

22. CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES EFFECTS ASSESSMENT

22.1 INTRODUCTION

Environmental effects caused by the Project that indirectly affect the current use of lands and resources for traditional purposes by Aboriginal peoples is a requirement to be assessed under the *Canadian Environmental Assessment Act* 1992. Environmental effects that serve as pathways potentially affecting current use of resources by Aboriginal people typically relate to changes in air quality, noise, surface water quality, fish and aquatic resources, terrestrial ecology, wildlife, visual quality, heritage, and human health (country foods). These components are assessed in Chapters 9, 10, 13, 14, 15, 16, 19, 20, and 21, respectively, of the Application for an Environmental Assessment Certificate/ Environmental Impact Statement (Application/EIS) respectively.

For the purposes of this chapter, “Current Use of Lands and Resources for Traditional Purposes” is defined as “any practice or activity that is part of the Aboriginal group’s distinctive culture and has been routinely practiced by the Aboriginal group within a timeframe extending from the recent past to the present” (CEA Agency May 2014).

This chapter provides baseline information on current use for each potentially affected Aboriginal group and describes the effects scoping and assessment process that was used following the methodology outlined in Chapter 8 of the Application/EIS. This chapter is based on ethnographic and other secondary source research collected for the Project as well as the Simpcw First Nation Traditional Land Use and Ecological Knowledge Study (TLU & EKS) included in [Appendix 22-A](#).

The proposed Project is located within the traditional territory of the Secwepemc (Shuswap) Nation (Figure 22.1-1; Shuswap Cultural Education Society 2007). The Secwepemc Nation asserts interests to Secwepemcul’ecw territory, an area that encompasses approximately 145,000 km² of the central interior region of the province. The Simpcw First Nation (SFN), Adams Lake Indian (ALIB), Neskonlith Indian Band (NIB), and Little Shuswap Indian Band (LSIB) are members of the Secwepemc Nation. The Secwepemc Nation was composed of historic divisions with stewardship responsibilities for areas within the Nation (Figure 22.1-2). The Project Site is located within the asserted and historic territory of the North Thompson (Simpawl’ecw) Division (Teit 1909b), which today is recognized as SFN territory (Figure 22.1-3; SFN 2010). Less than 0.1% of SFN traditional territory is overlapped by the Project. LSIB, ALIB, and NIB were historically referred to as the Shuswap Lakes Division (Teit 1909a).

This chapter is informed by the assessment undertaken by the Canadian Environmental Assessment Agency (CEA Agency) and the BC Environmental Office (BC EAO) with respect to aboriginal interests in relation to the Project. Letters sent to the ALIB, NIB and LSIB by the CEA Agency in August 2011 and the BC EAO in September 2012 indicate it is assumed that aboriginal rights within Secwepemc territory are held at the level of the historic divisions of Secwepemc Nation. Although it is assumed that aboriginal rights are held at the division level, some ethnographic sources indicate that Secwepemc people from different divisions could exercise aboriginal rights within each other’s territories. Accordingly, for the ALIB, NIB, and LSIB, the assessment of current use is conducted using the historical Lakes Division territory (Figure 22.1-2).

Figure 22.1-1

Secwepemc Nation Traditional Territory in Relation to the Project

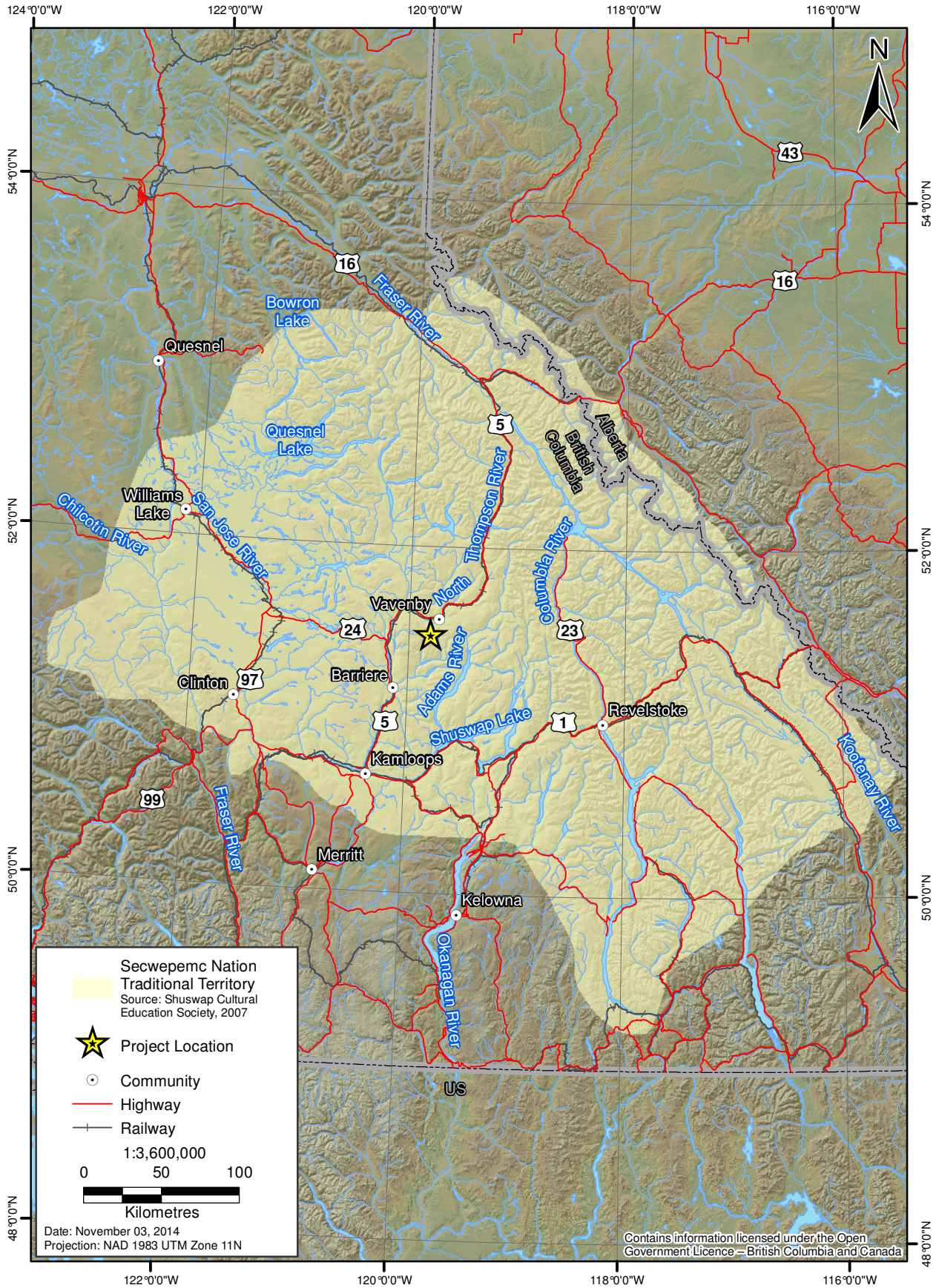


Figure 22.1-2
Historical Divisions within Secwepemc Traditional Territory
in Relation to the Project

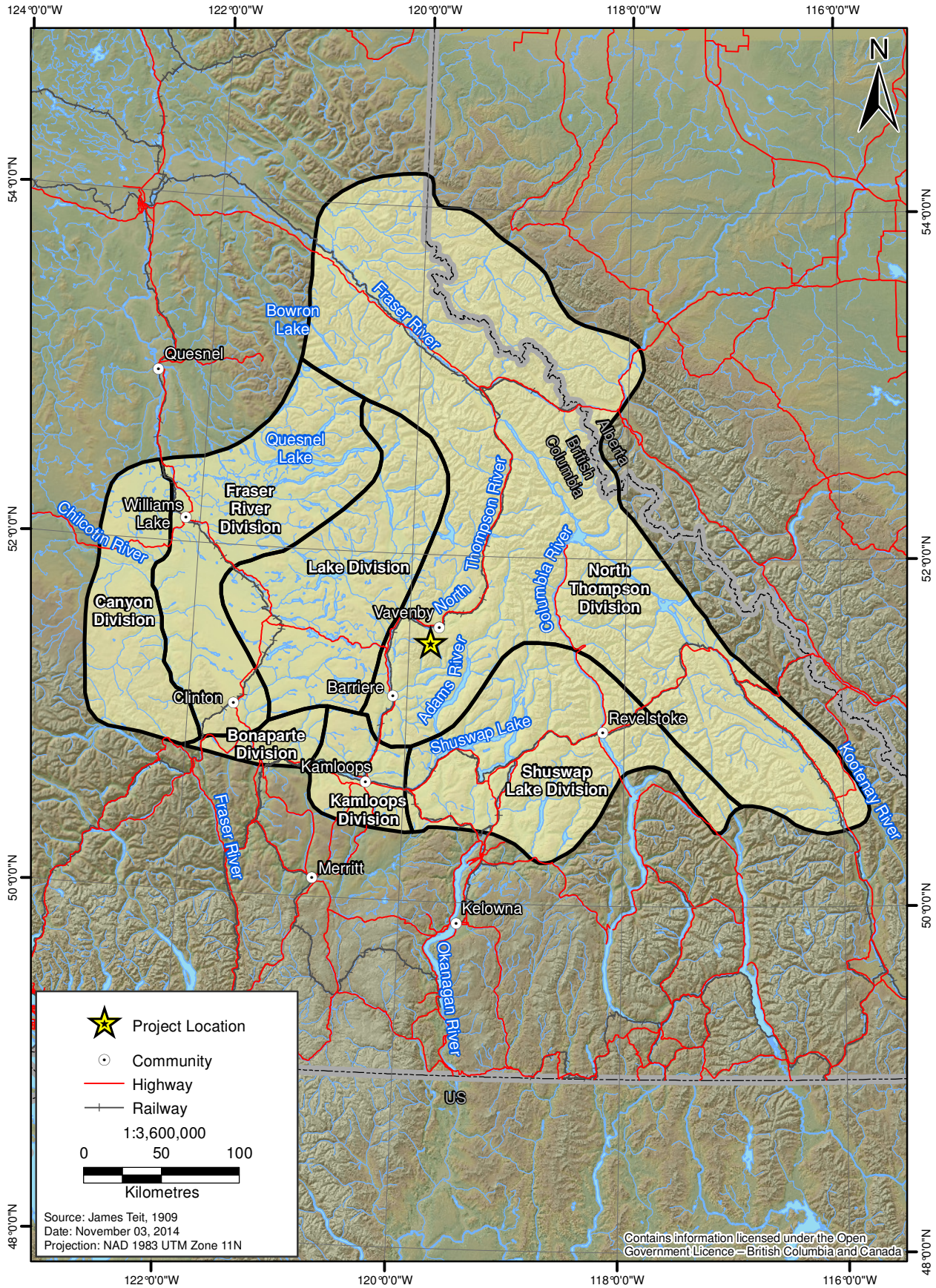
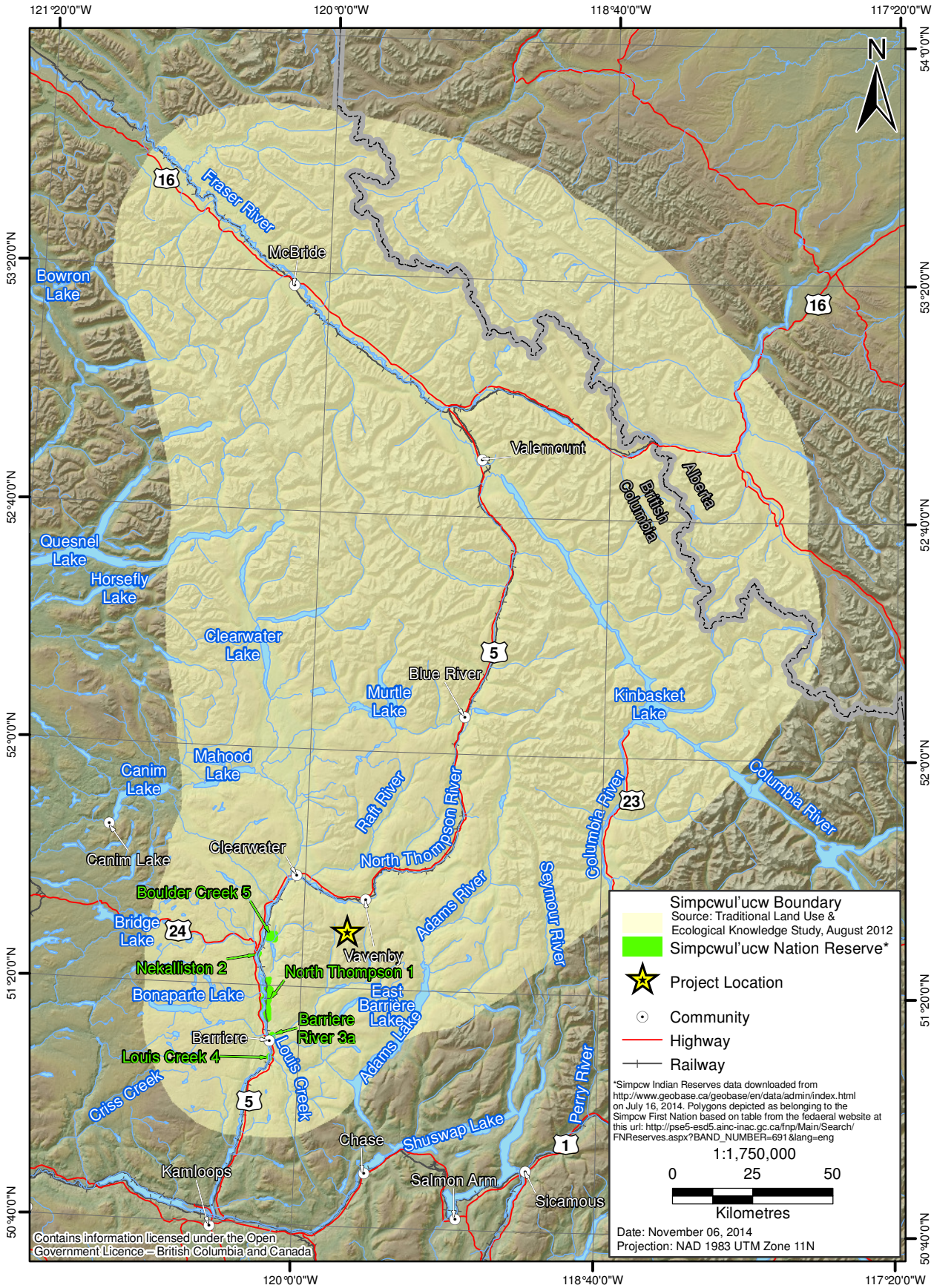


Figure 22.1-3

Simpchw First Nation Traditional Territory in Relation to the Project



Historically, Métis have lived in the regional area of the Project, including in Barriere, Valemount, Clearwater and Blue River. Métis Nation BC (MNBC) citizens from adjacent chartered communities and nearby communities may exercise their Aboriginal right to harvest within the Project footprint. The regional area is historically significant to the Métis who assert traditional harvesting and hunting rights. These rights are not geographically constrained because specific harvesting areas for each chartered community have not been identified by the MNBC. The Métis Nation of BC (MNBC), unlike other Aboriginal groups, does not claim territories; instead, on behalf of their citizens, they assert rights and traditional uses over the entire province (MNBC 2010).

In 1996, three member bands of the historical Shuswap Lakes Division (Little Shuswap, Adams Lake, and Neskonlith Indian Bands) submitted a collective Reserve Claim for lands that encompass Monte Creek, Scotch Creek, Adams Lake, and an area north to Dunn Peak forming the geographic boundaries of the Neskonlith Douglas Reserve claim (Figure 22.1-4; Indian Claims Commission 2008). The claim alleged that a reserve had been legally created for them in 1862 by the British Crown which was later unlawfully reduced. The federal government initially rejected the claim in March 1999. In May 2003, the Bands requested that the Indian Claims Commission (ICC) conduct an inquiry into their rejected claim. In June 2008, the Indian Claims Commission panel recommended the Neskonlith, Adams Lake and Little Shuswap Indian Bands Neskonlith Douglas Reserve claim not be accepted for negotiation under Canada's Specific Claims Policy (ICC 2008).

The Project Site is outside of the boundary attributed to the historical Shuswap Lakes Division as well as the Neskonlith Douglas Reserve claim area. The north-west corner of the Neskonlith Douglas Reserve claim area is located several kilometres south of the Project Site and overlaps lower Harper Creek and the North Barrière Lake watershed, downstream of the Project.

