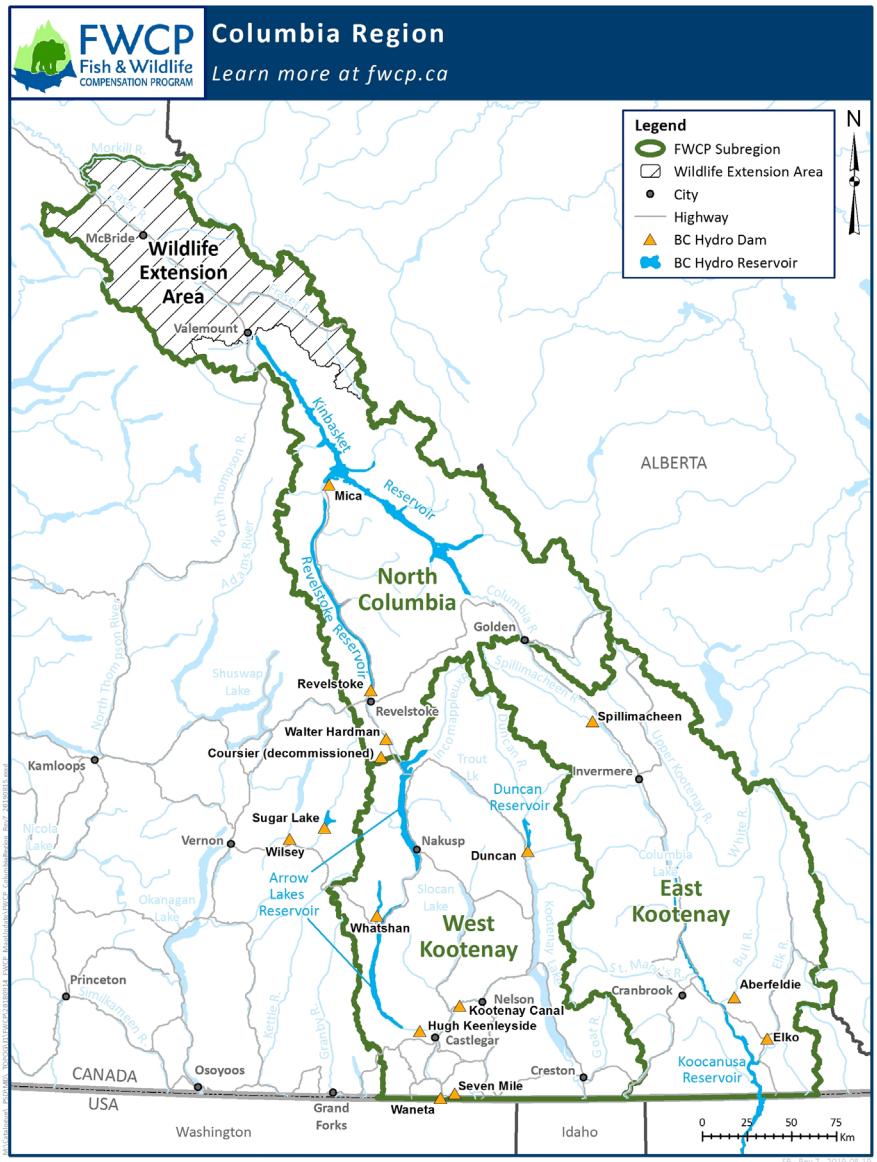
COLUMBIA REGION: OVERVIEW & ACTION PLANS

August 21, 2019 (V1)

The Fish & Wildlife Compensation Program is a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations, and Public Stakeholders to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams.



The Fish & Wildlife Compensation Program is conserving and enhancing fish and wildlife in watersheds impacted by construction of BC Hydro dams in the Columbia Region including four major hydroelectric dams built before 1984, two water storage dams that don't generate power, and seven smaller hydroelectric dams. Learn more at bchydro.com/energy-in-bc/operations/our-facilities/columbia.html.
Cover photos clockwise from left: Kokanee, B. Meunier; Bighorn Sheep, B. Meunier; Heron, i-Stock; Duncan River, R. Clarke.

FWCP
Fish & Wildlife
COMPENSATION PROGRAM
fwcp.ca

The Fish & Wildlife Compensation Program (FWCP) is a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations, and Public Stakeholders to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams. The FWCP funds projects within its mandate to conserve and enhance fish and wildlife in the Columbia Region ecosystems.

Learn more about the FWCP, projects underway now, and how you can apply for a grant at fwcp.ca. Subscribe to our free email updates and annual newsletter at fwcp.ca/subscribe. Contact us anytime at fwcp@bchydro.com.

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Introduction to this Action Plan Overview

This Overview & Action Plan document provides a high-level introduction to the FWCP and sets forth the strategic direction for the Columbia Region. This document outlines the vision, mission, and strategic objectives as per the FWCP Governance Manual, and provides a short description of the Columbia Region landscape and historical context. This document also provides grant applicants and others with important information about how our Action Plans are structured, including our Action Tables. This document also outlines the Board-approved engagement process to update the Columbia Region's Action Plans in 2019.

The Action Tables in each Action Plan outline the FWCP Priority Actions for each ecosystem in the Columbia Region. These actions support our mission to compensate for impacts to fish and wildlife in watersheds impacted by BC Hydro dams that make up our Columbia Region. We fund projects that align with our Priority Actions in each Action Table.

Contact us if you have questions about this Overview, our Action Plans, the Priority Actions in each Action Plan, or your grant application.

Learn more about the FWCP, projects underway now, and how you can apply for a grant at fwcp.ca. Subscribe to our free email updates and annual newsletter at fwcp.ca/subscribe. Contact us anytime at fwcp@bchydro.com.

INTRODUCTION TO THE FWCP

The Fish & Wildlife Compensation Program (FWCP) is a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations, and Public Stakeholders who are actively working to conserve and enhance fish and wildlife in watersheds impacted by construction of BC Hydro dams. The FWCP operates in the Coastal, Columbia, and Peace Regions.

How We Operate

The FWCP is funded annually by BC Hydro and directs those funds toward projects that address Priority Actions across its three regions. BC Hydro has water licence obligations in its Columbia and Peace Regions and has made voluntary commitments to address the impacts of dams in the Coastal Region. BC Hydro fulfills the applicable obligations through the work of the FWCP. In each region, a local Board comprised of agencies, First Nations, and Public Stakeholders guides our work and is responsible for approving all FWCP projects and budgets. FWCP projects are funded and delivered through our annual grants, long-term agreements, and partnerships that reflect the FWCP vision, mission, and strategic objectives (Figure 1). Our Boards may also choose to direct projects and approve funding to address regional priorities.

