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FISH AND WILDLIFE
COMPENSATION PROGRAM

ASH RIVER WATERSHED *SALMONID ACTION PLAN*

FINAL DRAFT

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Ash River Salmonid Action Plan

1 INTRODUCTION

The Fish and Wildlife Compensation Program (FWCP): Coastal Region evolved from its origin as the Bridge-Coastal Restoration Program (BCRP), a program initiated voluntarily by BC Hydro in 1999 to restore fish and wildlife resources that were adversely affected by the footprint of the development of hydroelectric facilities in the Bridge-Coastal generation area. Footprint impacts include historical effects on fish and wildlife that have occurred as a result of reservoir creation, watercourse diversions and construction of dam structures.

In 2009, the program developed a strategic framework that guides overall planning for compensation investments (MacDonald 2009). The framework has guided the development of strategic 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 1).

This Salmonid Action Plan sets out priorities for the Fish and Wildlife Compensation Program to guide projects in the Ash River project area. It identifies actions to be undertaken throughout the Ash River in support of salmonid fish species. The plan builds on the FWCP's strategic objectives and the Ash River Watershed Plan (FWCP 2011). Action plans have also been developed for riparian and wetland areas and species of interest; and some actions may be complementary across the different plans.

The actions and priorities outlined in this plan have been identified through a multi-stage process involving BC Hydro, Fisheries and Oceans Canada (DFO), Canadian Wildlife Service (CWS), Ministry of Environment (MOE), local First Nations, and local communities. Initial priorities were developed through consultation with agency staff. These priorities were then reviewed and discussed at a workshop¹ to allow First Nations, public stakeholders, and interested parties to comment and elaborate on the priorities.

It is important to understand, however, that planning priorities within action plans may not translate immediately into funded projects. Limited program funding requires that priority-setting has to also be developed across the program as a whole, not just within action plans. The process of selecting which actions will be implemented in any given year will occur during the annual implementation planning cycle.

¹ Port Alberni (18 June, 2010)