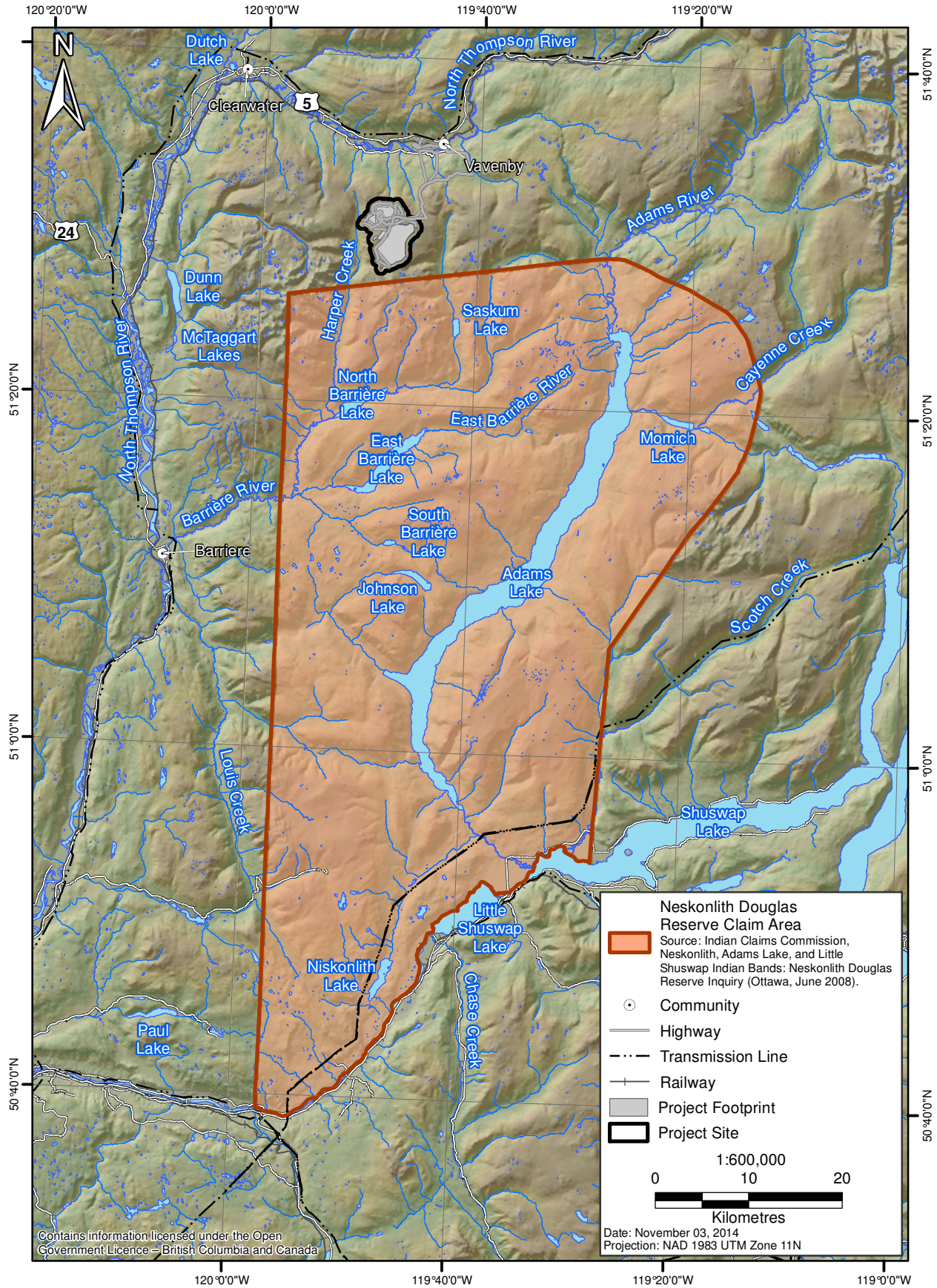
The proposed Project is located within the Kamloops Land and Resource Management Plan (KLRMP), which is a sub-regional land use plan covering 2.2 million hectares of south central BC. The plan informs the management of Crown land within the plan area, subject to existing legislation, policies and regulations. The KLRMP is organized into Resource Management Zones (RMZ), which include: General, Settlement, Protection, Community Watershed, Habitat/Wildlife Management Areas, and Recreation and Tourism RMZs. Table 18.4-3 in Chapter 18, Commercial and Non-commercial Land Use briefly describes each RMZ. General resource management objectives and strategies are also provided for heritage trails, cultural and heritage sites, and traditional native land use (BC ILMB 1995). General resource management objectives relevant to current Aboriginal use are outlined in Table 22.1-1.

Table 22.1-1. Kamloops Land and Resource Management Plan: General Resource Management Objectives relevant to Current Aboriginal Use

Category	Objective
Heritage Trails	<ul style="list-style-type: none"> Identify, restore, and manage provincially significant heritage trails.
Cultural and Heritage Sites	<ul style="list-style-type: none"> Protect archaeological sites in the KLRMP.
Traditional Native Land Use	<ul style="list-style-type: none"> To be determined based on studies conducted by First Nations.

Figure 22.1-4

Neskonlith Douglas Reserve Claim Area in Relation to the Project



22.1.1 Shuswap Nation Tribal Council Comprehensive Fisheries Agreement (2008)

The Shuswap Nation Tribal Council (SNTC), for and on behalf of the Secwepemc Fisheries Commission, entered into a Comprehensive Fisheries Agreement with the Minister of Fisheries and Oceans Canada (DFO) in 2008. The Agreement covers part of the North Thompson watershed. Its purpose is to provide for the orderly management of the fisheries and the involvement of First Nations in the management, protection and enhancement of fisheries resources and fish habitat in the area covered by the Agreement. Under the Agreement, the SNTC member communities may fish for food, social and ceremonial purposes for the species and quantity established in accordance with the Agreement, and DFO agrees to manage the various fisheries based on the principle of the Aboriginal fisheries having highest order of priority after conservation. The Agreement provides for the parties to jointly develop annual fishing plans, and for communal fishing licences to be issued to SNTC members, including the SFN, ALIB, NIB and LSIB. The licences include harvesting for Coho, Sockeye, Chinook and Pink salmon.

Schedule G-1 of the Agreement identifies responsibilities for fisheries monitoring for each of the eight First Nations that are signatories to the Agreement. Monitoring responsibilities for the SFN and the historical Lakes Division are identified for the fisheries below:

Simpco First Nation

- Raft River using a harpoon/spear, seine net and fence net for sockeye and chinook
- North Thompson River mainstem near Barriere using gill net for sockeye and chinook
- Clearwater River using dip net for chinook
- Barrière River using fence for sockeye
- Dunn Creek using fence for coho
- Holmes River using a dipnet for chinook

Historical Lakes Division

- ALIB
 - Little Shuswap Lake using a gill net set from communal fishing boat for sockeye and chinook
 - Scotch Creek using the stock enumeration weir for sockeye
 - Lower Adams River using dip nets, gaffs, and spears for sockeye and chinook
 - South Thompson River, Little River and Shuswap Lake near the mouth of Adams River using beach seine for sockeye and chinook
- NIB
 - South Thompson River using gill net for sockeye and chinook
 - Little Shuswap Lake using gill net for sockeye and chinook
- LSIB
 - Little Shuswap Lake and Little River using a gill net for sockeye and chinook
 - Scotch Creek with the aid of a sockeye counting fence

22.2 SCOPING THE EFFECTS ASSESSMENT

22.2.1 Selecting Valued Components

The British Columbia Environmental Assessment Office (BC EAO) defines Valued Components (VCs) as components “that are considered important by the proponent, public, First Nations, scientists, and government agencies involved in the assessment process” (BC EAO 2013). To be included in the Application/EIS, there must be a perceived likelihood that the VC will be affected by the proposed Project. VCs proposed for assessment were identified in the AIR (BC EAO 2011) and in the CEA Agency (2011) Background Information document.

22.2.1.1 Consultation Feedback on Proposed Valued Components

A preliminary list of proposed VCs was drafted early in project planning based on the expected physical works and activities of the reviewable project, type of project being proposed, local area and regions where the proposed project would be located, and consultation with the EA Working Group and public. A summary of the issues raised that are relevant to current Aboriginal use is summarized below in Table 22.2-1. Generally, the issues raised reflect concerns with the Project’s potential effects on fishing, hunting, plant gathering, and access to traditional and cultural sites.

Table 22.2-1. Consultation Feedback on Proposed Valued Component(s)

Current Aboriginal Use	Feedback by*				Issues Raised	Proponent Response
	AG	G	P/S	O		
Fishing	X				Disruption to access fishing areas and impacts on fish due to changes in water quality and quantity.	Potential for changes in access or ability to access or use of fishing sites are assessed in this chapter. Impacts on fish and fish habitat were included in the assessment in Chapter 14 (Fish and Aquatic Habitat) and impacts on surface water quantity and quality were assessed in Chapters 12 (Hydrology) and 13 (Surface Water Quality) respectively.
Fishing, Hunting	X				Concern over more people accessing the area due to improved roads resulting in increased on hunting and fishing pressure.	Mine employees will be prohibited from hunting on the Project site. Watercourses in the Project Site are non-fish bearing (see Figure 22.3-1). Potential for changes in access or ability to access or use hunting areas in Aboriginal traditional territories is assessed in this chapter.
Hunting, Gathering	X				Disruption to access to hunting and gathering sites.	Potential for changes in access or ability to access or use hunting or gathering sites in Aboriginal traditional territories is assessed in this chapter.

(continued)

Table 22.2-1. Consultation Feedback on Proposed Valued Component(s) (completed)

Current Aboriginal Use	Feedback by*				Issues Raised	Proponent Response
	AG	G	P/S	O		
Gathering	X				Impacts on vegetation and plant communities, including but not limited to medicinal, food, and ceremonial interests.	This chapter considers potential effects on harvesting of culturally important plants and is informed by the conclusions reached in Chapter 15 (Terrestrial Ecology) and Chapter 21 (Human Health).
Fishing, Hunting, Gathering	X				Impacts on culturally important areas, wildlife, plants, birds and fish species	This chapter assesses potential effects on culturally important areas, wildlife, plants, birds and fish species. The assessment is informed by the conclusions reached in Chapter 14 (Fish and Aquatic Resources), Chapter 15 (Terrestrial Ecology), and Chapter 16 (Wildlife and Wildlife Habitat).
Use of Cultural and Spiritual Sites	X				Impacts on cultural and archaeological sites or landforms.	This chapter assesses potential effects on cultural or spiritual sites. Effects on archaeological sites are assessed in Chapter 20 (Archaeology and Heritage).
Use of Cultural and Spiritual Sites	X				Impacts on access to and practices within culturally important areas that may be impacted by the Project.	Potential for changes in access or ability to access or use cultural and spiritual sites is assessed in this chapter.
Use of trails	X				Impacts on transportation corridors including trails, creeks, and rivers	Potential for changes to access to trails or alteration of trails is assessed in this chapter. Potential impacts to navigation are assessed in Chapter 18 (Commercial and Non-commercial Land Use).
Use of Lands and Resources for Traditional Purposes	X				Impacts on SFN's ability to practice their traditional livelihood, health and well-being, cultural practices, and trade networks	Changes in the ability of Aboriginal groups to practice their traditional livelihood and changes to cultural practices are assessed in this chapter. Changes to Aboriginal health and well-being are assessed in Chapter 21 (Human Health) and Chapter 17 (Socio-economics).

*AG = Aboriginal Group; G = Government; P/S = Public/Stakeholder; O = Other

22.2.1.2 Selecting Valued Components

Based on the concerns raised, effects on the quality, abundance and distribution of fishing, hunting and trapping resources and access to these traditional activities (including the use of habitations, trails, cultural and spiritual sites) were identified as issues of importance.

The SFN prepared a Traditional Land Use and Ecological Knowledge Study (2012) (TLU & EKS) that identified their concerns regarding potential impacts of the Project on: spiritual sites, fisheries,

caribou hunting territories, restrictions to traditional use sites including plant gathering sites, and transportation corridors (trails, creeks and rivers), and contamination of wildlife and their forage.

Socio-economic baseline reports for each First Nation ([Appendix 23-B](#)) were also developed to provide information specific to each First Nation. Information in these reports has been used to scope the current use assessment on issues of greatest concern to each group.

An interaction table was used to screen the potential for Project components and activities (during each phase of the Project) to affect the current Aboriginal use VC (Table 22.2-2). Residual effects (e.g., changes in quality, abundance and distribution) on resources (fish, wildlife, plants) have the potential to indirectly affect current Aboriginal use, including access to resources, the quality of those resources, and access to traditional use sites. For example, Project effects on surface water quantity and quality have the potential to affect fish habitat due to an alteration of water levels, stream discharge, channel morphology, and changes to surface water quality. Direct mortality effects on fish and changes to surface water quality could also affect fish species such as Bull Trout, Rainbow Trout, and Coho Salmon. These types of effects could affect fish species abundance, distribution, and the quality of fish as a country food.

22.2.1.3 Valued Components Selected for Assessment

Following guidance from the CEA Agency (May 2014), current aboriginal use includes any practice or activity that is part of the Aboriginal group's distinctive culture and has been routinely practiced by the Aboriginal group within a timeframe extending from recent past to present. Potential effects on current Aboriginal use include changes to access to areas that are of importance or concern to Aboriginal groups.

The Current Aboriginal Use VC was selected to encompass the assessment of effects on culturally important resources (fish, wildlife, and vegetation) and use of traditional sites. The rationale for including these resources and use of traditional sites in the assessment of the Current Aboriginal Use VC is presented below.

Fish (Fishing)

SFN members report fish harvesting in watercourses (e.g., Harper Creek, Barrière River, North Thompson River) that could interact with the Project (Section 22.3.3.2; [Appendix 22-A](#)). The SFN are concerned that the Project may impact fish stocks and spawning areas due to sedimentation and increases in water temperature. The SFN have noted the importance of the Barrière and North Thompson rivers fisheries and expressed concern around the effects of reduced flows on Bull Trout, in particular on adfluvial fish ([Appendix 3-F](#)). The SFN have raised concerns regarding effects on salmon fisheries. Potential effects on food procurement and fish-bearing waterbodies, in particular on culturally important fish species, have been raised with respect to SFN health and well-being; impacts on fishing related to a population increase has also been raised as a concern. Other issues raised include potential effects on aquatic resources, surface water quality in Harper Creek, seepage from the TMF, and safety of the TMF design. Finally, during the review of the Application Information Requirements (AIR) document, the SFN identified a potential concern regarding salmon which spawn and rear in the Barrière River system and downstream habitats.

Table 22.2-2. Interaction of Project Components and Activities with Current Aboriginal Use Valued Components

Category	Project Components and Activities	Current Aboriginal Use
Construction		
Concrete production	Concrete batch plant installation, operation and decommissioning	X
Dangerous goods and hazardous materials	Hazardous materials storage, transport, and off-site disposal Spills and emergency management	X
Environmental management and monitoring	Construction of fish habitat offsetting sites	X
Equipment	On-site equipment and vehicle use: heavy machinery and trucks	
Explosives	Explosives storage and use	
Fuel supply, storage and distribution	Fuel supply, storage and distribution	
Open pit	Open pit development - drilling, blasting, hauling and dumping	X
Potable water supply	Process and potable water supply, distribution and storage	
Power supply	Auxiliary electricity - diesel generators	X
	Power line and site distribution line construction: vegetation clearing, access, poles, conductors, tie-in	X
Processing	Plant construction: mill building, mill feed conveyor, truck shop, warehouse, substation and pipelines	X
	Primary crusher and overland feed conveyor installation	X
Project Site development	Aggregate sources/ borrow sites: drilling, blasting, extraction, hauling, crushing	X
	Clearing vegetation, stripping and stockpiling topsoil and overburden, soil salvage handling and storage	X
	Earth moving: excavation, drilling, grading, trenching, backfilling	X
Roads	New TMF access road construction: widening, clearing, earth moving, culvert installation using non-PAG material	X
	Road upgrades, maintenance and use: haul and access roads	

(continued)

Table 22.2-2. Interaction of Project Components and Activities with Current Aboriginal Use (continued)

Category	Project Components and Activities	Current Aboriginal Use
Stockpiles	Coarse ore stockpile construction	X
	Non-PAG Waste Rock Stockpile construction	X
	PAG and Non-PAG Low-grade ore stockpiles foundation construction	X
	PAG Waste Rock stockpiles foundation construction	X
Tailings management	Coffer dam and South TMF embankment construction	X
	Tailings distribution system construction	X
Temporary construction camp	Construction camp construction, operation, and decommissioning	X
Traffic	Traffic delivering equipment, materials and personnel to site	X
Waste disposal	Waste management: garbage, incinerator and sewage waste facilities	
Water management	Ditches, sumps, pipelines, pump systems, reclaim system and snow clearing/stockpiling	
	Water management pond, sediment pond, diversion channels and collection channels construction	X
Operations 1		
Concentrate transport	Concentrate transport by road from mine to rail load-out facility	
Dangerous goods and hazardous materials	Explosives storage and use	
	Hazardous materials storage, transport, and off-site disposal	
	Spills and emergency management	
Environmental management and monitoring	Fish habitat offsetting site monitoring and maintenance	
Equipment fleet	Project Site mobile equipment (excluding mining fleet) and vehicle use	
Fuel supply, storage and distribution	Fuel storage and distribution	
Mining	Mine pit operations: blast, shovel and haul	X
Ore processing	Ore crushing, milling, conveyance and processing	

(continued)

Table 22.2-2. Interaction of Project Components and Activities with Current Aboriginal Use (continued)

Category	Project Components and Activities	Current Aboriginal Use
Potable water supply	Process and potable water supply, distribution and storage	
Power supply	Backup diesel generators	X
	Electrical power distribution	X
Processing	Plant operation: mill building, truck shop, warehouse and pipelines	
Reclamation and decommissioning	Progressive mine reclamation	X
Stockpiles	Construction of Non-PAG tailings beaches	X
	Construction of PAG and Non-PAG Low Grade Ore Stockpile	X
	Non-PAG Waste Rock Stockpiling	X
	Overburden stockpiling	X
Tailings management	Reclaim barge and pumping from TMF to Plant Site	X
	South TMF embankment construction	X
	Sub-aqueous deposition of PAG waste rock into TMF	X
	Tailings transport and storage in TMF	X
	Treatment and recycling of supernatant TMF water	
Traffic	Traffic delivering equipment, materials and personnel to site	
Waste disposal	Waste management: garbage and sewage waste facilities	
Water management	Monitoring and maintenance of mine drainage and seepage	
	Surface water management and diversions systems including snow stockpiling/clearing	X

(continued)

Table 22.2-2. Interaction of Project Components and Activities with Current Aboriginal Use (continued)

Category	Project Components and Activities	Current Aboriginal Use
Operations 2	<i>Includes the Operations 1 non-mining Project Components and Activities, with the addition of these activities:</i>	
Processing	Low grade ore crushing, milling and processing	
Reclamation and decommissioning	Partial reclamation of Non-PAG waste rock stockpile	X
	Partial reclamation of TMF tailings beaches and embankments	X
Tailings management	Construction of North TMF embankment and beach	X
	Deposit of low grade ore tailings into open pit	X
Water management	Surface water management	X
Closure		
Environmental management and monitoring	Environmental monitoring including surface and groundwater monitoring	
	Monitoring and maintenance of mine drainage, seepage, and discharge	
	Reclamation monitoring and maintenance	
Open pit	Filling of open pit with water and storage of water as a pit lake	X
Reclamation and decommissioning	Decommissioning of rail concentrate load-out area	X
	Partial decommissioning and reclamation of Project Site roads	X
	Decommissioning and removal of plant site, processing plant and mill, substation, conveyor, primary crusher, and ancillary infrastructure (e.g., explosives facility, truck shop)	X
	Decommissioning of diversion channels and distribution pipelines	X
	Decommissioning of reclaim barge	
	Reclamation of Non-PAG LGO stockpile, overburden stockpile and Non-PAG waste rock stockpile	X
	Reclamation of TMF embankments and beaches	X
	Removal of contaminated soil	X
Use of topsoil for reclamation	X	

(continued)

Table 22.2-2. Interaction of Project Components and Activities with Current Aboriginal Use (completed)

Category	Project Components and Activities	Current Aboriginal Use
Stockpiles	Storage of waste rock in the non-PAG waste rock stockpile	X
Tailings management	Construction and activation of TMF closure spillway	X
	Maintenance and monitoring of TMF	X
	Storage of water in the TMF and groundwater seepage	X
	Sub-aqueous tailing and waste rock storage in TMF	X
	TMF discharge to T-Creek	X
Waste disposal	Solid waste management	
Post-Closure		
Environmental management and monitoring	Environmental monitoring including surface and groundwater monitoring	
	Monitoring and maintenance of mine drainage, seepage, and discharge	X
	Reclamation monitoring and maintenance	X
Open pit	Construction of emergency spillway on open pit	
	Storage of water as a pit lake	X
Stockpiles	Storage of waste rock in the non-PAG waste rock stockpile	X
Tailings management	Storage of water in the TMF and groundwater seepage	X
	Sub-aqueous tailing and waste rock storage	X
	TMF discharge	X

Note: a column is marked with an X when it has been determined that the Project component or activity could potentially interact with the VC.