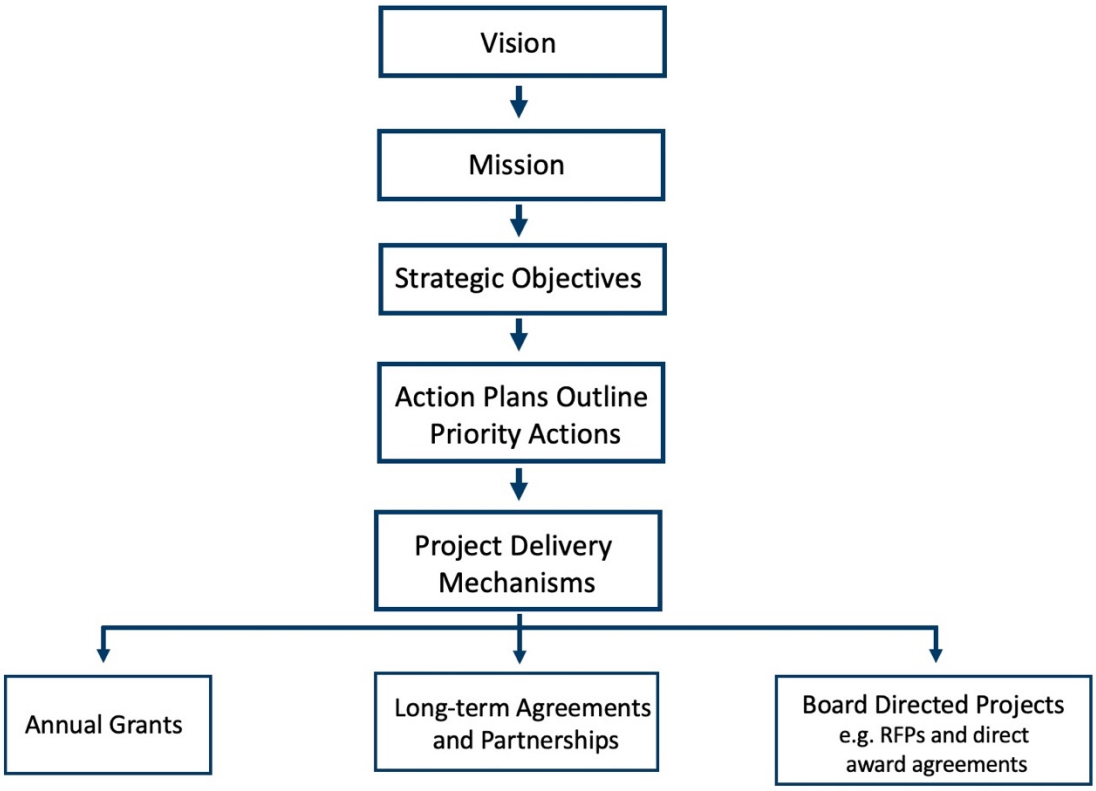

Figure 1: Flowchart of the operational structure of FWCP Columbia.

The FWCP blends its obligation to address dam impacts with a forward-looking approach that recognizes continual adaptation will be required in a dynamic natural environment in order to achieve the FWCP's vision of thriving fish and wildlife populations in watersheds that are functioning and sustainable. The FWCP also considers the objectives and priorities of its program partners. The projected local impacts of climate change, cumulative effects on the landscape, emerging ecological issues, and other factors will require the FWCP to respond in ways that will protect past conservation efforts and contribute to the resilience of our watersheds and ecosystems in the future, while remaining focused on its overall mission to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams.

How We Are Governed

Our Governance Manual defines a harmonized governance and delivery framework that is forward-looking and ecosystem-based, recognizing the unique attributes of each of the regions in which we operate: Coastal, Columbia, and Peace. The Governance Manual provides a structure for the delivery of the program and is used in combination with FWCP Action Plans to guide program implementation. Figure 2 outlines how FWCP is structured across the three regions.

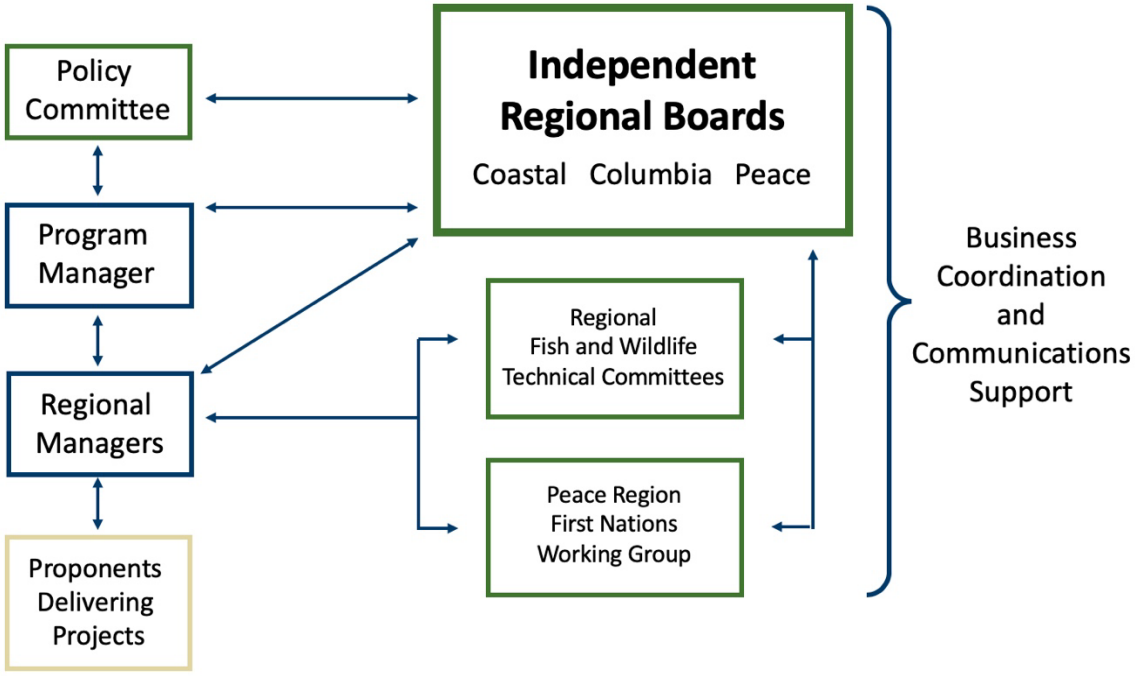

Figure 2: Flowchart of the governance structure of FWCP.

Independent Regional Boards provide oversight to the planning and implementation of the FWCP and are responsible for approving all FWCP projects and budgets. The policy committee sets the policy direction for the FWCP, including governance and the strategic framework. The Peace Region's First Nations Working Group provides advice and ensures First Nations considerations and input are included in strategic planning, annual operating plans, and projects. Fish and Wildlife Technical Committees provide technical advice to the Regional Boards and regional managers related to strategic planning and project selection. Regional managers report to their Boards and are responsible for overall program implementation, including Board and committee coordination, budget and contract development and management, proponent liaison, and strategic planning. The program manager supports operational and strategic planning and activities for each region and is responsible for communicating FWCP information to the policy committee and between Regional Boards.

Our Strategic Approach

The FWCP follows a strategic framework that guides overall planning for compensation investments (MacDonald 2009). The framework has guided the development of strategic plans (i.e. Action Plans) for each watershed within the FWCP program area, which are in turn informing action plans that focus on specific priorities within each watershed (Figure 3).

As outlined in our Governance Manual, our vision, mission, and strategic objectives provide the strategic framework and foundation for determining the priority actions recommended in each Action Plan.

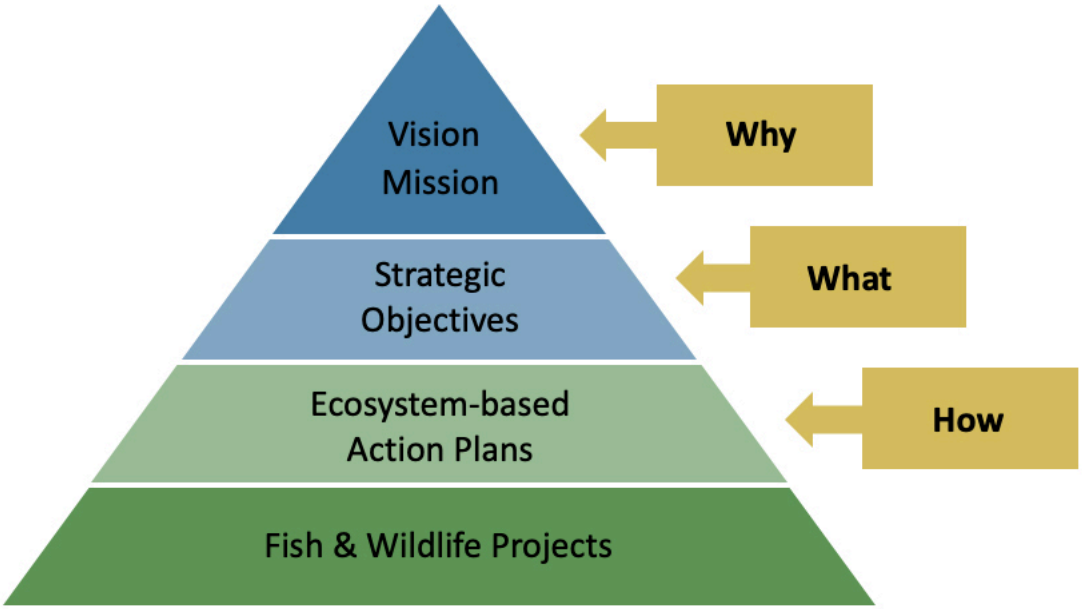

Figure 3: FWCP's strategic framework is the foundation for the Action Plans that define priorities for conserving and enhancing fish and wildlife impacted by BC Hydro dams.

