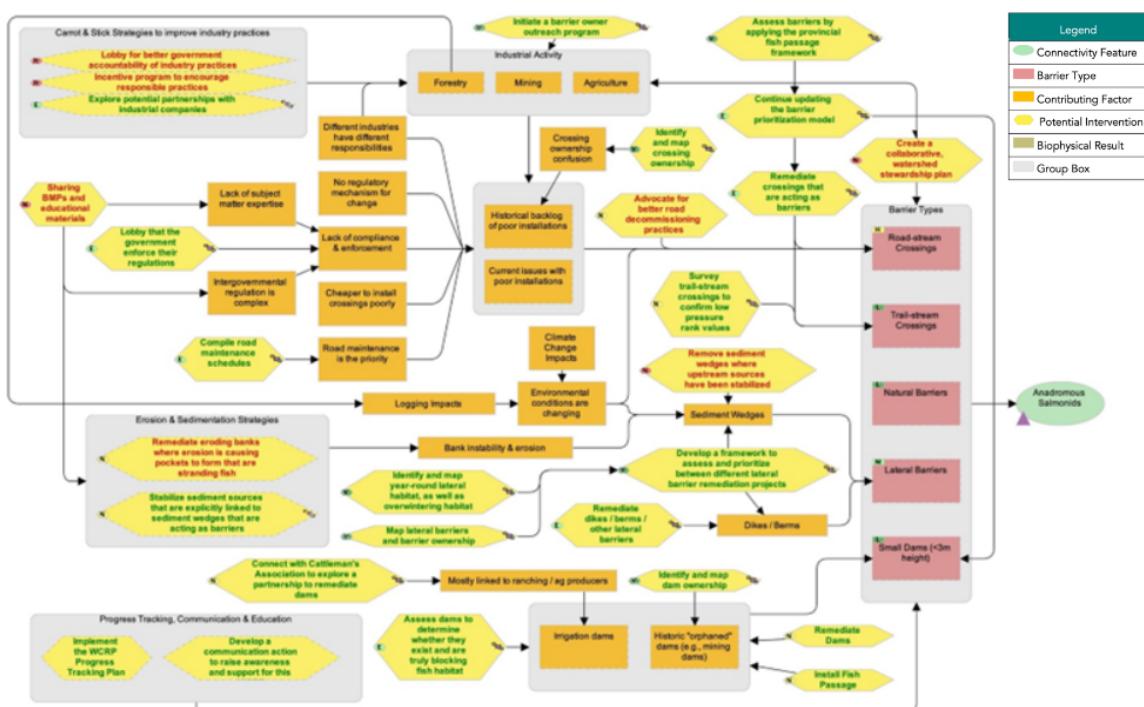


Figure 2: SAMPLE Situation analysis developed by the planning team to identify factors that contribute to fragmentation (orange boxes), biophysical results (brown boxes), and potential strategies/actions to improve connectivity (yellow hexagons) for target species in the Horsefly River watershed.

## **Strategies & Actions**

Effectiveness evaluation of identified conservation strategies and associated actions to improve connectivity for target species in . The planning team identified five broad strategies to implement through this WCRP, 1) crossing remediation, 2) lateral barrier remediation, 3) dam remediation, 4) barrier prevention, and 5) communication and education. Individual actions were qualitatively evaluated based on the anticipated effect each action will have on realizing on-the-ground gains in connectivity. Effectiveness ratings are based on a combination of “Feasibility and”Impact”, Feasibility is defined as the degree to which the project team can implement the action within realistic constraints (financial, time, ethical, etc.) and Impact is the degree to which the action is likely to contribute to achieving one or more of the goals established in this plan.