The LSIB raised concerns about changes in water quality and potential effects to fish and fish habitat in Harper Creek and downstream to its confluence with North Barrière Lake; access to fish and fish bearing streams throughout the life of the mine; and maintenance of sufficient water flows to creeks below the Project Site. No specific fishing places used by the LSIB have been identified.

During consultation, the ALIB asked questions regarding fish distribution, effects of the power line and access road upgrades on fish and aquatic habitat, and asked for more information on fish habitat offsetting options. ALIB also raised concerns around potential environmental effects on the Neskonlith Douglas Reserve Claim (Figure 22.1-4). The north-west corner of the Neskonlith-Douglas Reserve claim area is part of the Harper Creek and North Barrière Lake watershed which could potentially be affected by downstream effects of the Project. The ALIB have also identified concerns regarding tailings management facility (TMF) seepage into streams, spillway design and water treatment of TMF supernatant, and concern with downstream effects of the Project as it drains south into Harper Creek and beyond.

The NIB raised issues with respect to fish and fish habitat being impacted in the Harper Creek watershed and Barrière River system, and expressed an interest in being involved in the development of fish habitat offsetting plans. The NIB also expressed concerns related to metal leaching/acid rock drainage (ML/ARD) effects on water quality, and the release of contaminants into the North Thompson River or Harper Creek as a result of an accident or failure.

Based on available ethno-historical information, there is no site-specific use related to fishing within the mine footprint area by the Shuswap Lakes Division.

The MNBC have not identified any specific fishing areas near the Project and have not raised any issues related to their ability to access fishing areas.

Wildlife (Hunting and Trapping)

The Construction, Operation, and Closure phases of the Project have the potential to indirectly affect opportunities for Aboriginal hunting and trapping due to impacts to wildlife and wildlife habitat, including habitat loss and alteration; disturbance and displacement of wildlife species; and direct mortality.

The SFN report hunting moose and trapping marten and weasel in the RSA (Section 22.3.3.2 and [Appendix 22-A](#)). The SFN have raised the following concerns with respect to wildlife resources ([Appendix 3-F](#)): the potential of the Project to affect hunting and food procurement areas; effects on wildlife migration routes and habitations; effects on culturally important wildlife and bird species; impacts on hunting territories; effects of a population increase on hunting; effects of human activity and refuse on wildlife; blasting effects on wildlife and wildlife habitat; and effects on caribou and other wildlife species identified in [Appendix 22-A](#).

No specific hunting or trapping areas currently used and affected by the Project footprint have been identified by the ALIB. The ALIB identified potential effects on caribou and grizzly bear as a concern, and requested the plant and animal list provided to the EAO during the review of the draft AIR be considered which identifies the following wildlife species as being of interest: black bear,

grizzly bear, beaver, caribou, coyote, mule deer, whitetail deer, elk, fisher, red fox, snowshoe hare, lynx, marten, hoary marmot, yellow-bellied marmot, mink, moose, mountain goat, muskrat, otter, porcupine, bighorn sheep, northern flying squirrel, red squirrel, wolf, wolverine, rabbit, and pheasant (see also Table 22.3-3).

No specific hunting or trapping areas currently used and affected by the Project footprint have been identified by the NIB. The NIB identified impacts on noise from operations disturbing wildlife adjacent to the Project Site and impacts on access to culturally important areas as issues of concern ([Appendix 3-F](#)). The NIB also raised a concern regarding the mine operation impacting NIB culture, health and social well-being as a result of degraded water quality in the Barrière River and North Thompson River watersheds and related impacts to important wildlife species.

No specific current hunting or trapping areas affected by the Project footprint have been identified by the LSIB. The LSIB raised the following issues related to wildlife:

- impacts on access to hunting and gathering sites;
- excess noise disturbing wildlife, especially during mating and birthing and the need for mitigation;
- unauthorized hunting and the use of firearms by Project personnel; and
- increase in mine traffic impeding/ disrupting wildlife movement.

Based on available ethno-historical information, there is no site-specific use related to hunting and trapping within the mine footprint area by the Shuswap Lakes Division.

While no specific hunting or trapping areas currently used affected by the Project footprint have been identified by the MNBC, historical traditional harvesting for sustenance purposes is reported by the MNBC in the area south of Vavenby and northwest of the town of Barriere (MNBC 2014; [Appendix 23-D](#)) During the review of the draft AIR, the MNBC expressed general concerns related to effects of the Project on wildlife, and on the wildlife VCs selected for assessment. No concerns regarding potential impacts on their ability to access hunting areas were raised.

Vegetation (Gathering)

The Construction, Operation, and Closure phases of the Project have the potential to affect Aboriginal subsistence and medicinal plant gathering opportunities and practices. The SFN indicate they gather plants in the RSA (Section 22.3.2.2 and [Appendix 22-A](#)). The Simpcw are concerned about impacts on food procurement areas, including plant harvesting sites and their ability to access traditional use sites. The SFN have identified impacts on culturally important plant species (see Table 22.3-4) as issues of concern.

No specific gathering sites currently used and affected by the Project footprint have been identified by the ALIB. Issues raised by the ALIB relate to the protection and management of culturally important plants, effects on forestry, and a request to consider the plant species contained in a list provided by the ALIB to the EAO during the review of the draft AIR ([Appendix 15-C](#)).

No specific gathering sites affected by the Project footprint have been identified by the NIB. A general concern was identified regarding impacts on access to culturally important areas that may be impacted by the Project. The NIB raised a concern related to potential effects on water quality in the Barrière River and North Thompson River watersheds ([Appendix 3-F](#)). Impacts from operations on vegetation and plant communities, including but not limited to traditional use items providing medicinal, food, or ceremonial value that are on, or adjacent to, the Project Site was also raised as a concern.

No specific gathering sites affected by the Project footprint have been identified by the LSIB. Curtailed access to sites to gather resources during Operations and the condition of the site in Post-Closure were raised as concerns by the LSIB ([Appendix 3-F](#)). Restoration of non-timber resources in closure was also identified as an issue.

Based on available ethno-historical information, there is no site-specific use related to plant gathering within the mine footprint area by the Shuswap Lakes Division.

Historical traditional harvesting for sustenance purposes is reported by the MNBC in the area south of Vavenby and northwest of the town of Barriere (MNBC 2014). MNBC have not raised specific concerns related to their ability to access currently used gathering areas. One concern related to potential effects of the Project on forestry and natural habitat was raised ([Appendix 3-F](#)).

Use of Traditional Sites (Habitations, Trails, Cultural and Spiritual Sites)

The Construction, Operation, and Closure phases of the Project have the potential to affect the use of Aboriginal habitations, trails, cultural and spiritual sites. The SFN have identified habitations, trails, cultural and spiritual sites in the vicinity of the Project (Section 22.3.3.2 and [Appendix 22-A](#)). The Simpcw are concerned about impacts on their social and cultural practices, and transportation corridors including trails, creeks and rivers. Concerns related to impacts on archaeological sites, mitigation measures for two rock cairns in the Project area, and effects on access to traditional sites and their ability to practice their traditional livelihood and cultural practises have been raised by the SFN. Mitigation to manage effects on traditional use sites has been raised by the SFN who note there are traditional use areas in the Project area and downstream of the Project ([Appendix 3-F](#)).

While no specific habitations, trails, cultural and/or spiritual sites affected by the Project footprint have been identified by the ALIB, it was noted that the ALIB would like archaeology and cultural heritage work undertaken prior to drilling.

No specific habitations, trails, cultural and/or spiritual sites affected by the Project footprint have been identified by the NIB. Concerns regarding impacts of the Project on cultural and archaeological sites or landforms, and impacts on access to culturally important areas were raised.

No specific habitations, trails, cultural and/or spiritual sites affected by the Project footprint have been identified by the LSIB. However a concern was raised regarding the unknown function of the rock cairns identified in Archaeological Impact Assessment ([Appendix 20-A](#)).

Based on available ethno-historical information, there is no site-specific use related to traditional sites within the mine footprint area by the Shuswap Lakes Division.

The MNBC have not raised concerns related to potential impacts of the Project on their citizens' current use of habitations, trails, cultural or spiritual sites in the Project area, although historical regional use of trails in the area by the MNBC has been identified.

Based on the potential for the Project to affect VCs that act as pathways with the potential to effect use of lands and resources by Aboriginal groups, and considering the issues brought up by Aboriginal groups related to fish, wildlife, vegetation, and use of traditional sites, the following components were selected for assessment of the Current Aboriginal Use VC for SFN, the historical Lakes Division, and the MNBC (Table 22.2-3).

Table 22.2-3. Valued Components Selected for Assessment

Assessment Category	Subject Area	Valued Component
Socio-economic	Current use of lands and resources for traditional purposes	Current Aboriginal Use

22.2.2 Defining Assessment Boundaries

Assessment boundaries define the maximum limit within which the effects assessment and supporting studies (e.g., predictive models) are conducted. Boundaries encompass where and when the Project is expected to interact with the VCs, any political, social, and economic constraints, and limitations in predicting or measuring changes. Boundaries relevant to Current Aboriginal Use are described below.

22.2.2.1 Temporal Boundaries

Temporal boundaries, provided in Table 22.2-4, are the time periods considered in the assessment for various Project phases and activities. Temporal boundaries reflect those periods during which planned Project activities are reasonably expected to potentially affect a VC. Potential effects will be considered for each phase of the Project as described in Table 22.2-4.

Table 22.2-4. Temporal Boundaries used in the Assessment for Current Aboriginal Use

Phase	Project Year	Length of Phase	Description of Activities
Construction	-2 and -1	2 years	Pre-construction and construction activities
Operations 1	1 - 23	23 years	Active mining in the open pit from year 1 through to year 23.
Operations 2	24 - 28	5 years	Low-grade ore processing from the end of active mining through to the end of year 28.
Closure	29 - 35	7 years	Active closure and reclamation activities while the open pit and TMF are filling.
Post-Closure	36 onwards	50 years	Steady-state long-term closure condition following active reclamation, with ongoing discharge from the TMF and monitoring.

22.2.2.2 Spatial Boundaries

Current Aboriginal Use is characterized within three study areas: the Project Site, a local study area (LSA) and a regional study area (RSA). Each of these is described below.

Project Site

The Project Site consists of the mine site which is defined by a buffer of 500 metres (m) around the primary Project components. Project components include the open pit; the open pit haul road, primary crusher, and ore conveyor; mill plant site with ore processing facilities and intake/outtake pipelines; TMF; overburden, topsoil, PAG waste rock, and non-PAG waste rock stockpiles; and non-PAG and PAG low-grade ore stockpiles.

Local Study Area

The LSA is approximately 2,494 km² and includes the Project footprint (Figure 22.2-1). The LSA encompasses the area where Project components and activities are likely to interact with current Aboriginal uses. The LSA also captures potential interactions with the Project's access route, including areas where Aboriginal users may see or hear the Project.

Regional Study Area

The RSA is approximately 66,376 km² and includes the outer extent of the SFN traditional territory (the historic territory of the North Thompson Division of the Secwepemc), and the historical Shuswap Lakes Division territory of the Secwepemc (Figure 22.2-1). This area is intended to capture broad potential effects on current Aboriginal use patterns that may occur outside of the LSA.

22.2.2.3 *Technical Boundaries*

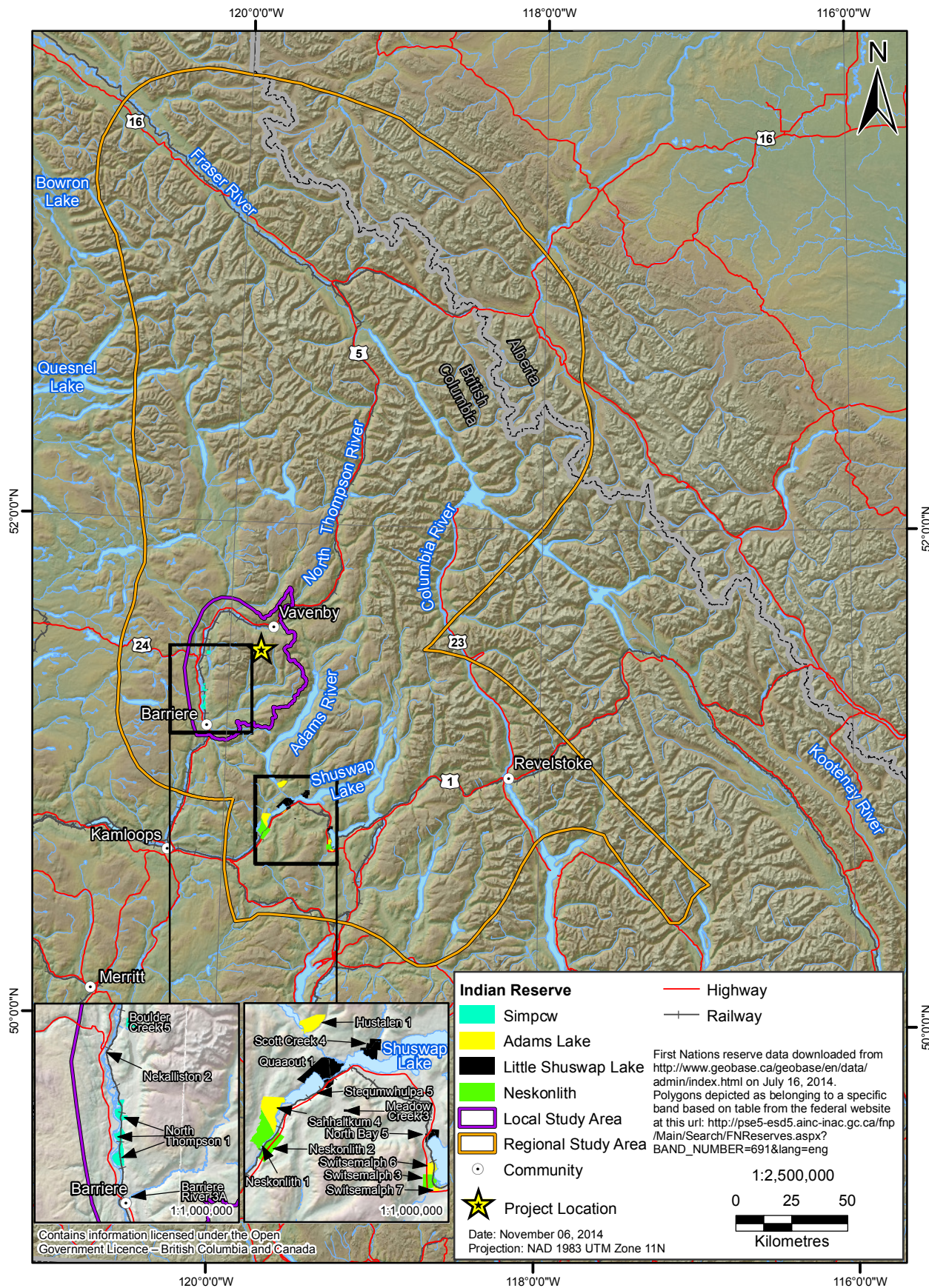
To date, the historical Shuswap Lakes Division members (ALIB, NIB, LSIB) and MNBC have not provided site-specific information on the use of land and resources in the LSA which constrains the analysis of the potential for the Project to impact current use of lands and resources for these Aboriginal groups. YMI has made efforts to engage with these groups in order to collect information from them on current and traditional use. In lieu of detailed information, a conservative approach to the assessment has been taken that assumes, as a member of the Secwepemc Nation, the historical Shuswap Lakes Division bands may at one time have historically used the lands and resources in the vicinity of the Project for economic, social and cultural purposes.

22.3 BASELINE CONDITIONS

22.3.1 Regional and Historical Setting

Secwepemc people lived a semi-nomadic lifestyle, following a seasonal round in accordance with the availability of specific foods. Around November, Secwepemc bands settled in villages composed of semi-subterranean, permanent pit-houses known as *s7istcen* ("winter homes"). The Secwepemc spent the winter months largely reliant on stored foods, particularly salmon. Stored foods were supplemented by dried roots and berries and occasionally complemented by fresh game (Dawson 1892; Teit 1909b). Winter was a time of tanning hides, making clothes and weaving baskets. In April, people began to leave their winter dwellings and split into smaller socio-economic groups. These smaller groups would exploit various animal and plant resources. This would include the collection of roots using digging sticks. The roots would be either dried or cooked in earth ovens. Summer housing consisted of above-ground circular mat lodges, though bark or skins could be substituted as a covering (Teit 1909b). Cambium from a variety of trees was also collected at this time, either to be eaten raw or dried for winter use (Ray 1939). Migrating birds were also taken, using a variety of hunting methods.