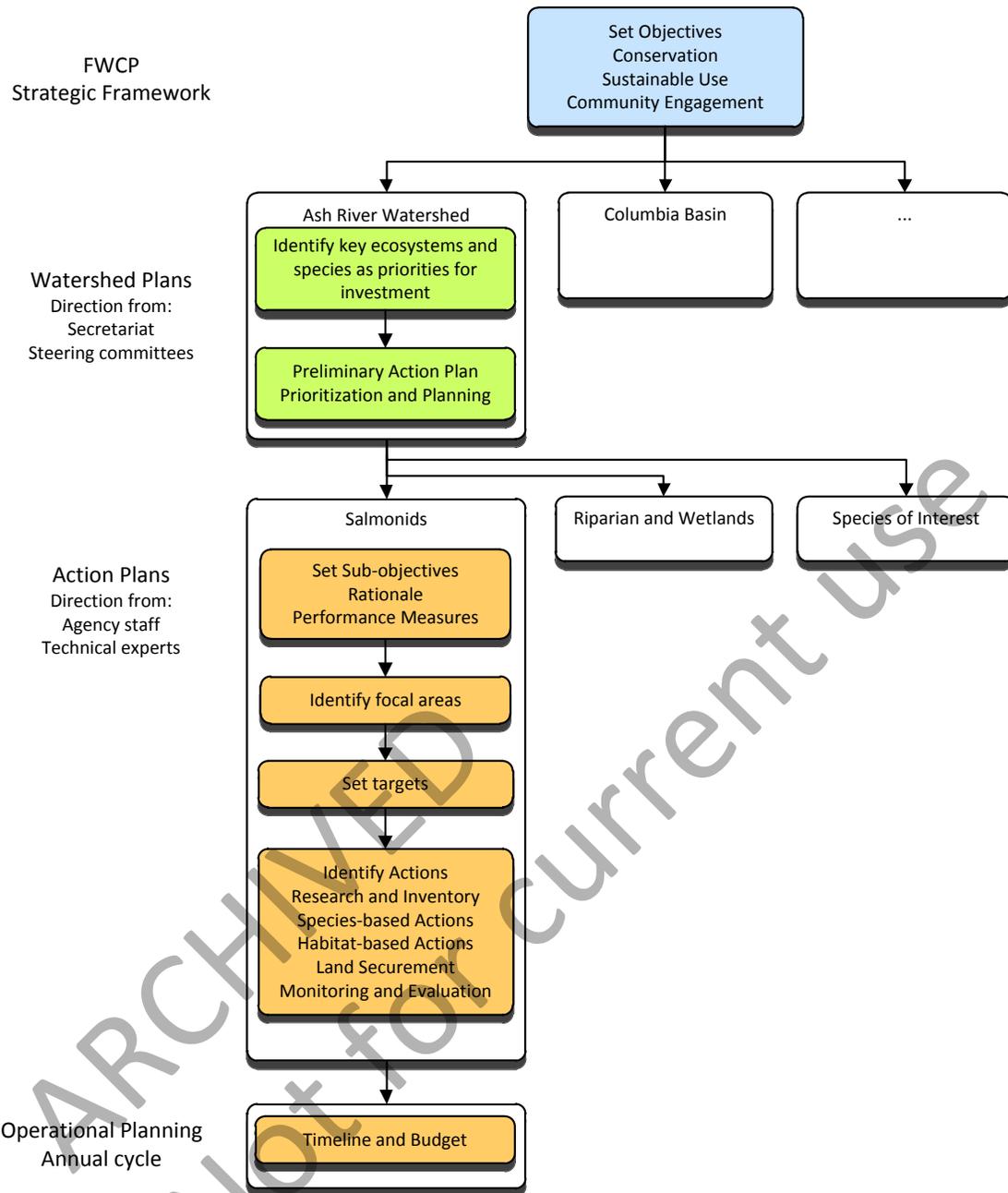


Figure 1. Relationship between the Salmonid Action Plan and higher level planning and objectives.

2 OVERVIEW CONTEXT

The Ash River watershed is situated about 40 km northwest of Port Alberni in central Vancouver Island, between the Beaufort Range and Strathcona Provincial Park. The upper Ash watershed is dominated by mountains up to 2,000 m, which form the boundary between the Ash, Campbell and Puntledge watersheds, and small areas of permanent snowpack exist there. From Oshinow Lake at elevation 410 m, the Ash River drops a further 80 m in 13 km to Elsie Lake Reservoir. The lower parts of the watershed have lower relief than the upper basin. Below Elsie Lake Reservoir the Ash River flows into the Stamp River and from there into the Somass River before meeting the ocean at Port Alberni. There are three lakes on the Ash River mainstem, Oshinow, Elsie and Dickson Lakes, and several smaller lakes on tributaries.