FWCP Vision

Thriving fish and wildlife populations in watersheds that are functioning and sustainable.

FWCP Mission

The FWCP compensates for fish and wildlife in watersheds impacted by BC Hydro dams.

FWCP Strategic Objectives

The FWCP's three core strategic objectives arise from its strategic plans. These objectives, as set out below, also support meeting both BC Hydro's water licence conditions in the Peace and Columbia Regions, and its commitment and intent when voluntarily establishing the program in the Coastal Region in partnership with the Province and DFO.

Conservation

- **Maintain or improve the status of species or ecosystems of concern.** This focuses on the conservation goals for ecosystems, habitats, or ecological communities and specific species. Conservation priorities may also be identified at the watershed level based on local conditions.
- **Maintain or improve the integrity and productivity of ecosystems and habitats.** This addresses the concept of ecosystem integrity, resiliency, and the functional elements of ecosystems, including efforts to optimize productive capacity.

Sustainable Use

- **Maintain or improve opportunities for sustainable use, including harvesting and other uses.** This focuses on the FWCP's role in restoring or enhancing the abundance of priority species and in providing information to resource management decision-makers related to providing opportunities for harvesting and other uses. Harvesters include First Nations, recreational, sport, and commercial users. Other uses may include cultural, medicinal, or non-consumptive uses.

Community Engagement

- **Build and maintain relationships with stakeholders and Indigenous communities.** This objective comes from BC Hydro's social responsibility policy, the Province's shared stewardship goal, and the approach of Fisheries and Oceans Canada's Stewardship and Community Involvement Program. This recognizes the importance of engaging Indigenous communities, local stakeholders, and other interest groups to contribute toward making good decisions and delivering effective projects.

Project Investment Criteria

At the level of individual project investment and implementation decisions, the FWCP applies the following criteria to further define its role and actions within defined program areas (Figure 4):

FWCP Does:	FWCP Does Not:
✓ Fund actions to create, restore, or otherwise improve the function of ecosystems that have been impacted by BC Hydro activities;	✗ Fund core activities of government or non-government agencies or programs;
✓ Fund actions to create, restore, or otherwise improve the function of alternate ecosystems that provide a better opportunity for investment;	✗ Lead the development of species recovery goals;
✓ Participate as a team member in species of interest planning;	✗ Fund, co-ordinate, or lead National Recovery Teams for species at risk;
✓ Fund specific management actions for species of interest as identified by recovery teams and action/implementation groups;	✗ Develop policy related to land or wildlife management;
✓ Fund baseline inventory that contributes to the development of habitat or species based actions within Action Plans;	✗ Administer government regulations;
✓ Fund monitoring programs designed to measure the effectiveness of FWCP funded habitat and species actions; and	✗ Engage in enforcement and compliance activities, except in relation to co-operatively managed conservation lands; and
✓ Contribute to all aspects of managing co-operatively managed conservation lands.	✗ Fund programs designed exclusively to address government harvest objectives.

Figure 4: FWCP's project investment criteria.

Previously funded Fish & Wildlife Compensation Program projects can be viewed at fwcp.ca/results. The details and reports of these projects are available to grant applicants to assist in determining the scope of new projects. Current FWCP-funded projects are updated annually on the FWCP website at fwcp.ca/region/columbia-region.

INTRODUCTION TO THE FWCP'S COLUMBIA REGION

The Columbia Region is located within the Columbia River Basin in southeast British Columbia, stretching just north of Valemount to the United States border (Figure 5). The Wildlife Extension Area (north of Valemount) is included for wildlife projects only as it relates to previous dam impacts on wildlife migration routes; fish work does not occur in this area as it is part of the Fraser River drainage.

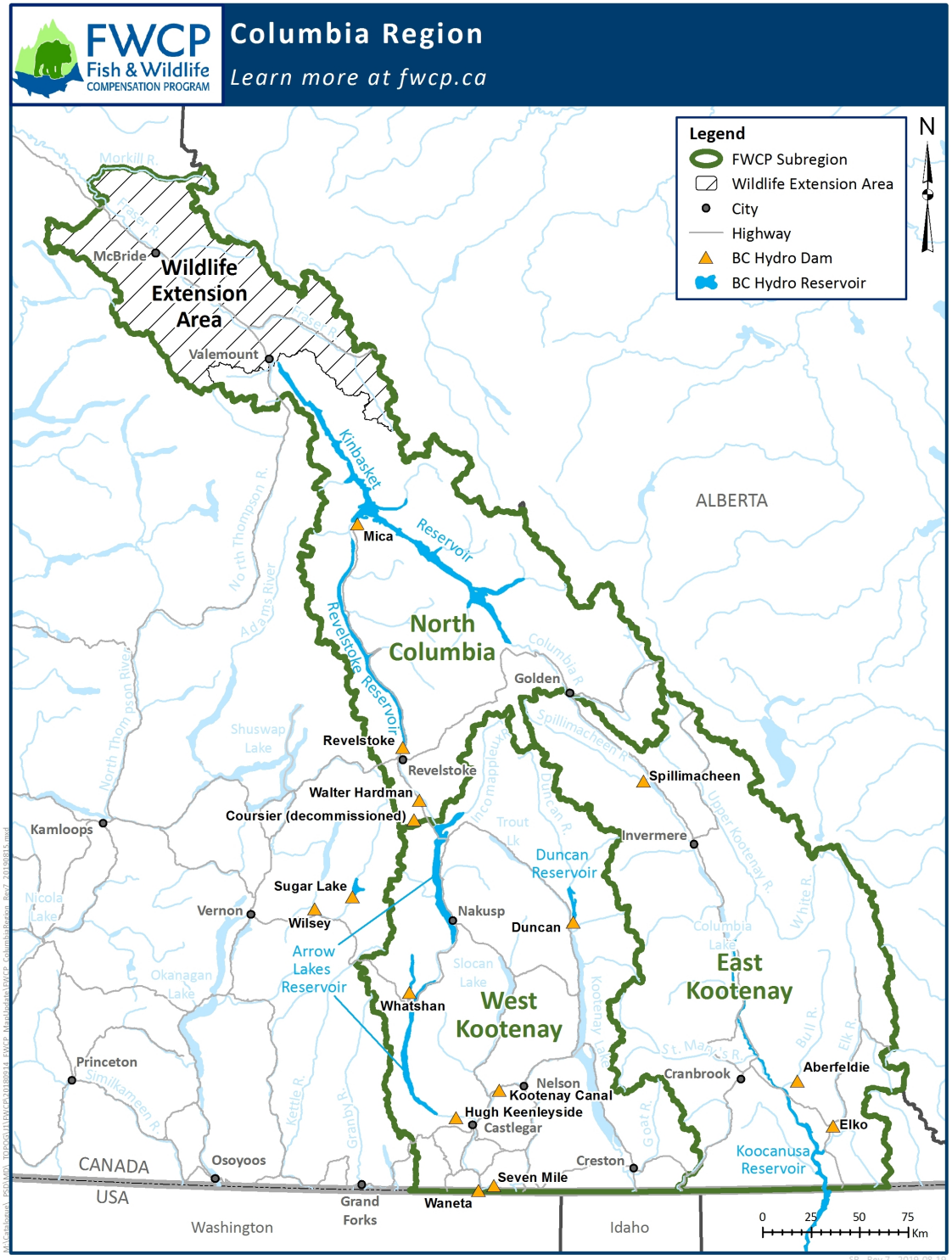

Figure 5: Map of the Columbia Region.