Figure 22.2-1
Current Aboriginal Use Local and Regional
Study Areas and Indian Reserves



Hunting, trapping, fishing, gathering sustenance and medicinal plant foods, and pursuing other traditional activities are central to the economies of Aboriginal groups inhabiting the North Thompson River. Salmon is an important country food to the SFN and Lakes Division, procured by various fishing methods. Species hunted included moose, mule and white-tailed deer, and to a lesser extent mountain goat. Plant-derived sustenance foods and medicines are used extensively by these Aboriginal groups, with a reliance on a variety of plants including berries, edible tubers and bulbs, and medicinal plants.

Extensive human development has occurred in the region relating to forestry and recreational use (e.g., recreational fishing and heli-skiing). Within the RSA, 56,443 ha (37.6% of the RSA) have been logged since the forest industry began operations in the area, according to a recent Vegetation Resource Inventory. Approximately half of the logging to date occurred prior to 1960. Consequently, the remaining forest is fragmented, there is high road density and active grazing tenures in the area. Most of the roads are actively used by forestry, recreational users (hunters, hikers, snowmobilers), and travelers (driving between the towns of Vavenby and Barriere).

22.3.2 Baseline Studies

Current Aboriginal use information in the LSA and RSA was collected through desk-based research (which included a literature review of online and hard-copy secondary sources) and the SFN TLU & EKS ([Appendix 22-A](#)). The results of the desk-based research are discussed in Section 22.3.3.

22.3.2.1 Secondary Sources

Secondary information was collected from the following sources:

- Publically available internet and print materials prepared by Aboriginal Affairs and Northern Development Canada (AANDC 2014), and the Ministry of Aboriginal Relations and Reconciliation (BC MARR n.d.);
- Publically available internet and print materials prepared by Aboriginal groups and Aboriginal organizations (e.g., M. Ignace and Ignace 2004; Billy 2006; R. E. Ignace 2008; Secwepemc Nation n.d.; Spirit Map n.d.);
- Ethnohistorical and anthropological literature (e.g., Boas 1890; Dawson 1892; Teit 1909b; Palmer 1975a, 1975b; Bouchard and Kennedy 1979; Coffey et al. 1990); and
- The report of the Indian Claims Commission Inquiry into the Douglas Neskonlith Reserve Claim (ICC 2008).

Documents submitted by proponents of other projects in the southern interior region and available on the BC EAO website were also reviewed including:

- Ajax Mine Project Description (pre-Application);
- Cache Creek Landfill Extension EA Application;
- Ruddock Creek Mine Project Description (pre-Application);
- Interior-Lower Mainland Transmission Line Project EA Application;

- Highland Valley Centre for Sustainable Waste Management EA Application;
- Kamloops Groundwater Project EA Application;
- Ashcroft Ranch Landfill Project EA Application;
- Mica Generating Station Unit 5 EA Application;
- Pingston Creek Hydroelectric Project EA Application; and
- Revelstoke Generating Station Unit 5 EA Application.

Other publically available studies include the Archaeological Overview Assessment (AOA) for the Kamloops Forest District (1994) and other information available for the Kamloops Timber Supply Area (TSA). No additional current Aboriginal use information was available in any of these documents.

HCMC is aware of additional secondary sources, such as the ALIB's and NIB's Traditional Use Study, Phase One Report (1998), and transcripts of testimony from the Indian Claims Commission Inquiry into the Neskonlith Douglas Reserve Claim. However, these documents are not publically available.

22.3.2.2 *Primary Information Sources*

HCMC has made numerous efforts to obtain primary source information related to current use from the Aboriginal groups involved in the review of the proposed Project. Provided below is a summary of YMI's general efforts to obtain traditional and current use information. Details are provided in Section 3.5 of Chapter 3.

Working Tables

In May 2013, the BC EAO requested YMI conduct additional consultation with Aboriginal groups to obtain information: on past and current Aboriginal interests in the vicinity of or in relation to the area of the Project; potential impacts of the proposed Project on those Aboriginal interests; and measures that could be used in the proposed Project's design or operation to avoid, mitigate, or otherwise address those potential impacts. In response to this request, YMI prepared and distributed a set of eight Working Tables to the SFN, ALIB, NIB and LSIB in July 2013 to engage on the identification of potential Project impacts and YMI's proposed mitigation measures. The Working Tables addressed issues raised by Aboriginal groups as being of potential concern from an environmental, socio-economic, heritage perspective, or from the perspective of Aboriginal interests and rights. These issues were grouped as follows:

- water and water quality;
- fish and fish habitat;
- vegetation and plant communities;
- air quality and noise;
- environmental impacts on wildlife;
- cultural and archaeological sites;
- socio-economic effects; and
- access to traditional use sites.

Simpcw First Nation

YMI funded the TLU & EKS, prepared by the SFN (2012). The study details the culture and history of the Secwepemc Nation. The SFN provided the public version of the report to YMI on September 4, 2012. SFN gave YMI permission to include the report in the Application/EIS submitted to the BC EAO and the CEA Agency in March 2013. The TLU & EKS was provided to the ALIB, LSIB, and NIB as an appendix to the 2013 submission.

YMI provided SFN with the opportunity to review and comment on the following studies, summaries, and reports (date in bracket refers to the date the document was first provided):

- Socio-economic Baseline Report (September 2012) and the First Nations Socio-economic Overview of the March 2013 Application (September 2012; Section 11.3.1 of previously submitted Application);
- Archaeological Impact Assessment (AIA) Report (November 2012);
- First Nation Consultation Summary and Planned Application Review Consultation (December 2012);
- Additional Consultation Measures (May 2013);
- Working Tables (July 2013);
- Archaeological Overview Assessment (AOA) Report for Power Line Route Options (May 2014); and
- Work Program for EA Application/EIS review phase (May 2014).

YMI offered capacity funding to the SFN to review and comment on each of the documents identified above. SFN provided comments and updates to the socio-economic baseline report in August 2012, which YMI considered and incorporated into the final version of the report. SFN provided comments on the First Nation Consultation Summary and Planned Application Review Consultation in January 2013. SFN has not commented on the other documents listed to date.

Adams Lake Indian Band

The ALIB provided the BC EAO with a list of plants and animals that would potentially require assessment in June 2011. The species are identified in Section 22.3.3.

YMI provided ALIB with an opportunity to review and comment on the following documents (date in bracket refers to the date the document was first provided):

- Traditional Land Use and Ecological Knowledge Study prepared by the Simpcw First Nation (August 2012);
- Socio-economic Baseline Report (September 2012) and the First Nations Socio-economic Overview of the 2013 Application;
- AIA Report (November 2012);

- First Nation Consultation Summary and Planned Application Review Consultation (December 2012);
- Additional Consultation Measures (May 2013);
- Working Tables (July 2013);
- AOA Report on Power Line Route Options (May 2014); and
- Work Program for EA Application review phase (May 2014).

YMI offered capacity funding to the ALIB to review and comment on each of the documents identified above. To date, the ALIB has not provided comments to YMI on the documents listed above. In addition to funding provided to the ALIB by the BC EAO in September 2012, on July 10, 2013, YMI wrote to ALIB offering additional capacity funding ([Appendix 3-G](#)). The capacity funding was meant to support ALIB's review of the Working Tables to assist with the identification of potential effects of the Project on ALIB's Aboriginal interests. In May 2014, YMI offered capacity funding to the ALIB to review the AOA report for the proposed power line route options, and to support the participation of ALIB in a work program for the Application review stage.

Neskonlith Indian Band

YMI provided NIB with the opportunity to review and comment on the following studies, summaries, and reports:

- Traditional Land Use and Ecological Knowledge Study prepared by the Simpcw First Nation (August 2012);
- Socio-Economic Baseline Report (September 2011; August 2012);
- First Nations Socio-Economic Overview and Assessment (Section 11.2.2 of previously submitted Application March 2013);
- AIA Report (November 2012);
- First Nation Consultation Summary and Planned Application Review Consultation (December 2012);
- Additional Consultation Measures (May 2013);
- Working Tables (July 2013; see Section 2.7);
- AOA Report on Power Line Route Options (May 2014); and
- Work Program for Application review stage (May 2014).

NIB provided comments on the First Nations Consultation Summary and Planned Application Review Consultation plan, and provided initial comments on the NIB Socio-Economic Baseline report in November 2012. NIB provided additional comments on the NIB Socio-Economic Baseline Report in December 2013. YMI has incorporated all comments and input into the Application/EIS. NIB also provided comments on the Working Tables which are addressed in the Application/EIS, and incorporated into the issues tracking tables.

Capacity funding was provided by YMI to NIB to update the NIB socio-economic baseline report; review and provide comments on the Working Tables, including information on NIB interests and use of the Project, and the 2012 AIA report; and community engagement meetings to share information and discuss the Project. In May 2014, YMI offered capacity funding to the NIB to review the AOA report for the proposed power line route options, and to support the participation of NIB in a work program for the Application review stage.

Little Shuswap Indian Band

YMI provided LSIB with the opportunity to review and comment on the following documents:

- Traditional Land Use and Ecological Knowledge Study prepared by the Simpcw First Nation (August 2012);
- Socio-economic Baseline Report (September 2012) and the First Nations Socio-economic Overview of the 2013 Application (Section 11.3.1 of previously submitted Application);
- AIA Report (November 2012);
- First Nation Consultation Summary and Planned Application Review Consultation (December 2012);
- Additional Consultation Measures (May 2013);
- Working Tables (July 2013; see Section 2.6);
- AOA Report on Power Line Route Options (May 2014); and
- Work Program for EA Application review phase (May 2014).

LSIB provided comments on the Socio-economic Baseline Report (January 21, 2013), which YMI considered and incorporated into the report. LSIB also provided comments on the Working Tables (incorporated into the issues tracking tables in Table 3-F4 of [Appendix 3-F](#)) and the AOA Report. LSIB did not provide comments on the other documents listed above.

YMI sent letters to LSIB offering capacity funding ([Appendix 3-G](#)) to support LSIB's review of the Working Tables (see Section 23.3.2.2) and to assist with the identification of potential effects of the Project on LSIB's interests. In May 2014, YMI offered capacity funding to the LSIB to review the AOA report for the proposed power line route options, and to support the participation of LSIBs in a work program for the Application review stage.

Métis Nation British Columbia

The MNBC wrote to YMI in December 2011 to indicate the Project area is of cultural and historical significance to Métis, and noted that Métis citizens reside in Barriere, Vale mount, Clearwater and Blue River. YMI wrote to the MNBC in January 2012, August 2012 and July 2014 to request additional information on traditional use or concerns regarding potential Project effects on Métis interests (including the use of lands and resources). No specific information on traditional or current use in the Project site has been provided by MNBC.

22.3.3 Existing Conditions

22.3.3.1 Resource Use

Fish

The Barrière River supports populations of Pink Salmon (*Oncorhynchus gorbuscha*), Chinook Salmon, Sockeye Salmon (*O. nerka*), and Coho Salmon as well as migratory Rainbow Trout, Bull Trout, Mountain Whitefish (*Prosopium williamsoni*), and other non-salmonid fish species. The Barrière River upstream of North Barrière Lake and lower Fennel Creek supports both Coho and Sockeye Salmon populations (DFO 1995; Irvine et al. 1999; Withler et al. 2000; Hobbs and Wolfe 2008).

North Barrière and Saskum lakes are large lakes with similar habitat. Migratory trout, char, salmon, and whitefish inhabit both systems through their connection via the Barrière River (BC MOE 2014b, 2014a). Both North Barrière Lake and Saskum Lake contain sizable populations of Bull Trout, and past surveys suggest that populations are relatively healthy and may be the source of adfluvial spawners for portions of Harper Creek and the Barrière River near Saskum Lake ([Appendix 14-A](#), Fish and Aquatic Habitat Baseline Report).

Fish distribution and diversity in creeks within the LSA are heavily influenced by the presence of permanent barriers to fish migration (i.e., waterfalls, over 20% gradient cascade). These barriers also delineate the boundaries of upper and lower sections of creeks. Figure 22.3-1 shows the spatial distribution of fish-bearing reaches in the fish baseline study area. Table 22.3-1 summarizes the known fish species occurring in the fish study area.

Table 22.3-1. Summary of Known Fish Species Occurrence in the Fish Baseline Study Area

Species Common Name	Species Scientific Name	Barrière River Sub-watershed				North Thompson Watershed	
		Lower Harper Creek	Upper Harper Creek	T Creek	P Creek	Baker Creek	Jones Creek
Bull Trout*	<i>Salvelinus confluentus</i>	X	X	X	X	X	
Coho Salmon†	<i>Oncorhynchus kisutch</i>	X				X	X
Rainbow Trout	<i>Oncorhynchus mykiss</i>	X				X	X
Longnose Dace	<i>Rhinichthys cataractae</i>	X					
Mountain Whitefish	<i>Prosopium williamsoni</i>	X					
Prickly Sculpin	<i>Cottus asper</i>	O					
Sockeye/ Kokanee Salmon	<i>Oncorhynchus nerka</i>	O					
Torrent Sculpin	<i>Cottus rhotheus</i>	X					X

* Blue-listed species

† Yellow-listed species

X = indicates that Project-specific sampling was utilized to confirm fish species presence in the Project LSA.

O = indicates that other sources of existing inventory data (e.g., historical literature, Habitat Wizard) were utilized to confirm fish species presence within the LSA.

^a Present below permanent barrier to fish migration (e.g., waterfall, >20% cascade, unsuitable habitat).

Empty cells indicate fish species not present

Figure 22.3-1
Spatial Distribution of Fish-Bearing Reaches

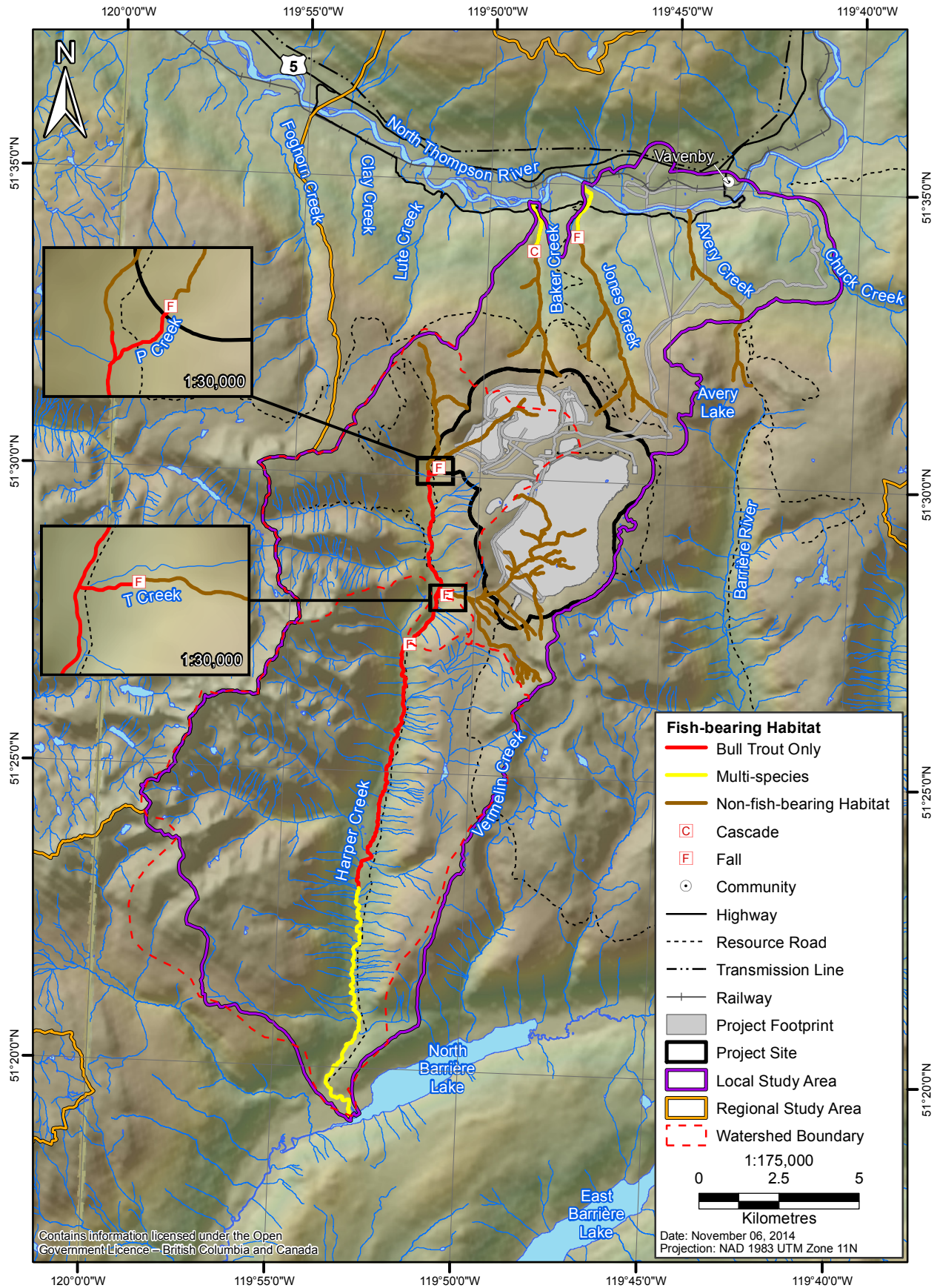


Table 22.3-2 lists fish resources harvested by the SFN based on the information provided in their TLU & EKS ([Appendix 22-A](#)), and information provided by the ALIB to the BC EAO in June 2011. This type of information has not been provided by the NIB, LSIB or MNBC and it is not publically available. Species bolded in the table were selected as Valued Components in the Fish and Aquatic Resources effects assessment (Chapter 14).

Table 22.3-2. Fish Resources Harvested Traditionally by the Simpcw First Nation and Adams Lake Indian Band

Species	Simpcw First Nation	Adams Lake Indian Band
Bull Trout	✓	✓
Chiselmouth		✓
Dolly Varden	✓	✓
Lake trout	✓	✓
Cutthroat Trout	✓	✓
Burbot	✓	✓
Northern squawfish		✓
Peamouth chub		✓
Rainbow Trout*	✓	✓
Redside shiner		✓
River trout	✓	
Salmon, Chum	✓	✓
Salmon, Chinook	✓	✓
Salmon, Coho	✓	✓
Salmon, Pink	✓	✓
Salmon, Sockeye	✓	✓
Kokanee	✓	✓
Sculpin (including prickly, bullhead)	✓	✓
Steelhead trout	✓	✓
Sturgeon (including white)	✓	✓
Sucker (including largescale, longnose, bridgelip, northern mountain, red-mouth)		✓
Whitefish (including mountain)	✓	✓

Note:

Bold text indicates a fish species selected as a valued component in Chapter 14, Fish and Aquatic Resources Effects Assessment.