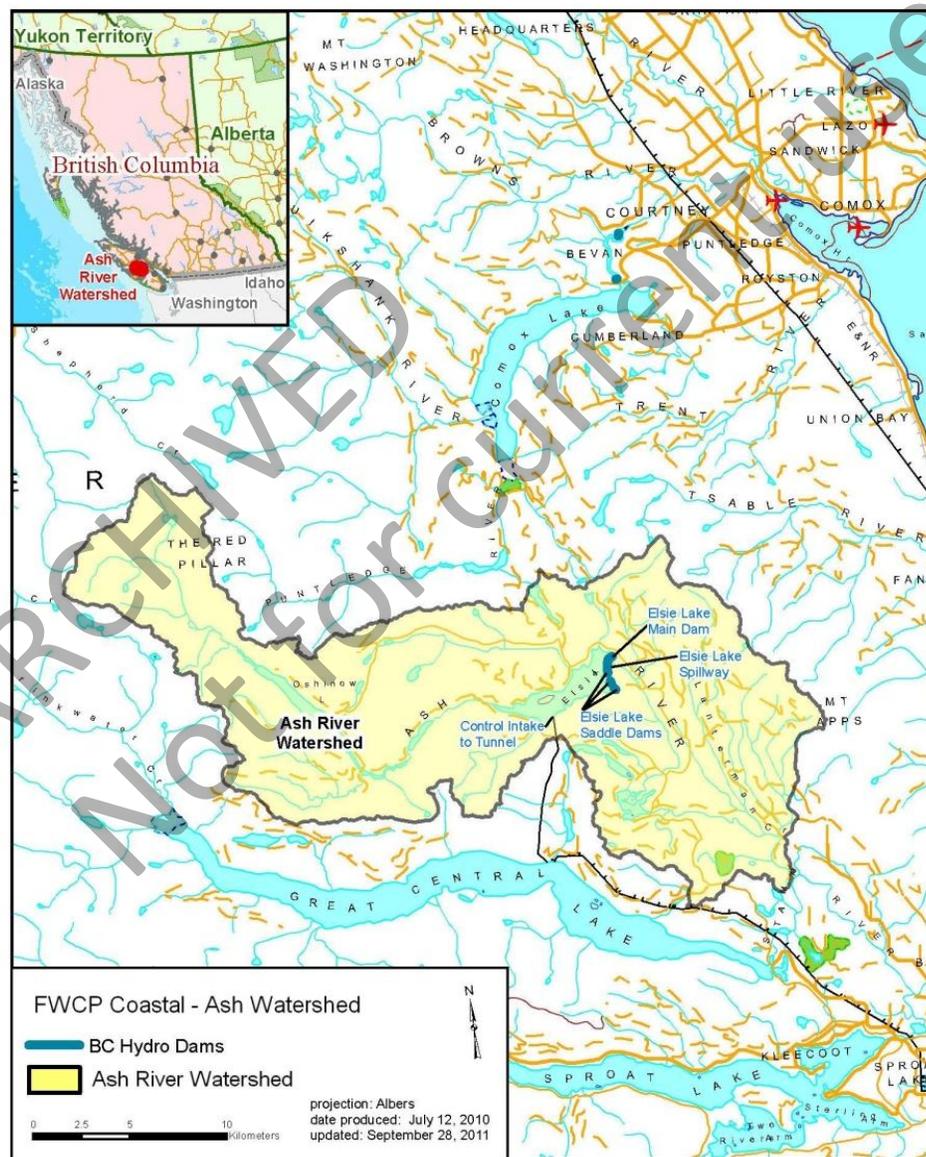


Figure 2. The Ash River hydropower project.

The Ash River basin is in the transition zone between the wet west coast and drier east coast climates of Vancouver Island. The basin is affected by frontal storms arriving from the southwest off the Pacific Ocean with strong, moist winds that bring heavy precipitation for durations of a few hours to a few days. Monthly rainfall can be as high as 800-900 mm between November and March. Peak inflow, however, occurs from May to July from snow melt, whereas August and September are low flow months.

The Ash River watershed is in the traditional territories of the Hupacasath First Nation and Tseshaht First Nation.

The Ash River project, completed in 1958 by the B.C. Power Commission, consists of Elsie Dam at the outlet of Elsie Lake Reservoir and four saddle dams. Water is diverted from Elsie Lake Reservoir through a 7.8 km tunnel and penstock to a powerhouse on the shoreline of Great Central Lake (Figure 2). The plant usually operates at maximum capacity (10.7 m³/s), except in late summer when inflows are low and during a 1-2 week annual maintenance period, usually scheduled for August. Flows are released down the Ash River from Elsie Dam to support fish and other objectives, according to operations described in the Ash River Project Water Use Plan (BC Hydro 2004). Updated minimum flows agreed to in the WUP are 3.5 m³/s from May 1 to October 31; 5 m³/s from November 1 to April 30; and two separate pulse flows for adult steelhead migration, of 10 m³/s for two days between August 1 and September 30.

2.1 SALMONIDS IN THE ASH RIVER

The Ash River is a tributary to the Stamp River, which itself is tributary to the Somass River. The Stamp and Somass are important salmon streams on the west coast of Vancouver Island, with stocks of steelhead, coho, Chinook, sockeye, chum and pink salmon. The Ash River has abundant stocks of steelhead, coho, and Chinook, but they are currently restricted to portions of the river downstream of Elsie Dam. There is ongoing debate about the historic occurrence of anadromous salmon above Dickson Falls, which is immediately downstream of Elsie Dam at the outlet of Elsie Lake Reservoir. Detailed habitat surveys of the upper river have not been completed, but BC Ministry of Environment field notes indicate that good rearing and spawning habitat is distributed throughout the mainstem and tributaries, including areas around Oshinow Lake in the upper watershed. Resident species that occur above the dam include rainbow trout, cutthroat trout and kokanee. In recent years, adult steelhead have been captured in the lower Ash and transported above the dam to take advantage of habitat availability in the upper watershed [confirm].

2.2 IMPACTS AND THREATS

Fish and Wildlife habitat and species have been significantly altered due to the construction of the dams, the development of hydro-power, and alterations in the hydraulic regimes of the systems. The following summary of the primary footprint impacts is derived from:

- Bridge-Coastal Restoration Program: Strategic Plan, Volume 2: Watershed Plans, Chapter 4: Ash River (December 2000);
- Ash River Water Use Plan Consultative Committee Report (October 2003); and
- Findings in the Community Workshop (Port Alberni, B.C., June 18, 2010).

Hydro-related Impacts — The impacts that occurred are based on location in the watershed as follows:

Elsie Dam and Upstream.

1. The creation of Elsie Lake Reservoir flooded 5 km of mainstem channel, 4.6 km of tributary channel and 271 ha of natural lake, as well as associated riparian areas.
2. There is reduced access to reservoir tributaries due to annual water level fluctuations of about 15 m.
3. Fluctuating water levels also impact littoral productivity in the reservoir.
4. Entrainment mortality is not quantified but is limited to resident species or offspring of fish transported around the dam, as there is no fish passage at Elsie Dam.

Lower and Middle Ash River.

5. The dam footprint led to a loss of instream, riparian and upland habitats.
6. Large woody debris recruitment has been reduced by the dam.
7. Spills from the dam strand steelhead smolts during spring out-migrations.
8. Elsie Dam blocks movement of resident trout.
9. Reduced flows have enhanced accessibility for summer steelhead to habitats above Lanternman Falls and potentially Dickson Falls.
10. 25 km of summer rearing habitat and capacity in the mainstem has been improved by summer fish flow releases.