The Columbia Region is home to four major hydroelectric dams, all built before 1984 (Revelstoke Generating Station, Mica Generating Station, Kootenay Canal, and Seven Mile Generating Station), two water storage dams that do not generate power (Hugh L. Keenleyside Dam and Duncan Dam), and seven smaller hydroelectric dams (Aberfeldie, Spillimacheen, Elko, Waneta, Shuswap Falls, Whatshan, and Walter Hardman). Together these facilities provide about 58% (or 6,882 MW) of BC Hydro's total capacity and generate an average of about 21,900 GWh each year (48% of BC Hydro's total of 46,000 GWh).[1]

Our History

The FWCP's Columbia Region, formerly known as the Columbia Basin FWCP, was established in 1993 to compensate for fish and wildlife populations affected by the construction of BC Hydro dams in Canada's portion of the Columbia River Basin. This program merged the already existing compensation programs for Arrow, Duncan, Mica, Seven Mile, and Revelstoke facilities, which have water licence conditions related to fish and wildlife compensation.

In 2008, following a comprehensive and independent evaluation, the three FWCP regions began operating in a more harmonized manner, following a more consistent approach to delivering fish and wildlife projects.

In 2012, Basin and Action Plans were finalized for the Columbia Region and the FWCP's new delivery model was implemented across its three regions. The new model included strengthened local decision making at the Board level and shifted toward engaging more stewardship groups and others in the development of project proposals that aligned with Action Plans. As a result of the 2012 changes to the delivery model, the Columbia Region entered into a long-term agreement with the Province of B.C. to deliver annual and ongoing fish and wildlife projects (e.g. Nutrient Restoration Programs on Arrow Lakes Reservoir and Kootenay Lake) on behalf of the FWCP. Previous iterations of the Columbia Region Action Plans are available on the FWCP website.

Footprint Impacts Summary

A comprehensive study was conducted over four years to analyze, summarize, and map impacts to habitat, primary productivity, impacts to specific fish and wildlife species, and the effects on their populations (Utzig and Schmidt 2011). A summary of primary footprint impacts is presented below.

Habitat Loss

Dam construction in the Columbia Region inundated large areas of woodlands, wetlands, floodplain, riverine, and lake (littoral) habitat. The Arrow (512.7 km^2) and Whatshan (17.7 km^2) Reservoirs flooded pre-existing lakes and wetlands, whereas the Kinbasket (426.5 km^2), Revelstoke (114.5 km^2), Seven Mile (Pend d'Oreille) (4.5 km^2), and Spillimacheen (0.024 km^2) Reservoirs inundated woodlands and large river systems. The Duncan Reservoir (73 km^2) inundated a complex mix of lakes, forests, and wetlands. The construction of the Kootenay Canal (<0.5 km^2) resulted in the loss of forested areas.

Approximately 1,600 km of riverine habitat was lost, affecting a large number of fish species (e.g. Kokanee, Rainbow Trout, Bull Trout, White Sturgeon, sculpins, dace, minnows, suckers) as well as riverine birds and cavity nesters. Approximately 126.5 km^2 of wetlands were lost, affecting amphibians, birds, and fish, primarily in the Kinbasket and Duncan areas. From an overall aquatic impact perspective, the creation of reservoirs caused a significant shift from highly diverse habitats (e.g. floodplains, wetlands, and small lakes) to simpler, less diverse pelagic habitats. Those reservoirs, with large fluctuations in water level, further resulted in seasonal impacts on tributary stream habitat and littoral area productivity. From a terrestrial perspective, an estimated total of 266 km^2 of riparian areas and 240 km^2 of upland areas were lost, predominantly due to Kinbasket, Arrow, Revelstoke, and Duncan Dams, which affected a large number of wildlife species (e.g. large mammals, carnivores, bats, flycatchers, warblers, woodpeckers, raptors, owls).

[1] bchydro.com/energy-in-bc/operations/our-facilities/columbia.html.

New Habitat Created

Pelagic lake habitat increased by an estimated 693.5 km^2 with the construction of dams and reservoirs. Although this type of habitat benefits some pelagic lake species, such as Kokanee, there have been significant impacts on species that rely on littoral and riverine habitat, as noted above.

Migration Barriers

Barriers to migration and habitat fragmentation due to dams and reservoirs have affected migration and movement of both fish and wildlife species. Impacts to migration can affect access to traditional spawning and rearing areas and affect genetic diversity of fish populations. Migration barriers are not limited to the large reservoirs; for example, smaller reservoirs such as Aberfeldie and Elko have had local impacts on the migration and movement of bighorn sheep and badgers.

Productivity and Nutrient Loss

Basin-wide losses in primary productivity (i.e. the conversion of solar energy into organic carbon) are mainly related to the loss of forested ecosystems in the Kinbasket, Revelstoke, and Arrow Reservoirs. A complex system of terrestrial, wetland, and floodplain primary productivity has been lost. In addition, rivers, lakes, and tributary streams have been replaced by reservoir aquatic ecosystems that are generally less productive. In sum, it is estimated that there has been an overall reduction of over 800,000 tonnes of carbon per year in primary productivity as a result of flooding in the basin.

Dams also impact nutrient flows. This is particularly evident in Kootenay Lake and Arrow Lakes where upstream dams trap nutrients, which has resulted in notable negative impacts on Kokanee, Bull Trout, and piscivorous Rainbow Trout. In addition, the complex transfer of carbon and nutrients between floodplain and wetland ecosystems and the aquatic system have been lost or severely disrupted.

Water Quality and Turbidity

Dams often affect water quality both within and downstream of reservoirs. Large reservoirs tend to keep water temperatures warmer in the winter and cooler in the summer. In most situations, reservoirs also block sediment transfer and reduce turbidity, which can benefit some species but not others.

Entrainment

Fish entrainment can be considered both a footprint and operational issue as both the existence and design of the water control infrastructure and how it is operated over time influence the level of impact. At two of the larger facilities on the mainstem, Mica and Revelstoke Dams, the species identified as having the highest risk of entrainment include Kokanee, Bull Trout, and Rainbow Trout (Mica-Revelstoke FESTC 2009).

INTRODUCTION TO THE FWCP'S ACTION PLANS

Action Plans recommend specific fish and wildlife priorities for each of the three FWCP regions and guide Regional Board investment decisions and project funding eligibility. These plans are forward-looking and holistic (i.e. ecosystem-based) in their approach; reflect the FWCP vision, mission, and strategic objectives; define "footprint" impacts of BC Hydro dams; and recommend Priority Actions to address regional impacts and priorities.

Columbia Region Action Plans were originally developed in June 2012. The Riparian and Wetlands Action Plan was revised in September 2014 based on input received from stakeholders and replaced the earlier (June 2012) version. A minor update was made to Table 1 of the Upland/Dryland Action Plan in June 2016. Previous versions of the Action Plans are available at fwcp.ca/archived-action-plans.

A more comprehensive update to Columbia Region Action Plans was completed in 2018–2019. These updates:

- Highlight the FWCP's progressive approach, which responds to dam impacts and works toward achieving resilient and functioning watersheds;
- Take a holistic, ecosystem-based approach to conservation that considers the linkage between dam impacts and the potential impacts of climate change and current cumulative effect ecological conditions;
- Incorporate learning and experience gained since 2012, when the previous Action Plans were initially completed, including consideration of the results of the 2018 FWCP Columbia Region strategic project review;[2]
- Reflect input and ideas received during a multi-step engagement process (see Updating Our Columbia Action Plans below);
- Support the objectives and priorities of our FWCP program partners;
- Include actions to address new and emerging topics and technologies;
- Present Priority Actions for each of the five major Columbia Region ecosystems (Table 1) in a streamlined format to capture species of interest within the relevant ecosystem; and
- Improve readability, navigation, and use.