Vegetation

Vegetation within the LSA varies according to elevation. The LSA is composed of the following biogeoclimatic (BGC) variants: the Thompson Moist Warm Interior Douglas-Fir variant (IDFmw2), the North Thompson Dry Warm Interior Cedar – Hemlock variant (ICHdw3), the Thompson Moist Warm Interior Cedar – Hemlock variant (ICHmw3), the Wells Gray Wet Cool Interior Cedar – Hemlock variant (ICHwk1), the Northern Monashee Wet Cold Engelmann Spruce – Subalpine Fir

variant (ESSFwc2), the Wet Cold Engelmann Spruce – Subalpine Fir Woodland subzone (ESSFwcw), and the Wet Cold Engelmann Spruce – Subalpine Fir Parkland subzone (ESSFwcp).

Extensive human developed has occurred in the region relating to harvesting and recreational use. Within the RSA, 56,443 ha (37.6% of the RSA) have been logged since the forest industry began operations in the area, according to a recent Vegetation Resource Inventory (VRI). Approximately half of the logging to date occurred prior to 1960. Consequently, the remaining forest is fragmented, and there is high road density. There are also active grazing tenures in the LSA. Most of the roads are actively used by forestry, recreational users (hunters, hikers, snowmobilers), and travelers (driving between the towns of Vavenby and Barriere).

Wildlife

The Project's regional wildlife and habitat values are described in the Vegetation and Wildlife Baseline Report included as [Appendix 15-A](#), and are briefly summarized here. The baseline report also includes results from baseline surveys conducted on site which are summarized in Section 16.4.3.

Moose and mule deer occur in the RSA, although the area occurs at sufficiently high elevation that snowfall likely limits their use of the wildlife RSA in winter. Neither grizzly bears nor caribou are common in the RSA, partially due to the levels of existing disturbance, and high road density but a few observations of grizzly bears were made during baseline studies. Fisher and wolverine occur in the RSA, though they are not abundant. A variety of migratory birds occur in the RSA, including raptors (bald eagle, northern goshawk) and a variety of upland birds, including listed species such as barn swallow, common nighthawk, and olive-sided flycatcher. Western toad also occurs in ponds in the LSA. Bats were also recorded in the LSA, although the area is likely too high elevation, and therefore too cold, to support bat hibernacula.

The RSA lies within "Region 3 – Thompson" of the Hunting and Trapping Regulations Synopsis; four Management Unit (MU) boundaries (3-37, 3-38, 3-41, and 3-42) divide up the RSA (BC MFLNRO 2012b). The hunting of ungulates, furbearers, large carnivores, waterfowl, and game birds takes place throughout the RSA.

Table 22.3-3 lists wildlife resources harvested by the SFN based on the information provided in their TLU & EKS ([Appendix 22-A](#)), and information provided by the ALIB to the BC EAO in June 2011. This type of information has not been provided by the NIB, LSIB or MNBC and it is not publically available. Species bolded in the table were selected as VCs in the wildlife effects assessment (Chapter 16).

Plants

The Project area is composed of seven Biogeoclimatic Ecosystem Classification variants, which include the: Thompson Moist Warm Interior Douglas - Fir variant (IDFmw2; 375 to 1,150 m); the North Thompson Dry Warm Interior Cedar - Hemlock variant (ICHdw3; 450 to 1,200 m); the Thompson Moist Warm Interior Cedar - Hemlock variant (ICHmw3; 450 to 1,600 m); Wells Gray Wet Cool Interior Cedar - Hemlock variant (ICHwk1; 500 to 1,500 m); Northern Monashee Wet Cold Engelmann Spruce – Subalpine Fir variant occurs (ESSFwc2 1,300 to 1,800 m); Wet Cold Engelmann Spruce – Subalpine Fir Woodland subzone (ESSFwcw; 1,600 to 2,000 m); and Wet Cold Engelmann Spruce – Subalpine Fir Parkland subzone (ESSFwcp; >1,800 m).

Table 22.3-3. Wildlife Resources Harvested Traditionally by the Simpcw First Nation and the Adams Lake Indian Band

Species	Simpcw First Nation	Adams Lake Indian Band
Badger	✓	
Bear (including black, grizzly)*	✓	✓
Beaver	✓	✓
Caribou	✓	✓
Coyote		✓
Deer (including mule, whitetail, blacktail)	✓	✓
Duck (various species)	✓	✓
Eagle (including bald, golden)	✓	✓
Elk	✓	✓
Fisher	✓	✓
Fox	✓	✓
Mountain goat	✓	✓
Goose	✓	✓
Grouse (including spruce, blue, ruffed)	✓	✓
Hare (including snowshoe)	✓	✓
Lynx	✓	✓
Marmot	✓	✓
Marten	✓	✓
Mink	✓	✓
Moose	✓	✓
Muskrat		✓
Otter		✓
Pheasant		✓
Porcupine	✓	✓
Rabbit		✓
Raccoon	✓	
Sheep (including bighorn, mountain)	✓	✓
Skunk	✓	
Squirrel (including northern flying, red)	✓	✓
Swan		✓
Turtles	✓	✓
Weasel	✓	
Wolf		✓
Wolverine		✓

Note:

This table is not an exhaustive list and it is not intended to represent the importance placed on wildlife resources harvested by the Aboriginal groups. Species bolded in the table were selected as valued components in Chapter 16, Wildlife and Wildlife Habitat Effects Assessment.

Table 22.3-4 lists plant resources harvested traditionally by the SFN based on the information provided in their TLU & EKS ([Appendix 22-A](#)), and information provided by the ALIB to the BC EAO in June 2011. The traditional use plant list was reviewed by a botanist. Species included in this list were either not expected to be impacted by the Project, common throughout the LSA, introduced species, or do not occur in the area. Based on the review of the list of traditional use plants and an understanding of the Project, traditional use plants will have an unmeasurable or negligible interaction with the Project. Traditional use plants are excluded from the Terrestrial Ecology effects assessment (Chapter 15). The rationale for exclusion of each of these plants from the effects assessment is provided in [Appendix 15-C](#).

Table 22.3-4. Plants and Berries Harvested Traditionally by the Simpcw First Nation and the Adams Lake Indian Band

Species	Simpcw First Nation	Adams Lake Indian Band
Alder (including mountain, sitka)	✓	✓
Alumroot (including round-leaved)	✓	✓
Alyssum (including hoary)	✓	
Arnica	✓	
Arrowhead (including arumleaf, broadleaf)		✓
Avens (including mountain, drummonds, eightpetal, yellow, large-leaved)	✓	✓
Ball-headed waterleaf	✓	
Balsamroot (including arrow-leaved, sunflower)	✓	✓
Bearberry	✓	✓
Bilberry	✓	✓
Birch (including paper, white, canoe, silver)	✓	✓
Bitterroot	✓	✓
Biscuit root (including desert parsley, hog-fennel, cous, camas)	✓	
Blackberry	✓	✓
Black twinberry (including honeysuckle)	✓	✓
Blueberry (including dwarf, oval-leaved, highbush, mountain, oval-leaved bilberry)	✓	✓
Brown-eyed Susan (Blackeyed Susan)	✓	
Brunchberry		✓
Camas (including blue sweet, edible, black)	✓	✓
Cambium- of the black pine, yellow pine, and aspen	✓	✓
Canada goldenrod	✓	✓
Cascara	✓	✓
Cattail	✓	✓
Western red cedar	✓	✓

(continued)

Table 22.3-4. Plants and Berries Harvested Traditionally by the Simpcw First Nation and the Adams Lake Indian Band (continued)

Species	Simpcw First Nation	Adams Lake Indian Band
Celery (including wild, Indian, Angelica)	✓	✓
Cherry (including choke, better, pin, bird, wild, red)	✓	✓
Chicory	✓	
Cinquefoil	✓	✓
Clematis (including white, blue)	✓	✓
Common horsetail	✓	✓
Cottonwoods (including black, giant)	✓	✓
Cow parsnip		✓
Cranberry (including bush)	✓	✓
Currant (including northern black, prickly)	✓	✓
Devil's club	✓	✓
Elderberry (including red, blue)	✓	✓
Falsebox		✓
False Solomon's seal	✓	✓
Fern (including bracken)	✓	✓
Fir (including subalpine, interior douglas)	✓	✓
Fireweed	✓	✓
Gooseberry (including wild)	✓	✓
Grasses (including reed canary grass, orchardgrass, cheatgrass, quackgrass, bluegrass, Kentucky, pine)	✓	✓
Hawthorn	✓	✓
Hazelnuts (including beaked, filbert, cobnut)	✓	✓
Hellebore (including Indian, white)	✓	✓
Hemlock (including western, water)	✓	✓
Huckleberry (including black)	✓	✓
Juniper (including common, rocky mountain)	✓	✓
Kinnikinnick	✓	✓
Lamb's quarter (Pigweed)	✓	
Lemonweed (stoneseed)	✓	✓
Lily (including tiger, Yellow avalanche, Sagebrush mariposa, Chocolate, sagebrush, glacier, wood, yellow-pond)	✓	✓
Lovage (including wild, canby's)	✓	✓
Maple (including rocky mountain, douglas, vine)	✓	✓
Mint (including field)	✓	✓
Mock orange	✓	✓

(continued)

Table 22.3-4. Plants and Berries Harvested Traditionally by the Simpcw First Nation and the Adams Lake Indian Band (continued)

Species	Simpcw First Nation	Adams Lake Indian Band
Moss (including black, sphanum)	✓	✓
Mountain valerian	✓	✓
Mushrooms (including puffball, shaggy manes, morel, oyster, pine, cottonwood)	✓	✓
Onion (including wild, nodding)	✓	✓
Oregon grape (including tall)	✓	✓
Parsnip (including Indian, carrot, cow, water)	✓	✓
Parsley (including wild, fern-leaved desert, large fruited desert, sevale desert, wild carrot, Indian sweet potato, hog-fennel, biscuit root, cow)	✓	✓
Pine (including lodgepole, whitebark, white, ponderosa, princess)	✓	✓
Plantain (Rattlesnake, common)	✓	✓
Prickly-pear cactus	✓	✓
Queen's cup		✓
Raspberry (including wild, black, creeping)	✓	✓
Red-osier dogwood	✓	✓
Rose (including wild, baldhip, wood, prickly, nootka, dwarf wild)	✓	✓
Roundstem bulrush		✓
Sagebrush (including big, white, buttercup, pasture, northern wormwood)	✓	✓
Saskatoon berry (Service-berry)	✓	✓
Scouring rush	✓	✓
Silverweed	✓	✓
Skunk cabbage	✓	✓
Spreading dogbane (Indian hemp)	✓	✓
Spring beauty (including leaceleaf)	✓	✓
Smooth sumac		✓
Snowberry (creeping, common, waxberry, snowbush)	✓	✓
Snowbrush backbrush	✓	✓
Soap berry (soopalallie)	✓	✓
Spiny woodfern		✓
Spirea	✓	
Spruce (including Engelmann, white, interior)	✓	✓
Stinging nettle	✓	✓
Strawberry (including wood, wild)	✓	✓

(continued)

Table 22.3-4. Plants and Berries Harvested Traditionally by the Simpcw First Nation and the Adams Lake Indian Band (completed)

Species	Simpcw First Nation	Adams Lake Indian Band
Tea (including trapper's, swamp, Labrador)	✓	✓
Thimble-berry	✓	✓
Trembling aspen	✓	✓
Western waterleaf	✓	✓
Wild bergamot	✓	✓
Wild ginger	✓	✓
Wild sarsaparilla	✓	✓
Willows (including wolf, green)	✓	✓
Yarrow	✓	✓
Yew (including western, American)	✓	✓

This type of information has not been provided by the NIB, LSIB or MNBC and it is not publically available.

Physical and Cultural Heritage

In [Appendix 22-A](#), important place names to the SFN are identified; these are shown on Figure 22.3-2. These areas all occur outside of the Project Site but within the Current Aboriginal Use LSA.

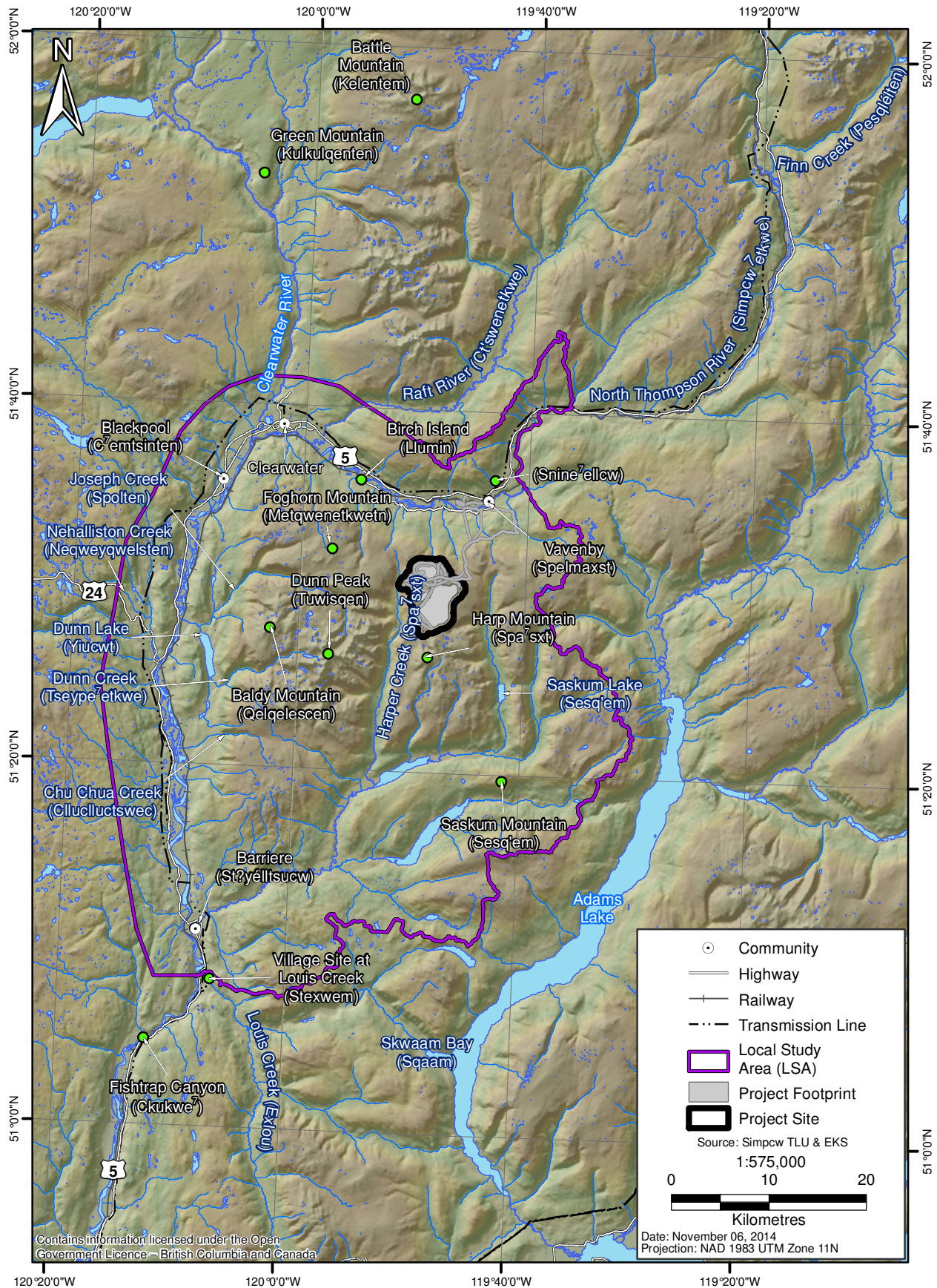
As reported in Chapter 20, Archaeology and Heritage, there are 32 known archaeological sites within the heritage and archaeology RSA (Table 20.4-1). Due to the sensitive nature of archaeological sites, locational information is not shown in the Application/EIS. The majority of the identified archaeological sites (n=25) within the RSA are located in the North Thompson River Valley, with three located along East Barrière Lake, and two along North Barrière Lake. Of the 32 known archaeological sites within the RSA, 28 are prehistoric and 4 are historic.

The 28 prehistoric sites include six sites with only lithic material; two sites that have cultural depressions identified as cache pits; 18 sites that have at least one cultural depression identified as a house pit, with two of these having an associated burial site; and two sites identified as petroforms. The four historic sites contain habitation features, including two potential homesteads, a log cabin, and a railway construction camp.

Of the 32 sites in the RSA, only the two petroform sites - both cairns of undetermined function – are located within the LSA. Both sites were located during the Archaeological Impact Assessment (AIA) of the Project Site, along with several features including a historic corral, a historic trail, post-1846 culturally modified trees, and historic debris (Enns et al. 2014). The Archaeological Overview Assessment (AOA) identified five areas of archaeological potential in previously undisturbed areas extending from the Vavenby-Saskum FSRs and along the two power line route options (Anderson 2014; [Appendix 20-B](#)). These areas are located immediately northeast of the Project Site, north of the TME, east of the Overburden Stockpile and along the two proposed power line route options near the North Thompson River and the Southern Yellowhead Highway (Highway 5).

Figure 22.3-2

Important Place Names in the Local Study Areas



Navigation and Trails

Of the eight watercourses that will potentially interact with the Project, the lower section of Harper Creek and the North Thompson River are considered navigable based on historic and current use. There is documented use of the North Thompson River and the lower section of Harper Creek. According to the Simpcw First Nation Traditional Land Use and Ecological Knowledge Study ([Appendix 22-A](#)), Simpcwetkwe (the Secwemptsin word for the North Thompson River):

...occupies a significant spatial, transportation, and resource presence within the study area, and flows through the middle of Vavenby and Birch Island, the mouth of Raft River (Raft River Mouth camp), Little Fort, Chu Chua, and Chinook Cove. Similarly, Harper Creek and Harper Creek Valley from Birch Island to North Barrière Lake occupy an equally significant spatial transportation, habitation, resource harvest, and water source corridor. These two routes were well established and remained well used as integral to Simpcwemc life, as they are today.