### **Strategy 1: Crossing Remediation**

ID	Actions
1.1	Remediate crossings that are acting as barriers
1.2	Lobby that the government enforce their regulations
1.3	Initiate a barrier owner outreach program for locations on the barrier remediation shortlist
1.4	Knowledge Gap: Continue updating the barrier prioritization model
1.5	Knowledge Gap: conduct field assessments on updated preliminary barrier list using the provincial fish p
1.6	Update longitudinal connectivity goal if additional barriers are added to the barrier remediation shortlist
1.7	Knowledge Gap: Identify and map crossing ownership
1.8	Knowledge Gap: Compile road maintenance schedules
1.9	Knowledge Gap: Survey trail-stream crossings to confirm low pressure rating values

### **Strategy 2: Lateral Barrier Remediation**

ID	Actions
2.1	Remediate dikes / berms / other lateral barriers
2.2	Initiate a barrier owner outreach program
2.3	Knowledge Gap: Identify and map year-round lateral habitat, as well as overwintering habitat
2.4	Knowledge Gap: Map lateral barriers and barrier ownership

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ID	Actions
2.5	Knowledge Gap: Develop a framework to assess and prioritize between different lateral barrier remediation options

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### **Strategy 3: Dam Remediation**

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ID	Actions	Details
3.1	Remediate Dams	
3.2	Install Fish Passage	
3.3	Connect with Cattleman's Association to explore a partnership to remediate dams	This intervention involves
3.4	Knowledge Gap: Continue updating the barrier prioritization model	The model will be updated to include
3.5	Knowledge Gap: Assess dams to determine whether they exist and are truly blocking fish habitat	Four dams are identified as potential targets for remediation.
3.6	Knowledge Gap: Identify and map dam ownership	

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### **Strategy 4: Barrier Prevention**

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ID	Actions
4.1	Explore potential partnerships with industrial companies
4.2	Stabilize sediment sources that are explicitly linked to sediment wedges or erosion that are acting as barriers

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### **Strategy 5: Communication and Education**

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ID	Actions	Details
5.1	Implement the WCRP Progress Tracking Plan	The WCRP Progress Tracking Plan will be developed and implemented.
5.2	Develop a communication strategy to raise awareness and support for this WCRP	This intervention includes developing a communication plan to raise awareness and support for the WCRP.

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## Theories of Change & Objectives

Theories of Change are explicit assumptions around how the identified actions will achieve gains in connectivity and contribute towards reaching the goals of the plan. To develop Theories of Change, the planning team developed explicit assumptions for each strategy which helped to clarify the rationale used for undertaking actions and provided an opportunity for feedback on invalid assumptions or missing opportunities. The Theories of Change are results oriented and clearly define the expected outcome. The following theory of change models were developed by the WCRP planning team to “map” the causal (“if-then”) progression of assumptions of how the actions within a strategy work together to achieve project goals.

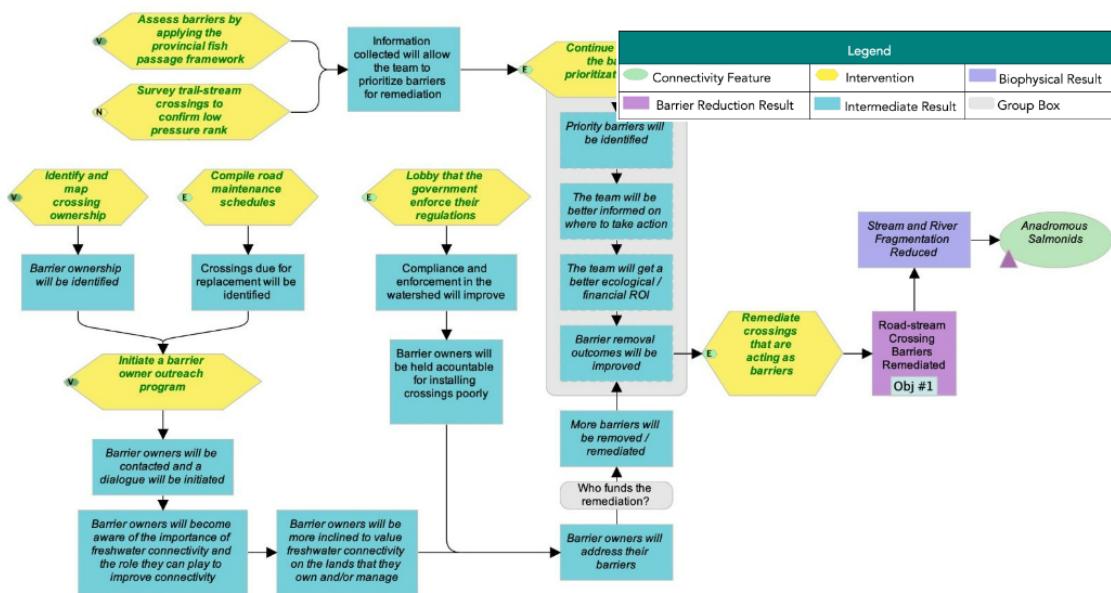


Figure 3: Theory of change developed by the planning team for the actions identified under Strategy 1: Crossing Remediation in the .