The Action Plans focus on overall ecosystem health and diversity in support of multiple fish and wildlife species. The objectives and sub-objectives within these plans reflect the overall ecosystem focus, and the plans include Priority Actions that show a progression from research and information acquisition, to habitat-based actions, to monitoring and evaluation of FWCP investments. Species of interest (including species at risk) or other regionally important species are addressed through species-based actions within each plan. Finally, contributing to the establishment of easements or covenants, or supporting the purchase of private land for conservation purposes are addressed by land securement actions.

Columbia Region Action Plans

There are currently five Action Plans for the Columbia Region representing the main ecosystems in the Columbia Basin (see Table 1 for descriptions and priority areas):

- Reservoirs & Large Lakes
- Small Lakes
- Rivers & Riparian Areas
- Wetlands & Riparian Areas
- Upland & Dryland

[2] This report (Tuttle et al. 2018) compiled and reviewed FWCP funded projects, regardless of delivery method, from 2013–2014 (F14) to 2016–2017 (F17) based on initial (2012) Columbia Region Action Plan priorities.

Table 1: Action Plans and their respective Priority Areas selected for the Columbia Region.

Action Plan	Description	Priority Areas
Reservoirs & Large Lakes	Reservoirs and large lakes are ecosystems that are greater than 1,000 hectares in size. Many have hydrologic regimes that are dominated by hydropower developments. Tributaries of these waterbodies are also included in the Action Plan.	• Kootenay Lake • Duncan Reservoir • Arrow Lakes Reservoir • Revelstoke Reservoir • Kinbasket Reservoir • Other reservoirs and lakes >1,000 hectares in the FWCP Columbia Region (including but not limited to Pend d'Oreille and Koocanusa Reservoirs, Moose, Slocan, Columbia, and Windermere Lakes)
Small Lakes	Small lakes are naturally occurring waterbodies that are less than 1,000 hectares in size and are generally unaffected by hydropower developments. Most are low productivity (oligotrophic) ecosystems.	• All lakes <1,000 hectares in the FWCP Columbia Region (including but not limited to Yellowhead, Summit, Moyie, and Whiteswan Lakes)
Rivers & Riparian Areas	Rivers include all natural watercourses with flowing water. Riparian habitat is the area adjacent to a river or stream that differs from surrounding uplands in the diversity and productivity of its plant and animal species.	• All rivers and streams in the FWCP Columbia Region (including but not limited to remaining river fragments along the Columbia and Kootenay Rivers mainstem up to the upper basin headwater tributaries) • Tributaries of reservoirs and large lakes are also eligible for actions in this ecosystem plan (including but not limited to Upper Columbia River, Drimmie Creek, and Kaslo River)
Wetlands & Riparian Areas	A wetland is an area of land with soil that is saturated with moisture either permanently or seasonally. Riparian habitat is the area adjacent to a wetland that differs from surrounding uplands in the diversity and productivity of its plant and animal species.	• Upper Columbia Valley • Elk Valley • Creston Valley • Duncan/Lardeau Valley and Revelstoke Reach • Slocan Valley • Canoe Reach and Robson Valley • Other valleys within FWCP's Columbia Region
Upland & Dryland	Uplands are ecosystems that are found above the influence of periodic or permanent flooding. Drylands are a subset of these habitats characterized by relatively low rainfall and rapid drainage, which results in vegetation communities dominated by grasses and drought-tolerant shrubs and trees.	• Fire-maintained ecosystems • Exceptional old-growth forests • Deciduous forests • Ungulate winter range • Grasslands • Montane ecosystems

FWCP partners and interested parties may examine the Action Plans with a primary viewpoint stemming from an interest in either individual species or ecosystems and habitats. The Action Plans contain cross-references, such as species-habitat association lists, that help to guide the interactions across Action Plans. Proponents are encouraged to check for potential interactions and compatibility of actions across plans as their projects enter the detailed development (i.e. proposal) stage. This is important for two reasons:

1. *To Achieve Synergy* – For example, actions to protect shoreline and shallow water habitats are noted within the Small Lakes Action Plan. When developing project proposals to address actions for any specific small lake, proponents should refer to the Wetlands & Riparian Areas Action Plan to check for compatible actions such as land securement opportunities or plans to control invasive species.
2. *To Test Compatibility* – For example, broad-based habitat restoration actions, such as prescribed burning, are identified in the Upland & Dryland Action Plan. Specific project proposals for an area should test for compatibility with potential species-based actions, where protection of important habitat features or other critical life history requirements of species of interest are noted.

Action Plan Content

The Action Plans describe the strategies and Priority Actions needed to accomplish FWCP objectives at the basin- or watershed-level. The Action Plans guide FWCP investments (see FWCP Investment Criteria) and are referenced annually by the Regional Boards to track progress toward implementation, set annual priorities, and guide decision-making in setting out and approving the Annual Operating Plan for each region. Our Action Plans:

- define "footprint" impacts of BC Hydro dams;
- identify fish and wildlife priorities (i.e. Priority Actions); and
- provide direction for projects to address priorities and determine which projects are eligible for funding.

Each Action Plan includes Action Tables that outline the Priority Actions for ecosystems and species of interest. The Priority Actions were developed with input from First Nations, partners, stakeholders, subject matter experts, and the public and have been assigned a priority from level 1 to 3 (see definition of FWCP priority levels below).

Cross Plan Actions

Some emerging issues and ecological priorities are broader than any one Action Plan and, in these instances, cross plan actions are identified. These actions are relevant to all terrestrial and aquatic Action Plans but are not readily nested under any particular sub-objective.

Action Table Content

Action Tables reflect the unique conservation and enhancement opportunities in the Columbia Region. The Action Tables are essential reading prior to starting an FWCP grant application. A high-quality grant application will clearly demonstrate alignment with one or more Priority Action(s) in an Action Table identified as "Open." An example of an Action Table is explained below in Figure 6. Contact us if you have any questions about how to interpret an Action Table.

UPLAND AND DRYLAND ACTION TABLE - ECOSYSTEMS							Version:AUG2019	
Action #	**Action Type**	**Priority Action Short Description**	**Priority**	**Priority Area**	**Target Species**	**Priority Action**	**Intended Outcome**	**Delivery Approach**
7	Research and Information Acquisition	**COLUPD.ECO.RI.07.01 Identify candidate upland areas for ecosystem restoration-P1**	**1**	Fire-maintained Ecosystems Old Growth Forests Deciduous Forests Grasslands	Fish and Wildlife	Identify candidate upland and dryland areas for the development of ecosystem restoration (ER) plans and/or restoration activities in the Columbia Region and develop strategies for future work as required. This work could include re-evaluating and refining the criteria developed to prioritize suitable ecosystem restoration areas. Collaboration with regional committees, First Nations and/or the Province of B.C. should occur.	Development of ecosystem restoration plans for important upland and dryland areas/habitats that identify FWCP compensation objectives and strengthens conservation planning and actions.	Directed / Open
8	Research and Information Acquisition	**COLUPD.ECO.RI.08.01 Assess connectivity and function of upland habitats-P1**	**1**	All Priority Habitats	Fish and Wildlife	Inventory the distribution, abundance, current function and connectivity of ecologically important habitats for wide-ranging species (e.g. carnivores, ungulates, bats).	Acqusition of information to inform conservation actions that protect unique and high value habitats.	Directed / Open

Figure 6: Each Action Table has the same format, but the Priority Actions reflect the needs and opportunities in each Action Plan.

Action # – A reference number for referring to the Action Table. These numbers may help the reader cross-reference actions within the table. This action # is not required when completing an online grant application.

Action Type – Priority Actions are grouped into five broad action types. When completing an online grant application, proponents will be asked to select the Action Type from a drop-down menu.

- *Research & Information Acquisition Actions* – These actions will collect information necessary to evaluate, review, and implement subsequent conservation, restoration, and enhancement actions. Examples include inventory, a limiting factor assessment and other activities to address data gaps and information needs to complete other actions.
- *Habitat-based Actions* – These actions will conserve, restore, and enhance habitats. Examples include habitat creation, restoration, and enhancement; enhancing habitat connectivity; and invasive species prevention.
- *Monitoring and Evaluation Actions* – These actions will monitor and evaluate projects supported by the FWCP to understand the effectiveness of habitat- or species-based actions.
- *Land Securement Actions* – These actions will contribute to the establishment of easements or covenants, or the purchase of private land for conservation purposes.
- *Species-based Actions* – These actions will alleviate limiting factors for a species. Examples include inventory, restoration planning, captive breeding/rearing, and reintroductions.