There is a well-developed multi-purpose trail network in the RSA, currently managed by Recreational Sites and Trails BC (BC MFLNRO 2013). Trails that overlap the LSA are known as the Foghorn-Harp Snowmobile Trails (see Chapter 18, Figure 18.4-14). Within the RSA, there are seven additional groups of trails including:

- Adams Plateau Snowmobile Trail, south of Barrière Lake;
- Seven Sisters Barriere Backcountry Horse Trails located west of Barriere;
- Dunn Peak Trail within the Dunn Peak Protected Area;
- McCorvie Lake Trail to North Barrière Lake beyond Highway 5;
- Baldy Mountain Lookout near Little Fort;
- Candle Creek XC Ski Trails in Clearwater; and
- East Barrière Lake Trail.

22.3.3.2 *Simpcw First Nation*

Baseline Data Sources

Current use baseline information summarized in this section is based on information provided through YMI's consultations with the Simpcw (see Section 22.3.2.2 and Chapter 3, Information Distribution and Consultation) and from secondary information sources (see Section 22.3.2.1 and [Appendix 22-A](#)).

Fishing

As described in Section 4.5 of the Simpcw TLU & EKS, the Simpcw traditionally harvested salmon including Spring, Sockeye and other fish species in Finn Creek (in the RSA), Raft River (in the RSA), and the North Thompson River within Simpcwul'ecw (part of which is in the LSA; [Appendix 22-A](#)). In Fishtrap Canyon, south of Barriere, salmon traps in the form of a fence were constructed to capture salmon. The Simpcw also used spears, nets, gaffs and jigs to catch other fish species from

the shoreline of the North Thompson River, Barrière River (LSA), Louis Creek (mouth at the edge of the LSA), Raft River and other contributing creeks and small rivers, as well as from some of the trout lakes on either side of the North Thompson Valley, and Dunn Lake (LSA) ([Appendix 22-A](#)).

Although the Simpcw have not identified specific fishing sites or areas in upper Harper Creek, they have indicated they fish for Bull Trout in upper Harper Creek, and Rainbow Trout in the LSA; Sockeye, Coho, Chinook, Bull Trout and Rainbow Trout from the North Thompson River; and Sockeye, Coho and Chinook salmon from the Barrière River (Tables 4 and 5, Simpcw TLU & EKS).

Based on Schedule G-1 of the Comprehensive Fisheries Agreement (2008), Simpcw current fishing locations include:

- Raft River using a harpoon/spear, seine net and fence net for Sockeye and Chinook salmon;
- North Thompson River mainstem near Barriere using gill net for Sockeye and Chinook salmon;
- Clearwater River using dip net for Chinook Salmon;
- Barrière River using fence for Sockeye Salmon;
- Dunn Creek using fence for Coho Salmon; and
- Holmes River using a dipnet for Chinook Salmon.

Hunting and Trapping

As indicated in Section 4.5 of the Simpcw TLU & EKS, Simpcw meat harvesting activities focussed on caribou, grouse, waterfowl and turtle, as well as moose, elk, Big Horn sheep, deer, porcupine, marmot, occasionally grizzly bear, black bear and mountain goat, in accordance with the seasonal movements and availability of sustainable food ([Appendix 22-A](#)). Animals trapped included beaver, marten, fisher, fox, black bear, lynx, and bobcat (for trade) and rabbit, muskrat, marmot, badger and wolverine (for subsistence use). According to the Simpcw TLU & EKS, Simpcw historically shared caribou hunting territories from north of Adams Lake, throughout the TumTum, Oliver, Finn, and Avola Creek Areas with members of the historical Shuswap Lakes Division ([Appendix 22-A](#)). Documented hunting sites are outside of the Current Aboriginal Use LSA but within the RSA.

Baldy Mountain (Figure 22.3-2; in the LSA) was identified by the Simpcw as home to small, but sufficiently numerous herds of mountain caribou. Harp Mountain (in the LSA) was also identified by Simpcw as a place where caribou were hunted in the past. Due to past and current forestry and other activities in this area, the Project Site is not managed for caribou, and there is no evidence of current hunting in the Project site or LSA. Harp Mountain was identified generally as a harvesting and food gathering area.

Section 4.6 of the TLU & EKS identifies two historical traplines that cross the Project Site and another within 5 km of the north boundary of the LSA. The Simpcw TLU & EKS notes the loss of habitat and limited returns on fur in the late 1960s which resulted in reduced trapping activities and trapline maintenance of these lines ([Appendix 22-A](#)).

Tables 1 and 2 in the Simpcw TLU & EKS identify traditional harvesting and processing sites within the LSA and RSA. The tables do not specify current use on what is harvested or processed at each location. Table 3 of the Simpcw TLU & EKS identifies the wildlife species important to SFN that may be impacted by the Project. The SFN have not provided information on where these species are hunted.

The Simpcw indicate the Project is in “prime Mountain caribou habitat” and that caribou migrate through the LSA (Section 10 of the TLU & EKS; [Appendix 22-A](#)). The Kamloops LRMP (1995) planning table established special management zones primarily to address forest practices within mountain caribou ranges in the region. The area between Dunn Peak and Adam’s Lake (included the LSA) was not included in the special management zones, likely due to high road density, forest harvesting and habitat fragmentation. The 2002 Provincial strategy classified this area as extirpated (Mountain Caribou Technical Advisory Committee 2002) and it was not included in the area identified by the Federal recovery strategy for caribou.

No caribou tracks were observed during baseline snow-tracking surveys. An incidental observation of caribou tracks was reported at an unspecified location along Harper Creek Forest Service Road by Summit (2009), and two additional potential tracks were recorded in the LSA. It was not confirmed if these were in fact tracks; therefore, caribou use of the LSA is likely limited (Section 16.4.3.13).

Mountain caribou were assessed for potential Project-related effects (Table 16.6-38). All three potential effects were scoped out of the assessment for caribou. Caribou were considered a VC because they are a species of interest; however, because they are not present in the LSA (Section 16.4.3.13; [Appendix 15-A](#)), no effects are expected to interact with mountain caribou. To date, the Simpcw have not identified current hunting and trapping areas within the Current Aboriginal Use LSA.

Plant Gathering

As indicated in Section 4.5 of the Simpcw TLU & EKS, the Simpcw gathered a variety of different plant species, including fir, horsetail, mosses and grasses (in the Spruce-Subalpine Fir zone), paper birch, red cedar, and Kinnikinnick (in the Interior Cedar-Hemlock zone), and Saskatoon, *Xusem* (soapberry), wild potato, balsam root, and black cottonwoods (in the Interior Douglas Fir zone) ([Appendix 22-A](#)). Table 3 of the Simpcw TLU & EKS identifies plant species important to SFN that may be impacted by the Project which includes wild rose, blueberry, juniper, desert parsley, Indian celery, biscuit root or camas, cinquefoil, and Saskatoon.

Tables 1 and 2 of the TLU & EKS identify traditional food gathering sites in the LSA and RSA. Sites in the LSA include areas near Vavenby, Harp and Vavenby Mountains, Harper Creek, along the North Thompson River from Vavenby to Messiter, north and south shores of the North Thompson River between Vavenby and Clearwater, and the south side of the North Thompson River, and both sides of Chuck Creek.

Use of Habitations, Trails, and Cultural and Spiritual Sites

As indicated in the Simpcw TLU & EKS, historic winter villages were located in the North Thompson River at Vavenby, Birch Island, Finn Creek, Louis Creek, and Barrière River (all within the LSA)

(Appendix 22-A). Simpcw camped near Clearwater (in the LSA) during resource gathering activities. Other camping locations during extended harvesting trips were in highland areas, such as at Foghorn Mountain, Saskum Mountain, Harp Mountain, and Chu Chua Mountain, all within the LSA (Figure 22.3-2).

Tables 1 and 2 in the Simpcw TLU & EKS identify traditional place names (Figure 22.3-2), habitations, sacred places and transportation routes within the LSA and RSA. Transportation routes in the LSA include from Clearwater Peak, southeast to the Adams River, including Raft Peak, Vavenby, and Harp and Vavenby mountains. Another transportation route was located on the south side of the North Thompson River, Jones Creek watershed south to Sesq'uem Lake. There was also a transportation corridor along Harper Creek, and from East Barrière and North Barrière Lake, up Harper Creek to Birch Island. The Simpcw TLU & EKS indicates these transportation corridors were used for hunting, gathering and trapping.

22.3.3.3 *Shuswap Lakes Division (Adams Lake Indian Band, Neskonlith Indian Band, Little Shuswap Indian Band)*

Baseline Data Sources

Current use baseline information summarized in this section is based on information provided through YMI's consultations with the ALIB, NIB and LSIB (see Section 22.3.2.2 and Chapter 3, Information Distribution and Consultation) and from secondary information sources (see Section 22.3.2.1).

Available secondary source information indicates the ALIB, NIB and LSIB hunting, trapping, and plant gathering sites and areas, as well as the use of habitations, trails and cultural landscapes, are utilized collectively as members of the historical Shuswap Lakes Division.

Fishing

Based on Schedule G-1 of the Comprehensive Fisheries Agreement (2008), ALIB current fishing locations include:

- Little Shuswap Lake using a gill net set from communal fishing boat for sockeye and chinook;
- Scotch Creek using the stock enumeration weir for sockeye;
- Lower Adams River using dip nets, gaffs, and spears for sockeye and chinook; and
- South Thompson River, Little River and Shuswap Lake near the mouth of Adams River using beach seine for sockeye and chinook.

NIB current fishing locations include:

- South Thompson River using gill net for sockeye and chinook; and
- Little Shuswap Lake using gill net for sockeye and chinook.

The north side of the South Thompson River at the Neskonlith Indian reserve (outside the RSA) is a favoured salmon fishing place of the NIB. Traditionally the village at Neskonlith was known as Celewt. Many drying racks were once set up along the river as people speared salmon into the fall. Ice fishing was done in the winter months. Today the Neskonlith fish at night using spears and smoke the salmon the way it was done traditionally (Secwepemc Nation n.d.). McGillvary Creek, which runs through Sun Peaks Resort, was traditionally fished for Dolly Varden, though that no longer appears to be the case (Billy 2006).

Based on Schedule G-1 of the Comprehensive Fisheries Agreement (2008), LSIB current fishing locations include:

- Little Shuswap Lake and Little River using a gill net for sockeye and chinook; and
- Scotch Creek with the aid of a sockeye counting fence.

LSIB issues fishing permits to its own members (LSIB n.d.).

Based on the review of publically available secondary source materials identified in Section 22.3.2, and YMI's consultations with the ALIB, NIB, and LSIB no Shuswap Lakes Division fishing sites or areas have been identified within the Current Aboriginal Use LSA.

Based on consultations undertaken by YMI to date, MNBC has not raised any issues or concerns related to Project's impact on fish and fish habitat. MNBC have also not identified any specific fishing areas within the Current Aboriginal Use LSA, and have not raised any issues related to their ability to access fishing areas

Hunting and Trapping

The hunting area known as *Mumix* is located approximately 75 miles from the Adams Lake and Neskonlith Indian reserves, at the north end of Adams Lake (in the RSA and outside the LSA) (Secwepemc Nation n.d.).

Hunters would set up camp in this hunting area and stay for extended periods hunting and preserving moose and deer for the winter (Secwepemc Nation n.d.). This hunting area may be the same as the areas mentioned by SFN, which include the Tum Tum, Oliver, Finn and Avola Creek headwaters. Skwelkwewkwt (formerly Tod Mountain, now called Sun Peaks, in the RSA) was also an important moose and deer hunting area. Billy (2006) states that prior to the Sun Peaks Resort, people would harvest up to ten moose at a time and preserve the meat by smoking and drying while living in seasonal camps set up on Mt. Morrisey. The Pillar Lake area (Sk'elpakw, in the RSA) was also used for hunting and fishing (Secwepemc Nation n.d.). Scotch Creek (Cemetetkwe, in the RSA) was an important hunting area (Secwepemc Nation n.d.).

Based on the review of publically available secondary source materials identified in Section 22.3.2, and YMI's consultation efforts with the ALIB, NIB and LSIB, no current hunting or trapping areas have been identified within the Current Aboriginal Use LSA.

Plant Gathering

Palmer (1975a) interviewed Secwepemc elders and recorded 135 different plant species within the Lakes Division that were suitable for food, medicine, ceremonial, habitation and technological use. The *Mumix* hunting area at the north end of Adams Lake was also utilized for gathering huckleberries and other berries, as well as gathering cedar roots and medicinal plants (Secwepemc Nation n.d.). Sun Peaks was especially important for harvesting roots (spring beauties & avalanche lilies), berries and medicinal plants. The area between Neskonlith and McGillivray lakes (outside the RSA), was also a fishing, hunting and camping area (Spirit Map n.d.).

Scotch Creek (*Cemetetkwe*) was an important berry picking area. People gathered cedar roots and birch bark here for making baskets. It was also a stopover camp on the travel route from the Neskonlith and Adams Lake Indian reserves to the north end of Adams Lake (Secwepemc Nation n.d.).

Based on the review of publically available secondary source materials identified in Section 22.3.2, and YMI's consultation efforts with the ALIB, NIB and LISB, no Shuswap Lakes Division gathering areas have been identified within the Current Aboriginal Use LSA.

Use of Habitations, Trails, and Cultural Landscapes

In June 2011, ALIB provided BC EAO with a list of archaeological sites in the Kamloops Timber Supply Area that are associated with ALIB traditional use activities. These sites are not recorded in the Heritage LSA and RSA (Table 20.4-1 of Chapter 20). LISB have expressed an interest in understanding the function of the rock cairns discussed in Section 22.3.3.1.

Based on the review of publically available secondary source materials identified in Section 22.3.2, and YMI's consultation efforts with the ALIB, NIB, LSIB, no habitations, trails, cultural or spiritual sites used by the Shuswap Lakes Division have been identified within the LSA.

22.3.3.4 *Métis Nation British Columbia*

Baseline Data Sources

Current use baseline information summarized in this section is based on information provided through YMI's consultations with the MNBC (see Section 22.3.2.2 and Chapter 3, Information Distribution and Consultation) and from secondary information sources (see Section 22.3.2.1).

Within the Thompson-Okanagan region, MNBC have identified historic and traditional pursuits that include subsistence harvesting and trapping (Letter from MNBC to HCMC, December 22, 2011; [Appendix 23-D](#)). HCMC has reviewed information on the MNBC website and asked MNBC for specific information on how the Project may impact their Aboriginal interests. At the time of submission of the Application/EIS no information has been received.

Review of available secondary source materials did not identify any current fishing, hunting, trapping, or gathering sites or areas, or current use of habitations, trails, cultural or spiritual sites used by MNBC within the Current Aboriginal Use LSA or RSA.

22.4 EFFECTS ASSESSMENT AND MITIGATION

22.4.1 Screening and Analyzing Project Effects

The purpose of this section is to identify the potential effects that can result from the interaction of Project components and activities with the current Aboriginal use (i.e., the VC selected in Section 22.2.1.3) in the boundaries selection in Section 22.2.2. Potential effects were identified through professional experience with other mining project Applications/EIS in BC and through consultation with the EA working group as summarized above in Section 22.3.1. A change in current Aboriginal use has the potential to occur through various pathways during the entire life of the Project. Project components and activities that were selected in the scoping process (Section 22.2.1), for each temporal phase are discussed to describe potential effects on current Aboriginal use (Table 22.4-1), which include:

- **Change in access or ability to use land and resource areas** – Construction, operation, closure and post-closure of the Project may adversely affect access to areas currently used by Aboriginal people (e.g., harvesting, processing, and gathering areas, transportation corridors, habitations, sacred sites).
- **Change in the quality of experience of the natural environment** – Noise and the visibility of the Project during construction, operation, closure, and post-closure may adversely affect the quality of experience for Aboriginal people undertaking current uses. This effect may result in Aboriginal people moving to new harvesting areas.
- **Change in the distribution and abundance of resources** – Construction, operation, closure and post-closure of the Project may result in the loss and alteration of wildlife and fish habitat, resulting in a change in the abundance and distribution of resources harvested by Aboriginal people.
- **Change in the quality of resources** – Construction, operation, closure and post-closure of the Project may adversely affect the quality of country foods harvested by Aboriginal people.

High and moderate risk interactions with potential major or moderate adverse effects were identified as those that warrant further consideration and assessment (Table 22.4-1). Interactions of Project components and activities with the potential for negligible or minor expected adverse effects were not further considered in the assessment. Environmental effects were assessed using qualitative and quantitative studies to evaluate the risk of indirect effects on current Aboriginal use. When data was lacking, scientific knowledge, past experience on other mining projects, and/or professional judgement was used to inform this evaluation.