11. Diversion of water to Great Central Lake, and reservoir retention has reduced nutrient levels downstream.

Diversions

12. Diversion of water to Great Central Lake may have elevated water temperatures in the lower Stamp and Somass rivers, which historically would have received cold water from the Ash.

Non-Hydro Impacts — Other impacts on fish populations in the Ash River watershed include historic effects of logging, historic and ongoing salmon harvest, linear developments, urbanization and habitat changes in the Alberni estuary. A substantial portion of the upper watershed is protected within Strathcona Provincial Park.

2.3 LIMITING FACTORS

Limiting factors vary among species and include availability of useable habitat, access to habitats (e.g., passage) and nutrient limitations. There are both natural and human-induced aspects, and the latter include effects from hydropower and other developments. The factors are summarized here.

1. **Habitat Area:** Alterations in flow have affected the wetted area below the dam and in the reservoir, and have likely affected the availability of spawning and rearing habitat. This may be offset by improved passage at Lanternman Falls, especially for steelhead. Former spawning, rearing and overwintering areas in the reservoir are permanently lost or seasonally reduced by dam footprint, reservoir drawdown and flooding, and diversions. Urban development in the lower watershed (mostly in the Stamp and Somass) has reduced off-channel, riparian, wetland and estuarine habitat.
2. **Habitat Quality:** Physical habitat quality below the dam has been altered by reduced wood recruitment. Habitat quality in the estuary has been altered by urban development and industrial waste releases. High water temperatures in summer and early fall are a substantial concern in the Stamp and Somass rivers, and may be affected by diversion of flow from the Ash.
3. **Access:** Dams block access to formerly useable habitat, and altered flow regimes and reservoir elevations affect fish passage in some locations. Passage conditions have improved for some species from reduced flows and selective blasting on falls.
4. **Nutrient limitations:** The Ash River has a naturally low nutrient content, and therefore low productivity of fish and other biological components.

2.4 TRENDS AND KNOWLEDGE STATUS

HABITAT TRENDS

A detailed account of habitat alterations from hydropower development is provided in the original BCRP Strategic Plan (BCRP 2000). In addition to present and historic hydropower impacts there are diverse impacts in the watershed from forestry, and urbanization.

Changes in operations as part the Ash River Water Use Plan have been implemented to improve habitat conditions, particularly downstream of the Elsie Dam (BC Hydro 2004). Monitoring shows that minimum fish flows and pulse flows of 10 cms have assisted in moving fish past Lanternman and Dickson Falls, and fish flows have improved rearing habitat (BC Hydro 2010).

Since 2000, FWCP (through BCRP) has conducted nutrient enhancement to increase biological productivity, developed a side channel in the lower Ash river (below Lanternman Falls) and has initiated several assessments related to fish passage that enhance access to habitat.

STOCK TRENDS

Chinook — Chinook occur in the Ash River, but they are not a significant population. There are important runs in the Stamp and Somass rivers, which have been increasing in part due to enhancement efforts at the Robertson Creek hatchery.

Coho — Coho occur primarily in the lower reaches of the Ash River, but are not common above Lanternman Falls. Recent observations of coho salmon juveniles above Dickson Falls (Michael McCulloch, BC Ministry of Environment, personal communication) have intensified the debate about fish distribution prior to hydropower development. Coho also occur in the Stamp and Somass rivers, where there is a relatively large and healthy population.

Cutthroat — Cutthroat trout occur in the Ash River, but there is limited knowledge of population trends in the system.

Pink and Sockeye — Pink salmon are not found in the Ash system, but they occur in the Stamp and Somass rivers. There is no sockeye run in the Ash, though there is a large and important run in Great Central Lake system.

Steelhead — There is a relatively healthy population of wild summer steelhead in the Ash River below Elsie Dam. After selective blasting at Dickson Falls in 1975, steelhead were able to use the entire lower system up to the dam. Higher minimum flows implemented under the WUP appear to have assisted fish movement in the system below the dam and increased overall habitat capacity. MOE estimates capacity at 9151 smolts or 182 adults (based on 2% survival rate).

KNOWLEDGE GAPS

Several knowledge gaps have been highlighted by agencies and stakeholders:

- There remain uncertainties about the historical range of anadromous salmonids, and whether they were able to regularly ascend above Dickson Falls.
- There is interest in obtaining more information about the effect of pulse flows and minimum flows in the late summer, particularly in relation to steelhead migration, rearing and spawning. Current monitoring is helping to address this knowledge gap.
- There is also interest, particularly from the First Nations, to facilitate passage through Lanternman and Dickson Falls for coho. However, there are also uncertainties about how this might affect steelhead, which are currently the only anadromous fish to regularly access those areas.
- To help set priorities for restoration, the program needs a better understanding of limiting factors that can be addressed by restoration initiatives, and a better understanding of the effects of previous restoration efforts.
- Information on rainbow trout and cutthroat trout populations is limited, as is the understanding of habitat limitations and opportunities for restoration for these species.