Priority Action Short Description – This is a concise description of the action and the FWCP-assigned alpha-numeric ID tag. When completing an online grant application, you will be asked to select the action description and the ID tag from a drop-down menu. This ID tag enables the FWCP to track the projects and outcomes associated with an action.

Priority – The Action Plans identify the importance and urgency of each Priority Action (i.e. priority 1, 2, or 3). When grant applications are evaluated, a priority 1 action will score higher than a priority 2 or 3 action. See below for additional information on priority-setting.

Table 2: Priority rating definitions for FWCP Columbia Region Actions.

Priority	Definition of FWCP Priorities
1	Required urgently due to current/imminent threats, provide a significant benefit relative to cost, and/or are required before subsequent actions can be completed.
2	Required due to current/imminent threats but may require more research/information acquisition to determine cost-benefit, and/or should be completed after the priority 1 actions.
3	Identified due to possible threats but requires more research/information acquisition to determine cost-benefit, and/or should be completed after the priority 1 and 2 actions.

Priority Area – This refers to the relevant priority habitat or area (i.e. reservoir, valley, ecosystem). When completing an online grant application, you will be asked to select the priority area from the Ecosystem Chapter from a drop-down menu.

Target Species – This identifies the primary species of interest that will benefit from the Priority Action, or simply whether the action is focused on fish or wildlife, or both. Species of interest are categorized by FWCP as recovery, focal, or inventory (Table 3; Fish & Wildlife Compensation Program 2011).

Table 3: Category definitions for FWCP Columbia Region species of interest.

Category	Definition of FWCP species of interest
Recovery	Recovery species are those of highest priority and conservation concern that have been adversely impacted by dam construction and/or operation. These species have formally been classified as either threatened or endangered by Canada or B.C., and SARA recovery and/or management plans are either in place or under development by Federal or Provincial management agencies. Actions for recovery species are directly coordinated with recovery strategies and plans.
Focal	Focal species have a strong linkage to dam footprint impacts and are of regional interest. Actions proposed for species in this category should be developed in the context of restoring/improving/enhancing suitable habitats in the relevant ecosystems. Focal species with a high conservation concern (i.e. species at risk) are considered a higher priority for actions.
Inventory	Inventory species have also been affected by dams, but detailed inventory and/or trend monitoring is required to support the development of more detailed actions. Actions proposed for species in this category should aim to provide the basis for future compensation actions. Inventory species with a high conservation concern (i.e. species at risk) are considered a higher priority for actions.

Priority Action – Priority Actions build on our strategic framework (i.e. vision, mission, and strategic objectives) and reflect First Nation, technical, and public input. Anyone interested in applying for an FWCP grant should develop a grant application that aligns with one or more "Open" or "Directed / Open" Priority Action(s).

Intended Outcome – This reflects the intention behind the action and how the Priority Action will help realize FWCP objectives and desired future conditions. Defining the outcome helps us monitor progress toward our objectives and vision.

Delivery Approach – We deliver funding and projects through our annual grants, long-term agreements, and partnerships. Our Board may also choose to direct projects and approve funding to address regional priorities. Priority Actions identified as "Open" and "Directed / Open" are eligible for a grant and these are the Priority Actions you should review if you want to apply for an FWCP grant. Actions identified as "Directed" are not eligible for a grant. These are projects that our Regional Boards will direct through the appropriate procurement process (e.g. a request for proposal). Please do not submit a grant application for a "Directed" project. Contact us if you are unsure.

UPDATING OUR COLUMBIA ACTION PLANS

In 2018, the FWCP's Columbia Region initiated a process to update its ecosystem-based Action Plans and Species of Interest Action Plan. LGL Limited environmental research associates (LGL Limited) was contracted in 2018 to complete a desktop strategic project review of all FWCP-funded projects, regardless of delivery method, from 2013–2014 to 2016–2017 and lead all technical aspects of the Action Plan update process. The FWCP's Communications Coordinator, Lynne Betts, supported LGL Limited with Action Plan update engagement activities and worked with the Columbia Region Manager, Crystal Klym, to coordinate First Nations engagement in this process. The Columbia Region Board was responsible for the final endorsement of the updated Action Plans.

A multi-step process was followed to update the Action Plans based on a Board-approved engagement strategy (Figure 7) that included early engagement with First Nations (Ktunaxa Nation Council, Secwepemc Nation, and Okanagan Nation Alliance), Kootenai Tribe of Idaho, fish and wildlife technical committees, partner agencies, and regional and Provincial organizations.

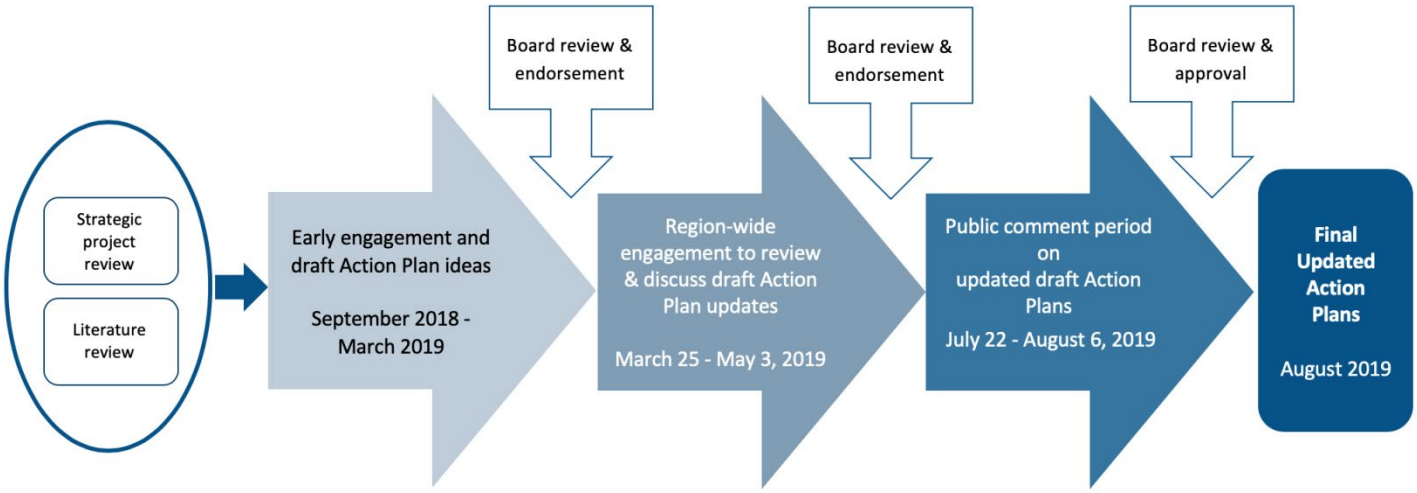

Figure 7: A multi-step process to update Action Plans for the FWCP's Columbia Region started in fall 2018 and focused on early engagement with First Nations, agencies, and stakeholders before a broader engagement that occurred spring 2019.

A detailed literature review and the strategic project review were critical first steps toward updating the region's Action Plans as they assisted in gauging progress toward achieving Action Plan priorities; identifying knowledge gaps within the review period; and identifying priorities and recommendations for consideration in Action Plan updates.

Results from the above reviews, along with early engagement discussions, provided important insights about ecological priorities and emerging issues and helped form initial Action Plan ideas and draft Action Tables, which were reviewed and endorsed by the Board and posted to fwcp.ca in March 2019. The draft Action Tables were the basis of a broad community engagement from March 25 to May 3, 2019.

The broad engagement included eight technical workshops, eight evening information sessions, and two online information sessions in April 2019. An online feedback form was available at fwcp.ca until May 3, 2019, when public and stakeholder input closed.