Table 22.4-1. Risk Ratings of Project Effects on Current Aboriginal Use

Project Components and Activities	Current Aboriginal Use
Construction	
Concrete batch plant installation, operation, and decommissioning	●
Hazardous materials storage, transport, and off-site disposal	
Construction of fish habitat offsetting sites	●
On-site equipment and vehicle use: heavy machinery and trucks	
Explosives storage and use	●
Open pit development - drilling, blasting, hauling and dumping	●
Process and potable water supply, distribution and storage	
Auxiliary electricity - diesel generators	●
Power line and site distribution line construction: vegetation clearing, access, poles, conductors, tie-in	●
Plant construction: mill building, mill feed conveyor, truck shop, warehouse, substation and pipelines	●
Primary crusher and overland feed conveyor installation	●
Aggregate sources/ borrow sites: drilling, blasting, extraction, hauling, crushing	●
Clearing vegetation, stripping and stockpiling topsoil and overburden, soil salvage handling and storage	●
Earth moving: excavation, drilling, grading, trenching, backfilling	●
New TMF access road construction: widening, clearing, earth moving, culvert installation using non-PAG material	●
Road upgrades, maintenance and use: haul and access roads	●
Coarse ore stockpile construction	●
Non-PAG Waste Rock Stockpile construction	●
PAG and Non-PAG Low-grade ore stockpiles foundation construction	●
PAG Waste Rock stockpiles foundation construction	●
Coffer dam and South TMF embankment construction	●
Tailings distribution system construction	●
Construction camp construction, operation, and decommissioning	●
Traffic delivering equipment, materials, and personnel to site	
Waste management: garbage, incinerator, and sewage waste facilities	
Ditches, sumps, pipelines, pump systems, reclaim system and snow clearing/stockpiling	●
Water management pond, sediment pond, diversion channels and collection channels construction	●

(continued)

Table 22.4-1. Risk Ratings of Project Effects on Current Aboriginal Use (continued)

Project Components and Activities	Current Aboriginal Use
Operations 1 and 2	
Concentrate transport by road from mine to rail loadout	
Explosives storage and use	
Hazardous materials storage, transport, and off-site disposal	
Fish habitat offsetting site monitoring and maintenance	●
Project Site mobile equipment (excluding mining fleet) and vehicle use	
Fuel storage and distribution	
Mine pit operations: blast, shovel and haul	●
Ore crushing, milling, conveyance and processing	
Process and potable water supply, distribution and storage	
Backup diesel generators	
Electrical power distribution	
Plant operations: mill building, truck shop, warehouse and pipelines	
Progressive mine reclamation	●
Construction of Non-PAG tailings beaches	●
Construction of PAG and Non-PAG Low Grade Ore Stockpile	●
Non-PAG Waste Rock Stockpiling	●
Overburden stockpiling	●
Reclaim barge and pumping from TMF to Plant Site	●
South TMF embankment construction	●
Sub-aqueous deposition of PAG waste rock into TMF	●
Tailings transport and storage in TMF	●
Treatment and recycling of supernatant TMF water	●
Traffic delivering equipment, materials, and personnel to site	
Waste management: garbage and sewer waste facilities	
Monitoring and maintenance of mine drainage and seepage	
Surface water management and diversions systems including snow stockpiling/clearing	●
Low grade ore crushing, milling and processing	
Partial reclamation of Non-PAG waste rock stockpile	●
Partial reclamation of TMF tailings beaches and embankments	●
Construction of North TMF embankment and beach	●
Surface water management	●
Deposit of low grade ore tailings into open pit	●

(continued)

Table 22.4-1. Risk Ratings of Project Effects on Current Aboriginal Use (completed)

Project Components and Activities	Current Aboriginal Use
Closure	
Filling of open pit with water and storage of water as a pit lake	●
Decommissioning of rail concentrate loadout area	●
Partial decommissioning and reclamation of Project Site roads	●
Decommissioning and removal of plant site, processing plant and mill, substation, conveyor, primary crusher, and ancillary infrastructure (e.g., explosives facility, truck shop)	●
Decommissioning of diversion channels and distribution pipelines	●
Reclamation of non-PAG low-grade ore stockpile, overburden stockpile and Non-PAG waste rock stockpile	●
Reclamation of TMF embankments and beaches	●
Removal of contaminated soil	●
Use of topsoil for reclamation	●
Storage of waste rock in the non-PAG waste rock stockpile	●
Construction and activation of TMF closure spillway	●
Maintenance and monitoring of TMF	●
Storage of water in the TMF and groundwater seepage	●
Sub-aqueous tailing and waste rock storage in TMF	●
TMF discharge to T-Creek	●
Post-Closure	
Monitoring and maintenance of mine drainage, seepage, and discharge	●
Reclamation monitoring and maintenance	●
Construction of emergency spillway on open pit	●
Storage of water as a pit lake	●
Storage of waste rock in the non-PAG waste rock stockpile	●
Storage of water in the TMF and groundwater seepage	●
Sub-aqueous tailing and waste rock storage	●
TMF discharge	●

Notes:

* Includes Operations 1 and Operations 2 as described in the temporal boundaries.

● = Low risk interaction: a negligible to minor adverse effect could occur; no further consideration warranted.

● = Moderate risk interaction: a potential moderate adverse effect could occur; warrants further consideration.

● = High risk interaction: a key interaction resulting in potential significant major adverse effect or significant concern; warrants further consideration.

Residual effects to culturally important resources (i.e., fish, wildlife, vegetation) are summarized below in Table 22.4-2; these conclusions will be used to focus the current use assessment so that only those resources with an anticipated impact are evaluated.

Table 22.4-2. Valued Components and Effects Related to Current Aboriginal Use

Valued Component	Potential Effect	Mitigation / Accommodation	Residual Effects		Current Aboriginal Use
			Project Only	Cumulative	
Fish (Bull Trout) Fish Habitat	Changes in surface water quantity	Site Water Management Plan (Section 24.13); Sediment and Erosion Control Plan (Section 24.11); Fish and Aquatics Effects Monitoring and Management Plan (Section 24.6); Fish Habitat Offsetting Plan (Appendix 14-E)	Not significant (moderate)	N/A	Fishing
Fish (Bull Trout in T, P, and upper Harper Creeks; Bull Trout, Coho Salmon, and Rainbow Trout in lower Harper Creek)	Potential for toxicity due to changes in water quality	Mine Waste and ML/ARD Management Plan (Section 24.9); Fish and Aquatic Effects Monitoring and Management Plan (Section 24.6); Selenium Management Plan (Section 24.12); Soil Salvage and Storage Plan (Section 24.14); Site Water Management Plan (Section 24.13); Sediment and Erosion Management Plan (Section 24.11)	Not significant (minor to moderate)	N/A	Fishing
Moose	Habitat alteration and loss	Re-vegetation; Reclamation of Project Site Closure and Reclamation (Chapter 7]	Not significant (minor)	Not significant (minor)	Hunting
Ecological Communities at Risk	Loss of rare plants	Avoidance where possible, protect (dust control), Air Quality Management Plan (Section 24.2) reclamation during Closure	Significant (major)	Unknown	Gathering
Wetlands	Habitat alteration and loss	Closure and Reclamation (Chapter 7) Vegetation Management Plan (Section 24.17) Air Quality Management Plan (Section 24.2)	Significant (major) for loss, Not significant (minor) for alteration	Not significant (minor)	Gathering

(continued)

Table 22.4-2. Valued Components and Effects Related to Current Aboriginal Use (completed)

Valued Component	Potential Effect	Mitigation / Accommodation	Residual Effects		Current Aboriginal Use
			Project Only	Cumulative	
Old growth Forest	Habitat loss	Closure and Reclamation (Chapter 7) Vegetation Management Plan (Section 24.17)	Not significant (moderate)	Not significant (minor)	Gathering
Human Health (Country Foods Quality)	Change in country foods quality;	No hunting or berry collecting at the Project Site. Vegetation Management Plan (Section 24.17); Selenium Management Plan (Section 24.12); Fish and Aquatic Effects Management Plan (Section 24.6); Air Quality Management Plan (Section 24.2); Mine Waste and ML/ARD Management Plan (Section 24.9); Soil Salvage and Storage Management Plan (Section 24.14); Site Water Management Plan (Section 24.13); Sediment and Erosion Control Management Plan (Section 24.11)	Not significant (minor)	Not significant (minor)	Fishing, Hunting, Trapping, Gathering

22.4.2 Analysis of Potential Effects to Current Aboriginal Use

Although Aboriginal groups have expressed concern over culturally important resources (see Section 22.2.1; e.g., Rainbow Trout or salmon migrating upstream into the Barrière River or the presence of rock cairns), to date, the ALIB, NIB, LSIB, and the MNBC have not identified specific fishing, hunting, trapping, gathering areas or traditional sites within the Current Aboriginal Use LSA.

22.4.2.1 *Change in Access or Ability to Use Land and Resource Use Areas*

During the Construction phase of the Project (18 to 24 months), the Project will be accessed by existing public and FSRs; only a 2.5 km section of new access road from the intersection of the Saskum Plateau and the Vavenby-Saskum FSRs to the Project Site will be constructed for the Project. During construction, access to the Project Site will be via Highway 5 (from both north and south bound), the Birch Island Lost Creek Road (BILCR), and several FSRs (Vavenby Mountain, Saskum Plateau, and Vavenby-Saskum FSRs). Oversized loads (overweight and/or over length/width) will be hauled via the BILCR bridge during construction. Upgrades will be required to existing FSRs, including widening and realigning roads to accommodate Project traffic.

During the Operations and Closure phases, access to the Project Site from Highway 5 will be via the Vavenby Bridge Road through Vavenby and then via the Vavenby Mountain FSR, which runs along the western side of Chuck Creek for approximately 6 km before heading west toward Avery Creek and then along the Saskum Plateau and the Vavenby-Saskum FSRs to the Project Site. During Closure, oversized loads would be transported over the BILCR bridge.

One gate will be installed approximately 500 m away from the Project Site. While this will restrict access to potential wildlife and plant resources in the Project Site, access to existing FSRs will be maintained, thereby minimizing effects on access to other locally or regionally available resources.

Because most of the access for the Project already exists, patterns of current use (e.g., effort, timing, harvest pressure, and location) will likely not be altered or impacted.

Fish (Fishing)

The ability of Aboriginal groups to access known preferred salmon, migratory Rainbow Trout, or Bull Trout fishing sites by road, trail, or river (e.g., Barrière River, North Barrière Lake, Harper Creek or Saskum Lake) should continue unaffected by the Project since the access road on the south side of the Project is existing and is not proposed to be used for hauling of concentrate, materials, supplies or personnel.

Two trails and the North Thompson River will be crossed by the power line route with aerial crossings to minimize ground disturbance. These crossings will not obstruct access to traditional fishing sites along the shoreline of the North Thompson River or to sites further north. Access to fishing sites listed in the DFO Comprehensive Fisheries Agreement for the SFN and the historical Shuswap Lakes Division members will not be affected as the Project does not overlap these areas.

The ability of Aboriginal groups to access and use fishing sites near to the Project Site [e.g., upper Harper Creek (SFN)] and which are listed in the DFO Comprehensive Fisheries Agreement [e.g., Barrière River using fence for sockeye (SFN)], will not be affected by the Project. With the implementation of the Traffic and Access Management Plan, there is no expected change in the ability of Aboriginal groups to access traditional fishing sites in the regional area and no residual effects were assessed.

As the historical Lakes Division members (ALIB, NIB, LSIB) and MNBC have not identified any specific fishing sites near the Project site that could be affected and access into the area remains largely unchanged, it is expected that fishing activities will continue unimpeded. No residual effect is identified on access for fishing purposes.

Wildlife (Hunting and Trapping)

The SFN, the historical Lakes Division, and MNBC did not identify any specific current use or traditional hunting or trapping sites within the Project footprint. Road restrictions immediately surrounding the Project Site should not affect access to other local and regional areas (e.g., highland areas around Harp Mountain; Figure 22.3-2) for hunting and trapping purposes because these can be accessed using alternate routes. An important hunting area known as *Mumix* is located some distance (75 miles) away from the Adams Lake and Neskonlith Indian Reserves and access to this site will not be affected by the Project.

No residual changes are expected in the ability of Aboriginal groups to access hunting or trapping areas as a result of the Project.

Vegetation (Gathering)

Although subsistence locations have been identified by the SFN in the LSA ([Appendix 22-A](#)), it is unknown what is being harvested or processed at each of the sites. It is known that the Simpcw gather a variety of different plant species including fir, horsetail, mosses and grasses in the LSA and that food is harvested near Vavenby, Harp and Vavenby Mountains, Harper Creek, along the North Thompson River between Vavenby and Clearwater, and the south side of the North Thompson River, and on both sides of Chuck Creek (Figure 22.3-2). There are numerous alternate access routes into highland areas around Harp Mountain, as well as routes into the Barrière and Saskum lakes and their associated watersheds.

Plant harvesting reported by the historical Shuswap Lakes Division in the *Mumix* hunting area north of Adams Lake, Scotch Creek and in the Sun Peaks area for harvesting roots, berries and medicinal plants will not be affected by the Project.

As none of the known harvesting sites overlap with the Project Site, and access into harvesting areas in the LSA will not be affected, there is no residual effect expected on gathering opportunities.

Use of Traditional Sites (Habitations, Trails, Cultural and Spiritual Sites)

Archaeological sites Eiqw-2 and EjQw-2 are both located within the TMF and will be impacted by the Project during Construction. Avoidance of archaeological sites is the preferred mitigation

measure; however, impacts to these cairns are unavoidable. Once the function of the cairns has been determined, prior to disturbance, mitigation measures will be developed in consultation with local First Nations and the BC Archaeology Branch. **It is currently unknown if these cairns are of historical or cultural significance.** However, once mitigation measures have been implemented, these sites will not be accessible in situ. Given the loss of access to two archaeological sites, an effect **may occur** and this effect is considered further.

Indirect effects on access to traditional sites, including SFN campsites and sacred sites at Harp Mountain, Dunn Peak, Foghorn Mountain, and other places along the North Thompson River or in the Barrière or Saskum lakes valleys (see Tables 1 and 2 in [Appendix 22-A](#)) should not be affected by the Project. The location of archaeological sites identified by the ALIB in a list provided to the BC EAO is unknown. Site-specific traditional site information for the NIB, LSIB, and MNBC is not available in the LSA or Project Site. Due to numerous alternate roads, including SFN trails, available in the LSA to access important traditional sites, the Project is not expected to affect access to other traditional sites.

22.4.2.2 *Change in Quality and Experience of the Natural Environment*

There is a possibility that Aboriginal people conducting traditional activities in the regional area of the Project may experience an adverse effect on the quality of their experience due to noise and visual effects from the Project during construction, operation, and closure. A change to the quality of experience may result in a decreased desire and ability of Aboriginal peoples to carry out traditional activities in favourite locations, avoidance of the area (due to perceived negative experience), or changing the type of traditional practice or area of use, which could impact patterns of current use (e.g., effort, timing, harvest pressure). The possibility of these types of effects occurring in the Project Site or LSA are low as there are no known traditional sites currently used there by any Aboriginal group.

The Visual Quality Assessment conducted for the Project (Chapter 19) concluded that for viewpoints along Highway 5 and the North Thompson River, the east overburden stockpile may be visible, however it is in the middle or background view and partially screened by vegetation. The alteration of the landscape as a result of the Project accounts for a nominal 1% addition to existing disturbances. The Project meets the Visual Quality Objectives (VQOs) developed for the North Thompson Valley in the Kamloops Land Resource Management Plan (KLRMP). Moderate changes in the visual landscape are anticipated at Viewpoint 7 (Granite Mountain), Viewpoint 9 (Harp Mountain) and Viewpoint 10 (Harp Mountain Trail #1). All other viewpoints were predicted to have minor to negligible changes in visual quality. A residual socio-economic indirect effect on SFN gathering activities in the LSA, in the upper Harper Creek and Harp Mountain area is expected. A change in visual quality and experience of the natural environment while engaged in harvesting activities may occur in these locations. Harp Mountain is considered sacred to SFN. Mitigation of visual quality effects includes ensuring Visual Quality Objectives (VQOs) established for the North Thompson River valley are met, and that the Closure and Reclamation Plan is implemented to revegetate disturbed areas as quickly as possible (Chapter 7).

Noise modelling conducted for the Project (Chapter 10, Noise Effects Assessment) shows that daytime (Ld) noise levels only exceed 70 dBA in the immediate vicinity of the TMF and open pit

during the Construction phase. During the Operations 1 and 2 phases, Ld and nighttime (Ln) noise levels will be approximately 70 dBA in the immediate vicinity of the open pit. Noise levels drop to 50 dBA outside of the Project Site and along the mine access road. Modelling of instantaneous noise from blasting shows noise levels at 108 dB extending approximately 3 km in every direction from the centre of the open pit. Blasting will cease at the end of Operations 1 when active mining of the open pit desists.

The potential for visual quality and noise effects to impact current Aboriginal use of resources and traditional sites is discussed in further detail below. A residual effect due to a change in experience of the natural environment in the Harp Mountain area as a result of visual quality and noise effects, is identified as a residual effect on current Aboriginal use and considered further.

Fish (Fishing)

SFN fishing activities along the North Thompson River or the mouth of Harper Creek should not be affected by changes in visual quality. As shown on Figure 19.4-3 (Chapter 19), the Project is not visible from the Barrière or Saskum Lake areas, or along the North Thompson River south of Clearwater. VQOs in the North Thompson River Valley will be met by the Project therefore no residual effect is assessed.

Daytime and nighttime noise during the Construction and Operations phases also should not affect fish harvesters along the North Thompson River Valley since they will be at a sufficient distance from the Project Site and modelled noise levels are lower than thresholds for human annoyance (Chapter 21, Human Health). While instantaneous noise from blasting has the potential to cause human annoyance, there are no known fishing locations within the modeling area as the Project Site is non-fish-bearing (see Figure 14.4-3). All fishing locations (e.g., mouth of Harper Creek or North Thompson River) are at a sufficient distance that noise from blasting will not be loud enough to change the behaviour of fish harvesters.

The historical Lakes Division members (ALIB, NIB, LSIB) and MNBC have not identified any use of fishing sites near the Project site.

Wildlife (Hunting and Trapping)

No specific wildlife resource harvesting sites were identified by SFN, the historical Lakes Division or the MNBC within the Project site. However, while hunting or trapping on Harp Mountain, visual and noise effects may be experienced.

Vegetation (Gathering)

No specific plant resource harvesting sites were identified by SFN, the historical Lakes Division or the MNBC within the Project Site. However, while gathering on Harp Mountain, visual and noise effects may be experienced.

Use of Traditional Sites (Habitations, Trails, Cultural and Spiritual Sites)

Use of SFN campsites, trails and sacred sites in the Harp Mountain area may be impacted by visual and auditory changes. Traditional sites at Dunn Peak and Foghorn Mountain, as well as other locations in the North Thompson River valley and the Barrière and Saskum lakes valleys, are at sufficient distance that noise from blasting will not be loud enough to change the behaviour of users of these locations. As shown on Figure 19.4-3 (Chapter 19, Visual Quality), the Project is not visible from the Barrière or Saskum lake areas, or along the North Thompson River south of Clearwater. VQOs in the North Thompson River Valley will be met by the Project. Minor to negligible changes in visual quality were predicted at viewpoints on Dunn Peak and Foghorn Mountain.

The Project's Closure phase reclamation activities will allow most of the Project land area, except for the area occupied by the waterbodies formed by the open pit and the TMF, to return to its previous uses. About 662 ha of the total footprint area (36%) will be reclaimed by Year 33. Noise effects are anticipated to be minimal during the Closure and Post-Closure phases compared to the Construction and Operations phases, since Project activities would be minimal during the Closure and Post-Closure phases.