3 ACTION PLAN OBJECTIVES, MEASURES AND TARGETS

Clear and realistic management objectives are necessary to guide information acquisition and prioritize management actions. Priority actions and information needs will change as both improvements to the system are realized and information is gained. The current plan reflects the information available and values expressed by stakeholders (FWCP partners, First Nations and local communities) through reports, interviews and regional workshops held between 2009 and 2011.

3.1 OBJECTIVE AND TARGET SETTING

The following terminology is used in this report.

Objectives:	Objectives are high-level statements of desired future conditions (outcomes), consistent with FWCP partner mandates and policies.
Sub-objectives and Status Indicators:	Sub-objectives are detailed statements of desired future conditions within objectives, from which status indicators can be derived and alternative management actions evaluated. Sub-objectives and indicators provide the details necessary to translate policy into actions and to evaluate their consequences. They may be arranged hierarchically within objectives, and usually indicate conditions necessary to attain the objective to which they refer.
Measures:	Measures are specific metrics whose values indicate the degree to which desired future conditions have been achieved. They can be either qualitative or quantitative. There is a preference to develop the latter where possible for ease of monitoring.
Targets:	Targets are the values of measurable items that indicate the attainment of a desired condition. In the current context these may be expressed as a single value or as a range to acknowledge the inherent variability of ecosystems.
Actions:	Management actions, plans or policies for achieving the objectives.

Objectives are the “ends” or the outcomes we ultimately care about. Actions are the “means,” or the things we do to achieve them. This report focuses on describing the actions required to achieve the objectives in relation to Salmonid species and fish in general. Actions relating to specific species or habitats may also be related to actions in other Action Planning documents such as the Riparian and Wetlands or Species of Interest plans.

3.2 OBJECTIVES FOR THE ASH RIVER

Management objectives are common to all locations in the Ash River watershed, although the species of interest vary between the upper and lower watershed and thus the list of indicators and targets may differ.

This section briefly summarizes the objectives, sub-objectives and status indicators. While the objectives are expected to remain stable over time, the indicators and targets may evolve as management priorities for agencies shift, or new information becomes available.

There are two salmonid management objectives for the Ash River:

1. Conservation – Ensure a productive and diverse aquatic ecosystem,
2. Sustainable Use – Maintain or improve opportunities for sustainable use.

Supporting these objectives are sub-objectives that break each into its key components and provide further clarity.

Objective 1. Ensure a productive and diverse aquatic ecosystem.

Rationale — This objective addresses overall ecosystem integrity and productivity and directs compensation activities to developing productive, useable aquatic habitats. Where cost-effective opportunities exist, compensation works will be aimed at aiding multiple fish species.

There are two sub-objectives, which divide salmonids into anadromous and resident species, since priorities tend to fall along these lines in different locations in the Ash River.

1. Maximize the viability of anadromous salmon and steelhead
2. Maximize the viability of resident salmonids.

Each sub-objective is supported by the following status indicators:

1. Anadromous salmon and steelhead
 - a. coho salmon
 - b. steelhead trout
2. Resident salmonids
 - a. cutthroat trout
 - b. rainbow trout

The indicators focus on species of greatest management concern. There is a tacit assumption that these are to some extent true indicator species and that meeting targets for these species will support conservation of other fish species.

There are different priority species in different parts of the Ash watershed. Projects need not focus solely on these species, but they are the species of greatest

interest to most stakeholders. From a conservation perspective, the priorities are as follows.

Lower and Middle Ash River: Lanternman and Dickson Falls have resulted in the relatively unique situation that steelhead have access to areas that other anadromous salmon, are generally excluded from. This situation makes the Ash River of particular interest for steelhead management. There is a healthy summer run of steelhead in the Ash.

Coho are also of management interest, but DFO places a lower priority on the coho from the Ash River because there are other larger and more important coho runs in this area. Nevertheless, First Nations have expressed an interest in increasing the Ash River coho population, and there are possibilities that development of side channels downstream of Lanternman Falls are an option that would benefit coho without adversely affecting steelhead.

Elsie Lake Reservoir and Upper Ash River: Cutthroat trout and rainbow trout occur in this portion of the Ash River, but relatively little is known about their status and they are considered low priority for restoration investments at this time. Steelhead spawning and rearing also occur here, but presence of the species is currently dependent on transport and release of adult fish above Elsie Dam; the species is considered a very high priority for management.

Integrity of the system can be addressed through exploring increased fish passage at both Elsie dam and downstream at Lanternman and Dickson falls. It should be noted that the Hupacasath First Nation have long placed a high priority on this topic.