Table 4: FWCP's Columbia Region Action Plan update community engagement locations and dates conducted in April 2019.

Date	Community	Venue
Thursday, April 4	-	Online info session #1
Monday, April 8	Valemount	Community Hall
Wednesday, April 10	Golden	Prestige Hotel
Thursday, April 11	Revelstoke	Regent Hotel
Tuesday, April 16	Nakusp	Sports Centre, Auditorium
Wednesday, April 17	Castlegar	Castlegar Forum
Thursday, April 18	Kaslo	St. Andrews Church Heritage Hall
Wednesday, April 24	Fernie	Best Western
Thursday, April 25	Cranbrook	Prestige Hotel
Tuesday, April 30	-	Online info session #2

Engagement sessions included an overview of the FWCP's vision, mission, and geographic scope, along with a review of emerging issues and ecological priorities. Discussion included an introduction to the proposed updates to each ecosystem-based Action Plan (e.g. draft changes or amendments proposed). Participants received a copy of the 51-page draft Action Tables for review and received guidance on how and when to provide feedback on the proposed draft actions.

The engagement sessions were advertised in community-level paid ads in print media; online google ads were geo-targeted to the host community and surrounding areas; news release was sent to community print media; FWCP promoted the engagement on LinkedIn via FWCP-generated and sponsored posts; two editions of WildBytes, the FWCP's e-letter, promoted the sessions (February and March 2019); the govTogetherBC team shared information with all residents about the engagement through its public website and social media channels; public information about the engagement, including background documents, was posted on fwcp.ca as of November 2019; and the engagement process was publicized to the Columbia River Treaty local government's committee in March 2019 and at a local government forum hosted by Kootenay Conservation Program in April 2019.

In addition to the broader engagement processes, the FWCP implemented a targeted First Nations engagement strategy based on the preferences and guidance of participating Nations, Bands, and Tribes. Participating Nations, Bands, and Tribes received draft Action Tables for review and the deadline for First Nations' input was extended to June 2019 to provide additional opportunities for input.

All input was reviewed and considered, as appropriate, in draft updated Action Plans, which were available for public review and comment from July 22 to August 6, 2019. Following Board review and approval, final updated 2019 Columbia Region Action Plans were finalized and posted on August 21, 2019.

The updated 2019 Columbia Region Action Plans will provide guidance for approximately five years. The next Action Plan update is tentatively scheduled for 2025, subject to the Columbia Board's discretion.

Finalizing Updated Columbia Region Action Plans

The Board reviewed input received by August 6, 2019, and finalized the updated Action Plans, which were posted on fwcp.ca on August 21, 2019.

Our updated 2019 Columbia Region Action Plans:

- are based on the best available science and information;
- reflect the objectives and priorities of our program partners;
- considered input received during all phases of the engagement strategy;
- include actions to address emerging issues (climate change) and ecological priorities (connectivity); and
- support and reflect the FWCP's mission and its forward-looking approach to fulfilling its mission and working toward its vision.

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Mica-Revelstoke FESTC. 2009. Mica-Revelstoke fish entrainment strategy Action Plan. Prepared by the Fish Entrainment Strategy Technical Committee for the Revelstoke Unit 5 Project, Revelstoke BC.

Tuttle, K., M. Mathews, and M.V. d'Entremont. 2018. Fish and Wildlife Compensation Program: Columbia strategic project review. Unpublished report by LGL Limited environmental research associates, Sidney, BC, for Fish and Wildlife Compensation Program – Columbia, BC Hydro Power and Authority, Castlegar, BC. 200 pp + Apps.

Utzig, G., and D. Schmidt. 2011. BC Hydro Dam footprint impact summary. Prepared for the Fish & Wildlife Compensation Program: Columbia Basin.

Previous Columbia Region Action Plans

Fish & Wildlife Compensation Program. 2012. Large Lakes Action Plan.

Fish & Wildlife Compensation Program. 2012. Small Lakes Action Plan.

Fish & Wildlife Compensation Program. 2012. Species of Interest Action Plan.

Fish & Wildlife Compensation Program. 2012. Streams Action Plan.

Fish & Wildlife Compensation Program. 2014. Riparian and Wetlands Action Plan.

Fish & Wildlife Compensation Program. 2016. Upland/Dryland Action Plan.

GLOSSARY

Action Plan: The Fish & Wildlife Compensation Program has identified conservation priorities for fish and wildlife in each of its three regions and these are reflected in a series of Action Plans. The priorities and plans vary by region.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC): An independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to identify and assess the status of wildlife species at risk of extinction. Members are wildlife biology experts from academia, government, non-governmental organizations, and the private sector responsible for designating wildlife species in danger of disappearing from Canada.

Cross Plan Action: An action that is relevant to two or more Action Plans and requires the consideration of multiple ecosystems.

Delivery Approach: Priority Actions identified as "Open" are eligible for a grant. Actions identified as "Directed" are not eligible for a grant. These are projects that the FWCP Regional Boards will direct through the appropriate procurement process (e.g. a request for proposal). Actions identified as "Directed / Open" are eligible for a grant or may be projects directed by the FWCP Regional Boards through the appropriate procurement process.

Dryland Habitat: A subset of upland habitats characterized by relatively low rainfall and rapid drainage, which results in vegetation communities dominated by grasses and drought-tolerant shrubs and trees.

Endangered Species: A fish or wildlife species that is facing imminent extirpation or extinction.

Entrainment: Fish entrainment can be defined as fish being transported along with the flow of water and out of their normal river, lake, or reservoir habitat into unnatural or potentially harmful environments.

Fire-maintained Ecosystem: A grassland or forest ecosystem whereby fire is an important natural disturbance event and component to maintaining its ecological health and productivity.

Fish & Wildlife Compensation Program (FWCP): The FWCP is a partnership between BC Hydro, Fisheries and Oceans Canada, the Province of B.C., First Nations, and Public Stakeholders to conserve and enhance fish and wildlife impacted by the construction of BC Hydro dams.

Floodplain: An area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.

Focal Species: Defined by the FWCP Columbia Region as species that have strong linkages to dam footprint impacts and are of regional interest.

Footprint Impacts: The permanent loss of habitat associated with the dam and related infrastructure, including the permanently flooded habitat (below the drawdown zone) resulting from reservoir creation.

Grassland: An ecological community in which natural vegetation consist largely of perennial grasses.

Inventory Species: Defined by the FWCP Columbia Region as species that have been affected by dams, but detailed inventory and/or trend monitoring is still required.

Lake: A naturally occurring body of water deeper than 2 m, classified by FWCP Columbia as small (less than 1,000 hectares) or large (greater than 1,000 hectares).

Littoral: Part of a lake or river that is close to the shore. The littoral zone typically extends from the high water mark, which is rarely inundated, to shoreline areas that are permanently submerged.

Montane: Ecosystems that occupy the zone between lowland and subalpine ecosystems.

Oligotrophic: Having a deficiency of plant nutrients that is usually accompanied by an abundance of dissolved oxygen.

Pelagic: The open water area of lakes, neither close to the bottom nor the shore.

Priority Areas: Habitats, areas, or ecosystems that have been outlined for each Action Plan and include areas that are deemed a priority for FWCP-funded Open or Directed work.

Recovery Species: Defined by the FWCP Columbia Region as species of highest priority and conservation concern that have been adversely impacted by dam construction and/or operation. These species have formally been classified as either threatened or endangered by Canada or B.C., and recovery and/or management plans are either in place or under development by Federal or Provincial management agencies.

Reservoir: A body of water formed by damming a river or stream. Water is held back by the dam and is allowed to fall to generate electricity when it is needed.

Riparian Habitat: Defined as an area adjacent to a river, stream, wetland, or lake that differs from the surrounding uplands in the diversity of plant and animals found and in the overall productivity of the site.

Riverine: Relating to or situated on a river or riverbank.

Species of Interest: Defined by the FWCP as a specific fish and wildlife species of conservation concern (including species at risk) or other regionally important species for compensation or conservation planning process that have been affected by hydro-power development footprint impacts.