## Operational Plan

The operational plan represents a preliminary exercise undertaken by the planning team to identify the potential leads, potential participants, and estimated cost for the implementation of each action in . The table below summarizes individuals, groups, or organizations that the planning team felt could lead or participate in the implementation of the plan and should be interpreted as the first step in on-going planning and engagement to develop more detailed and sophisticated action plans for each entry in the table. The individuals, groups, and

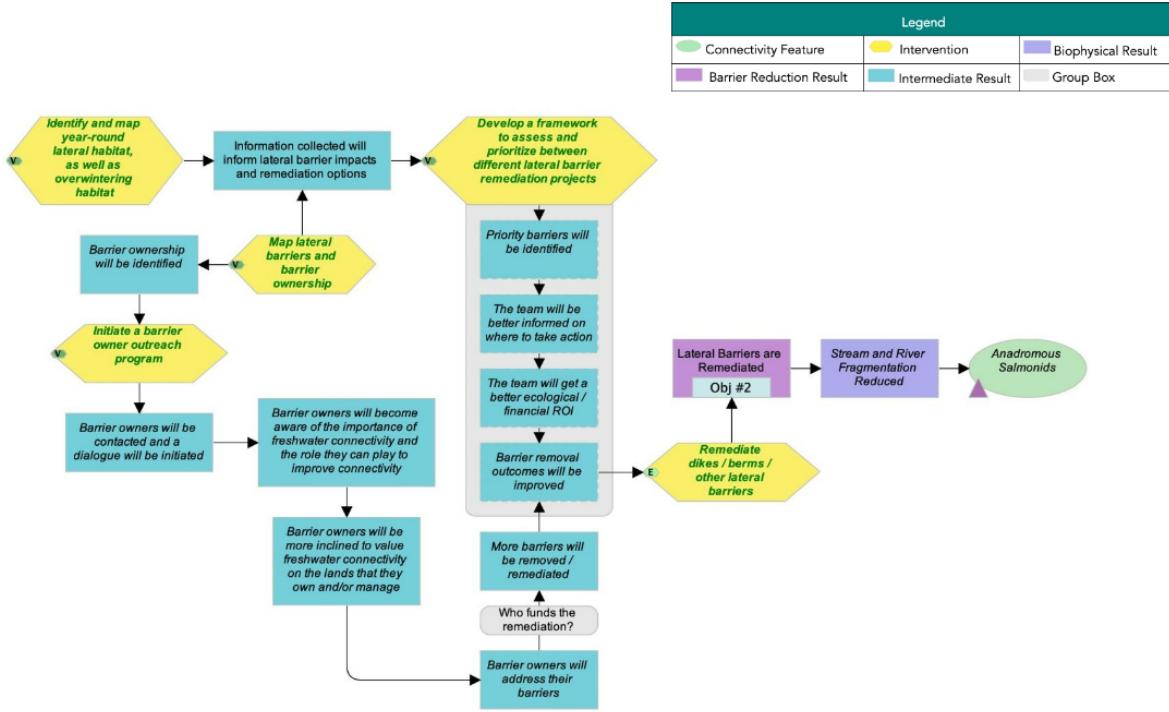


Figure 4: Theory of change developed by the planning team for the actions identified under Strategy 2: Lateral Barrier Remediation in .