Measures — Measures for the sub-objectives relate to the long-term viability of indicator fish populations, and may include distribution, population structure, abundance, and size or age distribution. At this time, the focus will be on abundance. Compensation activities may focus on improving habitat, but success will ultimately be assessed with measures of abundance. Abundance is currently measured through escapement estimates, snorkel swims, and Water Use Plan monitoring activities. Where necessary, additional monitoring may be required for the compensation program to assess progress under this objective.

Targets — Species targets were determined by DFO and MOE and are indicated in the Table 1.

Table 1: Species management targets for each location in the Ash River system.

Location	Species	Target (5 year average)
Lower and Middle Ash	Coho	No target
Lower and Middle Ash	Steelhead	200 adults
Elsie Reservoir and Upper Ash	Cutthroat	No target
Elsie Reservoir and Upper Ash	Rainbow	No target

Objective 2. Maintain or improve opportunities for sustainable use.

Rationale — This objective reflects the important sustainable use benefits that can be derived from healthy fish populations. Many salmonid species are the focus of First Nations, commercial and recreation fisheries. Consequently, any actions aimed at achieving the above objective also support this sustainable use objective. Although there are no direct actions for improving sustainable use at this time, it is conceivable that projects aimed at generally improving opportunities or increasing the participation in the fisheries could be identified by the program partners in the future.

As additional context, it should be noted that fisheries management agencies have an overall responsibility to manage the fisheries resource at a level of abundance and distribution to support First Nations' traditional uses and rights. These responsibilities are dealt with through the ongoing process of decision-making, which is not a formal part of this FWCP plan. In addition to this, First Nations' interests in overall conservation and sustainable use benefits have been incorporated into the development of this plan.

Measures and Targets — There are no specific measures or targets required at this time, aside from those associated with objective 1.

As part of their overall management responsibilities, DFO uses information such as abundance trends and escapement estimates to regulate angling and commercial harvest. MOE collects information on angler days, catch per unit effort, and number of fishing licences sold in the region, which informs decisions related to angling regulations.

From a fisheries management perspective, the highest priority is steelhead. Coho and resident trout species are lower priorities.

4 ACTION PLAN

4.1 OVERVIEW

The Action Plan has many individual actions, which are presented in Section 4.2. Some actions support multiple sub-objectives, which in turn support multiple objectives. Figure 3 provides an overview of the link between actions and objectives.