Species at Risk (SAR): Specific fish and wildlife species that have been listed by the Provincial (B.C. Conservation Data Centre) or Federal authorities (COSEWIC, SARA) to be of conservation concern for the Columbia Region.

Species at Risk Act (SARA): Proclaimed in 2003, SARA is Government of Canada legislation designed to prevent wildlife species in Canada from disappearing; to provide for the recovery of wildlife species that are extirpated (no longer exist in the wild in Canada), endangered, or threatened as a result of human activity; and to manage species of special concern to prevent them from becoming endangered or threatened.

Species of Special Concern: A fish or wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Strategic Objectives: These objectives support meeting both BC Hydro's water licence conditions in the Peace and Columbia Regions, and its commitment and intent when voluntarily establishing the program in the Coastal Region in partnership with the Province of B.C. and DFO. The strategic objectives address conservation, sustainable use, and community engagement goals.

Tributary: A stream or river that flows into a larger stream or mainstem of a river or a lake. Tributaries and the mainstem river drain the surrounding drainage basin of its surface water and groundwater.

Ungulate Winter Range (UWR): An area that contains habitat necessary to meet the winter habitat requirements of an ungulate species.

Upland Habitat: An ecosystem that is found above the habitat influenced by periodic or permanent flooding and has a distinctive vegetation community.

Wetland: An area of land where the soil is saturated with moisture either permanently or seasonally and where water occurs on the surface (e.g. in marshes, bogs, and swamps).

Wildlife Extension Area (WEA): The FWCP recognizes that opportunities for fish and wildlife habitat enhancement within the Canoe Arm drainage of the Kinbasket Reservoir are extremely limited and better opportunities may exist in the upper drainage of the Fraser River near Valemount. The Columbia Region boundary includes a portion of the Fraser River drainage (i.e. the wildlife extension area) for wildlife projects only. The Policy Committee approved the WEA in 1996. The Wildlife Extension Area includes the area north of Valemount, extending east to the Alberta border, including Mount Robson Provincial Park, and west to north of McBride.

APPENDICES

Appendix 1: Alignment with other provincial and regional processes.

The FWCP Columbia Region does not act in isolation. Priority-setting takes into consideration, and aligns with as much as possible, other projects and initiatives that are occurring in the region. Some examples of these are below.

BC Hydro's Water Use Plans

- Water use plans (WUP) were developed for most of BC Hydro's hydroelectric facilities through a consultative planning process involving participants, such as government agencies, First Nations, local citizens, and other interest groups. Several WUP fish and wildlife projects have been completed or are ongoing throughout the Columbia Region. bchydro.com/about/sustainability/conservation/water_use_planning.html.

BC Hydro Fish Passage Decision Framework

- Proponents applying for an FWCP grant to evaluate opportunities to restore fish production above BC Hydro facilities that previously blocked fish passage, are required to work through the Fish Passage Decision Framework, approved by the Fish, Wildlife & Hydro Policy Committee in 2008 and revised in 2017. The framework establishes a process which will determine how BC Hydro will address fish passage issues at BC Hydro facilities and clarifies the role of the FWCP in supporting the development of fish passage proposals for BC Hydro consideration.

Columbia Basin Trust

- Columbia Basin Trust supports the ideas and efforts of the people in the Columbia Basin. Whatever the situation calls for, it can adapt its role: from providing resources, to bringing people together, to leading an entire initiative. The Trust offers experience and support to all Basin residents. While its range of services, programs, initiatives, and financial investments is extensive, its purpose is straightforward: the Columbia Basin Trust exists and acts for the social, economic, and environmental well-being of the Basin, now and for generations to come. ourtrust.org.

Columbia River Treaty

- The Columbia River Treaty (CRT) is an international agreement between Canada and the United States for the joint development, regulation and management of the Columbia River in order to coordinate flood control and optimize hydroelectric energy production on both sides of the border. After extensive engagement with Columbia Basin Residents, government-to-government consultation with Indigenous Nations, and a thorough technical analysis, the Province decided in March 2014 to continue the Columbia River Treaty and seek improvements within the existing Treaty framework. Canada (including B.C.) and the U.S. started negotiations on modernizing the Columbia River Treaty in the spring of 2018. The negotiating sessions have been occurring approximately every two months, alternating locations between the U.S. and Canada. Canada, B.C., and Canadian Indigenous Nations have been working closely together throughout the negotiation process. The Province continues to engage with the Basin residents to ensure their interests are represented in Treaty negotiations. More information on the Treaty and its modernization process can be found at: engage.gov.bc.ca/columbiarivertreaty.

Cumulative Effects Framework

- Cumulative effects are changes to environmental, social, and economic values caused by the combined effect of past, present, and potential future human activities and natural processes. British Columbia's answer to this potential problem is the cumulative effects framework. The cumulative effects framework is a set of policies, procedures, and decision-support tools that helps identify and manage cumulative effects consistently and transparently across British Columbia's natural resource sector. www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/cumulative-effects-framework.

Federal and Provincial Species Recovery Planning

- Federal and Provincial governments collaborate on recovery planning through a bilateral agreement to establish a framework within which Canada and B.C. can exercise their respective powers and duties to ensure a co-ordinated and focused approach to the delivery of species at risk legislation, policies, and operational procedures. The recovery planning process creates a plan of action for species and ecosystems at risk that will help stop/reverse decline and remove any threats to long-term survival. www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/species-ecosystems-at-risk/recovery-planning.

Invasive Species

- Columbia Shuswap Invasive Species Society (CSISS) is a non-profit organization dedicated to preventing and managing the spread of invasive species within the Columbia-Shuswap Region. columbiashuswapinvasives.org.
- Central Kootenay Invasive Species Society (CKISS) is a network of partners collaborating to minimize the impacts of invasive species on the ecosystems, communities, and economy of the Regional District of Central Kootenay and the Regional District of Kootenay Boundary Area A and B. ckiss.ca/about/purpose.
- East Kootenay Invasive Species Council (EKISC) is a non-profit organization that builds partnerships and supports collaborative projects in natural and applied science, policy research, outreach, and education to protect our forests, fields, gardens, waterways, and cities from the damaging effects of invasive species. ekisc.com.
- Inter-Ministry Invasive Species Working Group (IMISWG) provides policy direction, coordination, and collaborative delivery of provincial invasive species programs for the Province of B.C. The IMISWG brings together provincial ministries and agencies with invasive species management responsibilities to manage invasive species together through a cross-government approach. www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/imiswg.
- Invasive Species Council of British Columbia (ISCBC) is a collaborative-based organization committed to reducing the spread and impacts of non-native species within BC. bcinvasives.ca.
- Northwest Invasive Plant Council (NWIPC) formed as a committee in 1992, later becoming a not-for-profit organization in 2004. The NWIPC's goal is to prevent further damage to the ecosystems of the northwest and central BC from invasive alien plants. nwipc.org.

Kootenay Conservation Program

- The Kootenay Conservation Program (KCP) is helping its partners to protect clean water, preserve important wildlife habitat, and steward the land to allow for healthy, functioning ecosystems. KCP's collaborative approach builds the capacity of its partners and can find win-win solutions to ecosystem conservation on private lands. In this way it can maintain and, in some cases, restore the rich biological and social heritage of the Kootenays. Since 2002, the KCP has helped to support partners in conserving over 250,000 hectares of land and have invested over $150 million into conservation projects across the Kootenays. kootenayconservation.ca.

Salmon Restoration and Fish Passage – Columbia River

- Upstream fish passage in the Columbia River was blocked by construction of dams in the United States in the late 1930s and early 1940s. In July 2019, a landmark agreement between the Ktunaxa, Secwepemc, and Syilx Okanagan Indigenous Nations, Canada, and British Columbia committed the five governments to collaborate on exploring the reintroduction of Pacific anadromous salmon into the Canadian portion of the Upper Columbia River Basin. Action Plans will be updated as required pending the outcome of these discussions.