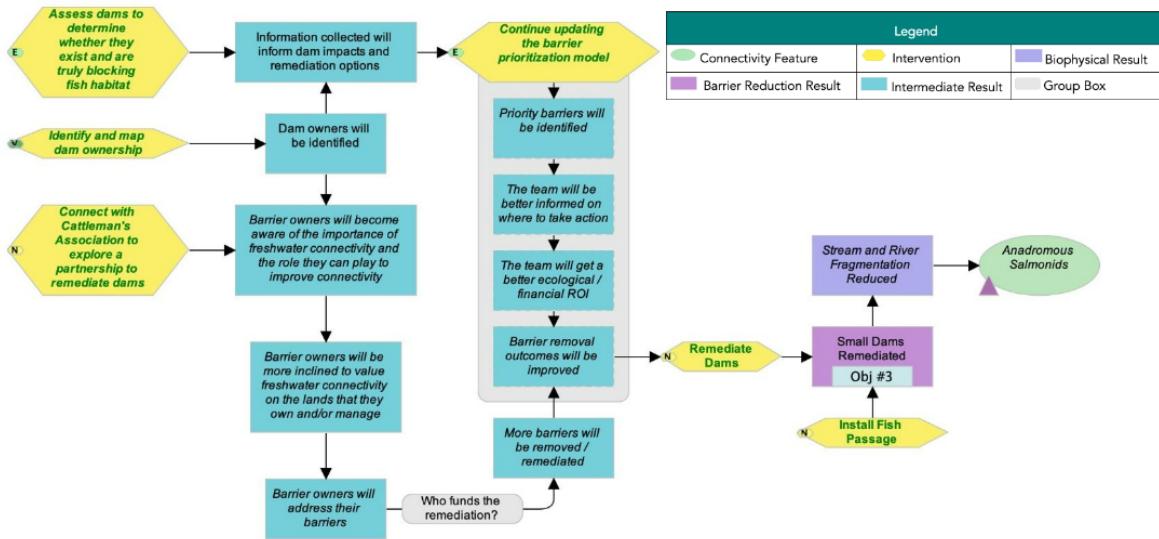


Figure 5: Theory of change developed by the planning team for the actions identified under Strategy 3: Dam Remediation in .

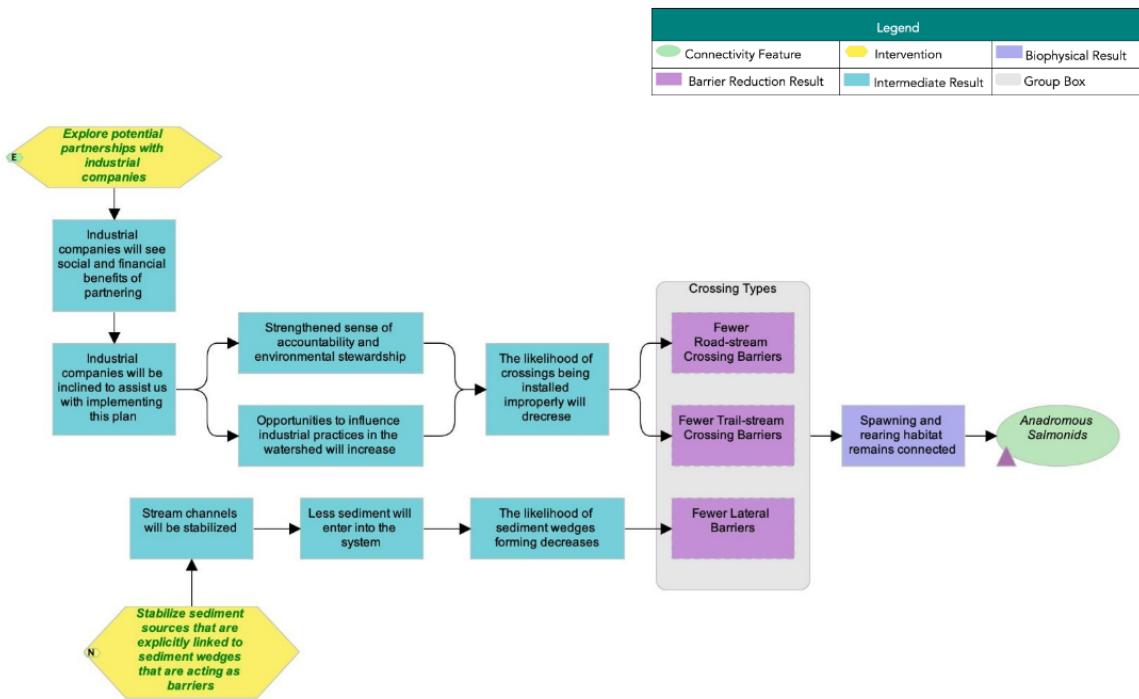


Figure 6: Theory of change developed by the planning team for the actions identified under Strategy 4: Barrier Prevention in .

organizations listed under the “Lead(s)” or “Potential Participants” columns are those that provisionally expressed interest in participating in one of those roles or were suggested by the planning team for further engagement (denoted in bold), for those that are not members of the planning team. The leads, participants, and estimated costs in the operational plan are not binding nor an official commitment of resources, but rather provide a roadmap for future coordination and engagement to work towards implementation of the WCRP.