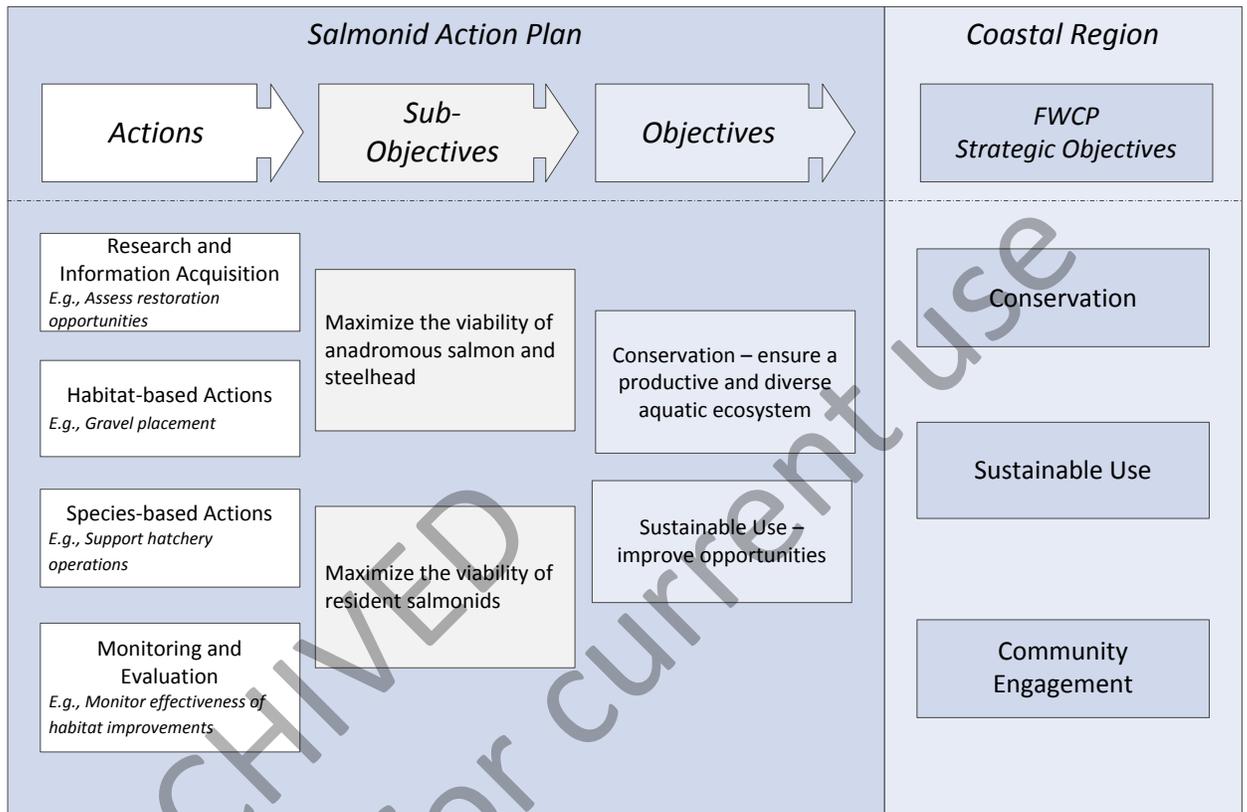


Figure 3: Relationship between actions, sub-objectives and objectives in this Salmonid Action Plan and the FWCP strategic objectives in the Ash River Watershed Plan.

4.2 COMPONENTS

This section presents the main actions identified under each sub-objective (Tables 2 and 3) along with the supporting rationale for why the actions are required and what they will achieve. Actions are organized under five broad categories: Research and Information Acquisition, Habitat-based Actions, Species-based Actions, Land Securement and Monitoring and Evaluation. Also provided are priority ratings to guide investment planning efforts. Actions are assigned priorities from 1-3. Note that low priority actions are not included in the table.

Sub-objective 1: Maximize the viability of anadromous salmonids.

Table 2: Actions with associated priorities and target species in the Ash River

Actions	Lower Ash	Middle Ash	Elsie Lake Reservoir	Upper Ash	multiple species	Anadromous		Resident	
						Coho	Steelhead	Cutthroat	Rainbow
Research & Information Acquisition									
Undertake quantitative assessment of the benefits of fertilization program in the lower and upper Ash River.	1	1	2	2	x				
Develop a Fish Passage Action Plan for the Ash River within the context of the Fish Passage Decision Framework.	1	1	1	1	x				
Develop an integrated habitat restoration plan for the Ash system, and ensure compatibility with WUP implementation and monitoring. Proponent should discuss project scope with program staff before submitting a proposal.	3	3	3	3	x				
Habitat Based Actions									
Continue fertilization program in the middle and upper Ash River, if assessment indicates sufficient benefit.	1	1	1	1	x				
Maintain existing constructed habitat enhancements for all salmonids.	1	1			x				
Develop side channels downstream of Lanternman Falls for coho and steelhead.	3					x	x		
Land Securement									
There are possible opportunities where land securement may address fisheries management objectives.	2				x				
Monitoring & Evaluation									
Assess efficacy of habitat enhancements undertaken by the program.	2	2	2	2	x				
Assess adult returns and out-migrating smolts as a measure of overall fish production in relation to specified targets.	2					x	x		
Continue monitoring of pulse flows and passage for steelhead in relation to the fish passage action plan. Note that passage during pulse flows was originally monitored as part of the WUP and continued monitoring and adjustments should build on recommendations coming from those studies.	2					x	x		

Rationale.— To support targets for anadromous salmon and steelhead several actions are proposed. Most actions focus on improving habitat for one or more species and life stages, but there is much we don't know biologically and physically about the species and habitats of interest, so actions also include collecting information to help evaluate and implement compensation options and assess performance of implemented restoration activities.

The primary options for enhancing salmonid habitat in the Ash River are fertilization and improved fish passage, but there are also opportunities downstream of Lanternman Falls to develop side channels for coho and to some extent steelhead. Fertilization should be evaluated before being continued, with an aim to understand the effects of previous fertilization efforts and an assessment of benefits and costs associated with continuing the program.

Improved fish passage is related to increased passage over Lanternman and Dickson Falls, and potentially at Elsie Dam. Improved passage over the falls would permit greater numbers of steelhead to access significant spawning and rearing habitat, but it may also allow increased access to coho, which may compete with

steelhead. This issue should to be assessed prior to undertaking steps to increase passage.

Fish passage at Elsie Dam would allow access to suitable spawning and rearing areas above Elsie Lake Reservoir for anadromous salmon and steelhead, but again, a detailed assessment of the benefits and negative impacts should be completed before any changes in passage are implemented. Developing a “Fish Passage Action Plan for the Ash River” should be completed as a first step.

Possible objectives for the action plan are:

- Conservation: To maintain or improve the status of summer steelhead, and other species, in the system.
- Production: To improve the overall abundance of fish in the system to support improved fisheries.
- Community / Culture: To recognize and support the value placed on fish and fisheries by First Nations and local communities.

The action plan should provide:

- Articulation of objectives, performance measures and targets for each species of interest.
- A thorough investigation of the biological opportunities and risks associated with improving fish passage in the system.
- An assessment of the technical feasibility and costs of facilitating improved adult fish passage upstream and smolt migration downstream.
- Presentation of different alternatives, including:
 - Improvements to both Lanternman and Dickson Falls.
 - Improvements to fish passage at Dickson Falls only
 - Improvements to fish passage at the falls and full passage at Elsie Dam
 - Other projects in lieu of fish passage projects that may meet objectives in a more cost-effective or lower risk manner (e.g., estuary projects).

Enhancement of sustainable fisheries will help ensure a First Nation fisheries and support recreational fisheries which directly address sustainable use interests. Improvement of sustainable fisheries will necessarily involve augmenting the population of certain species, but also can include improving access to harvest or use those species. Clearly, many of the activities that enhance the ecological integrity and the status of certain species will also benefit a sustainable fishery.

Monitoring is a cornerstone of good resource management because it provides information on present status and trends and allows post-implementation assessment of management decisions and programs. Fundamentally, monitoring provides direction on adjustments that may be necessary. There are multiple

elements related to anadromous salmon and steelhead that require monitoring. Realistically, monitoring will likely focus on abundance of different life stages of sportfish and species of concern. Results of monitoring should feed directly into compensation program evaluation and help revise objectives and targets, where necessary. Special care will be required to ensure that implementation and monitoring of FWCP: Coastal projects complements that of the Water Use Plan.

Sub-objective2: Maximize the viability of resident salmonids.

Table 3: Actions with associated priorities and target species in the Ash River.

Actions	Lower Ash	Middle Ash	Elsie Lake Reservoir	Upper Ash	multiple species	Anadromous		Resident	
						Coho	Steelhead	Cutthroat	Rainbow
Research & Information Acquisition									
Assess stock status of resident species and identify opportunities for restoration and enhancement.	1	1	1	1	x				

Rationale.— The rationale for the proposed actions related to resident salmonids are similar to those discussed earlier for anadromous salmon and steelhead, and some of those proposed projects will benefit resident fish also. The primary action required for resident salmonids is to develop a better understanding of present stock status and possible restoration options.

4.3 UNSUPPORTABLE PROJECTS

DFO and MOE have indicated they would not support the following projects.

- BC Hydro has implemented operational changes under the Ash River Water Use Plan, which are expected to improve conditions for fish and other resources. There are concerns that some restoration works could confound results from studies underway to evaluate aspects of the WUP. FWCP partners support the WUP and its associated monitoring studies and recognize the need to avoid confounding WUP monitoring results.
- Projects related to fish passage at BC Hydro facilities must adhere to the Fish Passage Decision Framework for BC Hydro Facilities (BC Hydro 2008), including requirements for evaluation of specific prerequisite biological studies.
- Habitat enhancement projects (e.g., improving fish passage at natural barriers, modifications to specific habitats) may require agency review, and in some cases prerequisite biological studies, to evaluate risks and benefits.

5 REFERENCES

- BC Hydro. 2003. Consultative Committee Report and draft Water Use Plan submitted to the Comptroller of Water Rights in October 2003. Executive Summary available at:
http://www.bchydro.com/etc/medialib/internet/documents/environment/pdf/wup_ash_river_executive_summary.pdf.Par.0001.File.wup_ash_river_executive_summary.pdf.
- BC Hydro. 2004. Ash River Project Water Use Plan. Revised for Acceptance by the Comptroller of Water Rights. Available at:
http://www.bchydro.com/etc/medialib/internet/documents/environment/pdf/wup_ash_river_water_use_plan.pdf.Par.0001.File.wup_ash_river_water_use_plan.pdf.
- BC Hydro. 2008. Fish passage decision framework for BC Hydro facilities. Available at:
<http://www.bchydro.com/bcrp/docs/Fish%20Passage%20Decision%20Framework%20FINAL%20Sept%202008.pdf>
- BC Hydro. 2010. Annual Report 2010, Ash River Project WUP Monitoring Program and Physical Works, October 30, 2010. Available at:
http://www.bchydro.com/etc/medialib/internet/documents/planning_regulatory/wup/vancouver_island/2010q4/ash_annual_report.Par.0001.File.ASH-Annual-Report-2010-Oct-30.pdf.
- Bridge-Coastal Restoration Program. 2000. Strategic Plan, Volume 2, Watershed Plans, Chapter 4: Ash River. Available at:
http://www.bchydro.com/bcrp/about/strategic_plan.html
- Bridge Coastal Restoration Program. 2008. Ash River workshop summary, Port Alberni BC, June 18, 2010. Available at:
http://www.bchydro.com/bcrp/about/strategic_plan.html
- Fish and Wildlife Compensation Program. 2011. Ash River Watershed Plan. Available at:
http://www.bchydro.com/about/our_commitment/compensation_programs.html
- MacDonald, A. 2009. Fish & Wildlife Compensation Program: Executive Summary. Report for BC Hydro, Vancouver, BC.