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## Strategy / Actions

### Strategy 1: Crossing Remediation

- 1.1 – Remediate crossings that are acting as barriers
- 1.2 – Lobby that the government enforce their regulations
- 1.3 – Initiate a barrier owner outreach program for locations on the barrier remediation shortlist
- 1.4 – Knowledge Gap: Continue updating the barrier prioritization model
- 1.5 – Knowledge Gap: conduct field assessments on updated preliminary barrier list using the provincial fish p
- 1.6 - Update longitudinal connectivity goal if additional barriers are added to the barrier remediation shortlist
- 1.7 – Knowledge Gap: Identify and map crossing ownership for barriers on the barrier remediation shortlist
- 1.8 – Knowledge Gap: Compile road maintenance schedules
- 1.9 – Knowledge Gap: Survey trail-stream crossings to confirm low pressure rating values

### Strategy 2: Lateral Barrier Remediation

- 2.1 – Remediate dikes / berms / other structures that are acting as barriers
- 2.2 – Initiate a barrier owner outreach program
- 2.3 – Knowledge Gap: Identify and map year-round lateral habitat, as well as overwintering habitat
- 2.4 – Knowledge Gap: Map lateral barriers and barrier ownership
- 2.5 – Knowledge Gap: Develop a framework to assess and prioritize between different lateral barrier remediations

### Strategy 3: Dam Remediation

- 3.1 - Remediate Dams
- 3.2 - Install Fish Passage
- 3.3 - Connect with Cattleman's Association to explore a partnership to remediate dams
- 3.4 - Knowledge Gap: Continue updating the barrier prioritization model
- 3.5 - Knowledge Gap: Assess dams to determine whether they exist and are truly blocking salmon habitat
- 3.6 - Knowledge Gap: Identify and map dam ownership

### Strategy 4: Barrier Prevention

- 4.1 – Explore potential partnerships with industrial companies
- 4.2 – Stabilize sediment sources that are explicitly linked to sediment wedges or erosion that are acting as barriers

### Strategy 5: Progress Tracking Plan

- 5.1 - Implement the WCRP Progress Tracking Plan
- 5.2 - Develop a communication action to raise awareness and support for this WCRP

Total:

Fundraising total:

Strategy / Actions

Proponent/government contribution total:

## Funding Sources

Funding Source	Spending Restrictions and Conditions
Land Based Investment Strategy	Assessment and remediation
Environmental Enhancement Fund	Fish and wildlife passage
Community Salmon Program	For projects supporting the salmon
Southern Boundary Restoration and Enhancement Fund	Supports 3 activities: (1) d
Habitat Conservation Trust Foundation Enhancement and Restoration Grants	Projects that focus on freshwa
Environmental Damages Fund	Direct funds received from
Habitat Stewardship Program for Aquatic Species at Risk	Program for non-profits, Indigeno
Canada Nature Fund for Aquatic Species at Risk	Funding program aimed at
BC Salmon Restoration and Innovation Fund	Funding for Indigenous en
Aboriginal Fund for Species at Risk	Program for Indigenous gr
Federal Gas Tax Fund - Community Works Fund	Funding available to local
Disaster Mitigation and Adaptation Fund	For those projects where t
Community Gaming Grants	Funding for non-profit orga
Sitka Foundation	Funding for registered char
TULA Foundation	Supports various environm
Vancouver Foundation	Granting agency for comm
BC Conservation Foundation Small Project Fund	Funding available to Non-
Real Estate Foundation of BC General Grants	Funding for First Nations,

# Data Download and Methods

## Modelled Habitat Maps

High-resolution PDF maps accessed [here](#). In each individual map sheet, priority barriers are symbolized using the following notation:

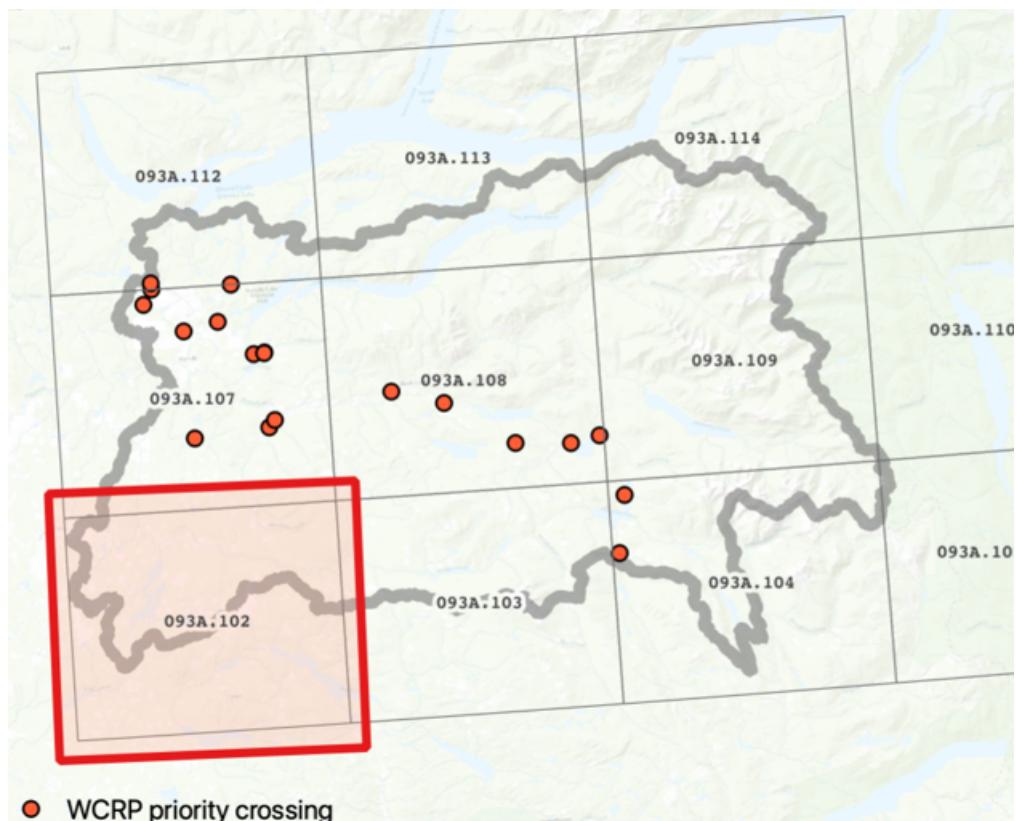


Figure 7: Map description.

## Connectivity Status Assessment Methods

The connectivity status assessment ... The model spatially locates known and modelled barriers to fish passage, identifies potential spawning and rearing habitat for target species, and estimates the amount of habitat that is currently accessible to target species. The habitat model uses two geomorphic characteristics of the stream network — channel gradient and mean annual discharge — to identify potential spawning habitat and rearing habitat for each target species. The habitat model does not attempt to definitively map each habitat type nor estimate habitat quality, but rather identifies stream segments that have high potential to support spawning or rearing habitat for each species based on the geomorphic characteristics of the segment. For more details on the connectivity and habitat model structure and parameters, please see Mazany-Wright, Norris, et al. (2021). The variables and thresholds used to model potential spawning and rearing habitat for each target species are summarized in (table).

Species	Channel Gradient (%)	Mean annual discharge (m <sup>3</sup> /s)
Chinook Salmon	0-3 (Busch et al. 2011, Cooney and Holzer 2006)	0.46-322.5 (Bjornn and Reiser 1991, Neuman et al.
Coho Salmon	0-5 (Roberge et al. 2002, Sloat et al. 2017)	0.164-59.15 (Bjornn and Reiser 1991, Sloat et al.
Sockeye Salmon	0-2 (Lake 1999, Hoopes 1972)	0.175-65 (Bjornn and Reiser 1991, Woll et al.