22.4.2.3 *Change in the Abundance and Distribution of Resources*

Construction and operation of the Project may change the abundance and distribution of resources harvested by Aboriginal groups, adversely affecting the ability of Aboriginal peoples to successfully collect sufficient resources. These changes may result in broader changes to current use, including changing patterns in timing, location, and effort.

Fish (Fishing)

Changes in the abundance and distribution of fish species selected for assessment (Bull Trout, Rainbow Trout, and Coho Salmon) may occur due to loss of fish habitat or changes in water quality. These effects were assessed in Chapter 14. Activities during the Construction, Operation, Closure, and Post Closure phases of the Project may affect fish resources because of:

- Project-related changes to surface water quantity (e.g., flow reductions) - from the establishment and operation of mine components (e.g., the non-PAG waste rock stockpile, open pit, TMF); and
- Project-related changes to water quality - due to metal leaching, seepage or TMF discharge, sedimentation and erosion, and atmospheric deposition of dust into surface water.

Hydrological modelling (Chapter 12) predicts mine components will reduce monthly stream flows in upper Harper Creek (between P and T Creeks), P Creek and T Creek below Bull Trout habitat thresholds for life stages specific to each stream. In the lower reaches of Harper Creek, predicted flows are sufficient to sustain Bull Trout, Rainbow Trout, and Coho Salmon life history and productivity similar to pre-mine conditions, especially during sensitive low flow summer (October) and winter months (December to March). A Fish Habitat Offsetting Plan ([Appendix 14-E](#)) has been developed to balance the loss of fish habitat in upper Harper Creek, lower P and lower T creeks. While a follow-up program to ensure the offset projects are effective will be implemented, a

moderate residual effect on fish and fish habitat due to changes in water quantity is predicted (Table 22.4-2) because of uncertainty of the effectiveness of the offset measures. The abundance and distribution of Bull Trout in areas near the Project Site (e.g., upper Harper Creek near P and T creeks) may be affected and is carried forward.

Changes in water quality have the potential to affect fish health or abundance (Section 14.5.1.3). The surface water quality model predicts that several parameters (e.g., dissolved cadmium, total copper, and total selenium) may be greater than BC water quality guidelines (Section 14.5.3.2). There is a potential for toxicity in Bull Trout due to changes in water quality in upper Harper Creek, P Creek and T Creek, and in other fish species (e.g., Bull Trout, Rainbow Trout, and Coho Salmon) in areas further downstream. The magnitude of the residual effect to fish decreases with distance from the Project Site (i.e., the residual effects have the lowest magnitude in lower Harper Creek compared to T Creek or upper Harper Creek). Characterization of the residual effects on fish due to changes in water quality found that the predicted concentration of contaminants of potential concern (COPCs) in water were below toxicity thresholds (i.e., the concentration of a parameter in water that causes adverse effects in fish; Section 14.5.3.2 and Section 14.5.3.3). Since the predicted concentrations for the COPCs in water are below toxicity thresholds for fish, it is unlikely that the residual effects on fish will alter the abundance of the fish population due to lethal or sub-lethal effects. Therefore, the potential for water quality to affect abundance and distribution of fish is low, particularly in lower Harper Creek, and only residual effects on abundance and distribution of fish due to water quantity are considered further.

Wildlife (Hunting and Trapping)

Changes in the abundance and distribution of wildlife species harvested by Aboriginal hunters and trappers may occur due to habitat alteration, disturbance and displacement, and mortality. The wildlife effects assessment (Chapter 16) evaluated effects on western toad, migratory birds (barn swallow, common nighthawk, olive-sided flycatcher, harlequin duck), raptors (northern goshawk, bald eagle), bats (fringed myotis, little brown myotis, northern myotis); large mammals (grizzly bear); furbearers (fisher and wolverine); and ungulates (mule deer, mountain caribou, moose). Of these, caribou, moose, deer, wolverine, and fisher were identified as species of importance to the SFN ([Appendix 22-A](#)).

No residual effects are anticipated for fisher, wolverine, or mule deer. Caribou are not present in the LSA, and therefore no effects were anticipated to caribou. The Project is expected to remove up to 34% of potential grizzly bear fall feeding habitat and 21% of potential summer feeding habitat. However, while grizzly bear are considered to be an important species and a conservation concern for SFN, there is no indication from the evidence available that SFN harvesters regularly harvest grizzly bear. The history of forest harvesting, disturbance and the high road density (greater than 2.4 km/km²) already existing in the LSA has likely reduced habitat suitability and use of the area. This is an existing impact from past activities. More than 77.4% and 22.9% of the moose habitat (growing season and security/thermal habitat, respectively) within the LSA will be affected by the Project. Although mitigation may recover some of this lost habitat, the effectiveness of mitigation is unknown. Therefore, a residual effect to moose due to habitat loss is anticipated (Section 16.5.3.6) and a potential change in abundance and distribution in wildlife resources may occur and is carried forward in the assessment.

Vegetation (Gathering)

Changes in the abundance and distribution of plant species harvested by Aboriginal gatherers may occur due to the loss and alteration of plant habitat. Simpcw gather a variety of different plant species (Table 22.3-4). Examples of botanical species harvested include fir, horsetail, mosses and grasses (in the Spruce - Subalpine Fir zone), paper birch, red cedar, and Kinnikinnick (in the Interior Cedar-Hemlock zone), and Saskatoon, *Xusem* (soapberry), wild potato, balsam root, and black cottonwoods (in the Interior Douglas Fir zone; [Appendix 22-A](#)). In the Simpcw TLU & EKS ([Appendix 22-A](#)), SFN listed a number of plants that are important to them and have the potential to be directly impacted by the Project. Some of these plants are likely harvested by SFN gatherers, including rose (hips), blueberry, juniper, desert parsley, biscuit root, chocolate tips, Indian celery, cinquefoil, and Saskatoon berry.

The terrestrial ecology effects assessment (Chapter 15) assessed effects on the following VCs: rare plants, wetlands, old-growth forest, and Ecological Communities at Risk (ECAR). No rare plants listed in Table 15.4-1 were identified by SFN as being harvested. The remainder of these VCs is assumed to contain one or a number of plants harvested by SFN. Residual effects to wetlands are anticipated as a result of habitat loss and alteration; and residual effects to old-growth forest are anticipated as a result of habitat loss. The success of SFN's gathering activities with respect to gathering culturally important plants in the LSA may be adversely affected due to loss and alteration of habitat that may contain these plants in the LSA.

ALIB, NIB, LSIB and MNBC have not identified gathering areas in the LSA. No effects to these groups' gathering activities are anticipated from the Project due to change in abundance and distribution of resources.

22.4.2.4 *Change in Quality of Resources*

Fish (Fishing)

All phases of the Project may affect the quality of fish resources harvested by Aboriginal people due to changes in water quality or bioaccumulation of contaminants through the food chain. The surface water quality effects assessment identified several parameters (e.g., cadmium, copper, and selenium) as contaminants of potential concern (COPCs) for fish and aquatic resources in T Creek, P Creek, upper Harper Creek and lower Harper Creek (see Chapter 13, Section 13.5.3). Fish have the potential to take up COPCs from the aquatic environment and accumulate them in their tissues and the fish can then be eaten by human consumers (Chapter 21, Section 21.5.3.2). However, the residual effects to human health due to changes in fish quality are assessed to be negligible in magnitude, and were assessed to be not significant (minor; Chapter 21.5.4.2). Since effects to human health are unlikely due to changes in the quality of fish, changes in the use of resources due to changes in the quality of fish are not anticipated.

ALIB, NIB, LSIB and MNBC have not identified specific fishing spots on P Creek, T Creek, Baker Creek, or Jones Creek, Harper Creek or Barrière River that are currently used.

Wildlife (Hunting and Trapping)

The surface water quality effects assessment (Section 13.5.3) identified selenium as a COPC for wildlife (see Chapter 13, Section 13.5.3 and [Appendix 13-D](#)). No other COPCs were identified with the potential to affect the quality of terrestrial country foods. Terrestrial country foods, such as wildlife, have the potential to take up COPCs from soil, vegetation, or water and accumulate them in their tissues, which can then be eaten by human consumers (Chapter 21, Section 21.5.3.2). However, the residual effects to human health due to changes in terrestrial country foods quality are predicted to be negligible in magnitude, and were assessed to be not significant (minor; Chapter 21.5.4.2).

SFN hunters and trappers using areas in the LSA, therefore, will not see any changes to the quality of wildlife resources that could affect human health. However, the SFN in their TLU & EKS ([Appendix 22-A](#)) have noted that cases have already been reported of animals being poisoned and killed by contaminated water and vegetation due to industrial development activities occurring in their traditional territory. As such, there is concern that the health and well-being of SFN people may become compromised, and may result in a loss of important subsistence resources integral to the SFN traditional livelihood.

The historical Lakes Division (ALIB, NIB, LSIB) and MNBC have not identified hunting or trapping areas in the LSA.

Vegetation (Gathering)

All phases of the Project have the potential to affect the quality of plant resources gathered by Aboriginal people due to changes in plant quality from deposition of dust onto soil or vegetation, or bioaccumulation of COPCs through the food chain.

Air quality modelling results demonstrate that fugitive dust deposition (“dusting”) on soil and vegetation will be local in nature. Dusting is predicted to occur predominantly in areas closest to the sources of fugitive dust, such as sections along the road and northeastern side of the Project Site.

Berries and other edible vegetation near the Mine Access Road and Project Site may be affected by dust generated by road upgrades, maintenance, and use. However, access to the Project Site will be limited to authorized vehicles from the junction of Vavenby Mountain FSR with BILCR. Since access to the Mine Access Road and Project Site will be restricted, it is unlikely that residents from local communities will harvest country foods that reside or grow within these areas (Section 21.5.3.2).

Exposure of harvesters is low in the area. The SFN, the historical Lakes Division, and the MNBC have not identified gathering areas in the Project Site. No effects to these groups’ gathering activities are anticipated from the Project due to a change in quality of resources.

Summary - Potential for Effects due to Change in Quality of Resources

Changes in the quality of country foods may occur (e.g., changes in tissue metal concentrations), particularly for aquatic organisms such as fish in Harper Creek (Section 21.5.3.2). However, it is unlikely that the concentration of metals in the tissue of the country foods will surpass thresholds for effects in human consumers or result in residual effects to human health that are noticeably

different than baseline conditions (i.e., magnitude of the residual effect is negligible; Section 21.5.3.2). In addition, there is limited potential for human receptor harvesters to collect country foods from the areas closest to the Project where any changes to the quality of country foods are likely to be highest (e.g., due to mitigation measures such as access control). Therefore, this potential effect is not assessed further.

22.4.3 Mitigation Measures

This section identifies measures to mitigate potential effects on Current Aboriginal Use. The anticipated effectiveness of each mitigation measures described below has been identified as low, moderate, high or unknown in Table 22.4-3. These criteria are defined as:

- Low effectiveness: After implementation of the mitigation measure, there is still a major change in the parameter, VC, or discipline from the baseline and a permanent effect.
- Moderate effectiveness: After implementation of the mitigation measure, there is a measurable change in the parameter, VC, or discipline from the baseline but no permanent effect.
- High effectiveness: After implementation of the mitigation measure, there is no change in the parameter, VC, or discipline from the baseline (e.g., it returns to its original condition before the construction of the Project) or an environmental enhancement is evident.
- Unknown effectiveness: The suggested mitigation measure has not been tried elsewhere in similar circumstances and the response of the parameter, VC, or discipline compared to the baseline is unknown.

Table 22.4-3. Proposed Mitigation Measures and their Effectiveness

Potential Effect	Proposed Mitigation Measure	Mitigation Effectiveness (Low/Moderate/High/ Unknown)	Residual Effect (Y/N)
Change in Access or Ability to Use Cultural Sites - loss of rock cairns	Mitigation measures will be developed in consultation with local First Nations and the BC Archaeology Branch	Moderate	Y
Change in Quality and Experience of the Natural Environment - visual quality impact of the Project in the Harp Mountain area)	Visual quality mitigation measures described in Section 19.5.4 of Chapter 19 (Visual Quality Effects Assessment); Closure & Reclamation Plan (Chapter 7); Noise Management Plan (Section 24.10)	Moderate	Y
Change in Quality and Experience of the Natural Environment - noise	Noise Management Plan (Section 24.10)	High	N

(continued)

Table 22.4-3. Proposed Mitigation Measures and their Effectiveness (completed)

Potential Effect	Proposed Mitigation Measure	Mitigation Effectiveness (Low/Moderate/High/ Unknown)	Residual Effect (Y/N)
Change in Abundance and Distribution of Resources - Fish (as a result of changes in surface water quantity and country foods quality)	Diverting non-contact and contact water; maintaining natural networks; reusing contact water to minimize the use of freshwater. Implementing the Fish Habitat Offsetting Plan (Appendix 14-E), surface water management structures (diversion channels); Implementing the Fish and Aquatic Effects Monitoring and Management Plan (Section 24.6), Site Water Management Plan (Section 24.13), and Sediment and Erosion Control Plan (Section 24.11)	Moderate	Y
Change in Abundance and Distribution of Resources - Wildlife (as a result of habitat alteration for moose)	Wildlife Management Plan (Section 24.19), Noise Management Plan (Section 24.10), Spill Prevention and Response Plan; Air Quality Management Plan (Section 24.2), Vegetation Management Plan; Prohibition of hunting by staff within Project Site.	High	Y
Change in Abundance and Distribution of Resources - Gathering (SFN; as a result of loss of wetlands, rare plants, and Old-Growth Forest)	Discourage hunting, fishing, or berry collecting at the Project Site; Vegetation Management Plan; Air Quality Management Plan (Section 24.2); Spill Prevention and Response Plan; Fuel Handling Plan; Mine Waste and ML/ARD Management Plan; Sediment Erosion and Control Plan (Section 24.11); Closure and Reclamation Plan (Chapter 7)	Moderate	N

22.4.4 Predicted Residual Effects and Characterization for Current Aboriginal Use

Residual effects on Current Aboriginal Use in the vicinity of the Project are those effects that remain after mitigation is applied. There are four anticipated residual effects remaining out of the identified potential interactions between proposed Project activities and Current Aboriginal Use. These residual effects relate to a change in resource quality, abundance, and distribution and changes in user experience of the natural environment. When characterizing residual effects, the terms and definitions described in Table 22.4-4 were used.

Table 22.4-4. Definitions of Specific Characterization Criteria for Current Aboriginal Use

Timing*	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Resiliency
Construction Phase		Discrete: effect is limited to the Project Site.	Short-term: effect lasts less than 2 years (e.g., during the Construction Phase of the Project).	One Time: effect is confined to one discrete event.	Reversible: effect can be reversed.	Low: Does not occur in a preferred Aboriginal use site.
Operations Phases (Stages 1 and 2)	Low: Little to no alteration of behaviour is required to carry out the current Aboriginal use.	Local: effect is limited to the Local Study Area.	Medium-term: effect lasts from 2 to 30 years (i.e., encompassing both stages of the Operations phase).	Sporadic: effect occurs rarely and at sporadic intervals.	Partially Reversible: effect can be partially reversed.	Moderate: Occurs in a preferred Aboriginal use site but alternative sites of equivalent value are available
Closure Phase	Medium: At least some behaviours are altered at least some of the time while carrying out the current Aboriginal use.	Regional: effect occurs throughout the Regional Study Area.	Long-term: effect lasts from 30 to 37 years (i.e., effects last into the closure phase)	Regular: effect occurs on a regular basis.	Irreversible: effect cannot be reversed, is of permanent duration.	High: Occurs in a preferred current Aboriginal use area for which there are little to no alternatives of equivalent value
Post-Closure Phase	High: The current Aboriginal use can no longer be carried out in preferred locations and ways.	Beyond regional: effect extends beyond the Regional Study Area.	Future: effect lasts more than 37 years (i.e., effects last into the Post-closure Phase and beyond).	Continuous: effect occurs constantly.		

22.4.4.1 *Characterization and Likelihood of Residual Effects on Current Aboriginal Use – Change in Access or Ability to use Traditional Sites*

Access to the rock cairns will be lost during construction of the TMF. The functions of the rock cairns are unknown. Mitigation will be developed in collaboration with the BC Archaeology Branch and First Nations. Once mitigation measures for these sites have been implemented, this residual effect on current Aboriginal use due to a change in access to a potentially important cultural site is considered:

- **Magnitude** – The magnitude of the effect is assessed as **low** because the function of the rock cairns is unknown and may not be culturally related;
- **Geographic extent** – The loss is constrained to a **discrete** area in the TMF;
- **Duration** – Once mitigation measures have been implemented, the effect will last into the **future**;
- **Frequency**– once the rock cairns are removed, the effect is **continuous**;
- **Reversibility** – once the rock cairns are removed, the effect is permanent; therefore, the effect is assessed as **irreversible**;
- **Resiliency** – both the SFN and the LSIB have expressed interest and concern regarding the function of the rock cairns but there is no documented evidence of use in the Project Site; therefore, the context is assessed as **low** because the rock cairns may not possess Aboriginal heritage value.

Likelihood refers to the probability of the predicted residual effect occurring and is determined according to the attributes identified in Table 22.4-5 below.

Table 22.4-5. Attributes of Likelihood of Effects

Probability Rating	Quantitative Threshold
High	> P80 (effect has > 80% chance of effect occurring)
Moderate	P40 - P80 (effect has 40 - 80% chance of effect occurring)
Low	< P40 (effect has < 40% chance of effect occurring)

If the rock cairns prove to be of cultural importance, there is a high likelihood that this residual effect will occur. Mitigation measures for the rock cairns will be implemented prior to TMF construction, access to these sites would no longer be possible.

22.4.4.2 *Characterization and Likelihood of Residual Effects on Current Aboriginal Use - Change in Quality and Experience of the Natural Environment*

The Visual Quality Assessment concluded that moderate changes in the visual landscape at Viewpoint 7 (Granite Mountain), Viewpoint 9 (Harp Mountain) and Viewpoint 10 (Harp Mountain Trail #1) would occur. Harp Mountain is considered culturally important to SFN. Mitigation measures will assist in minimizing, but not fully preventing, visual impacts at these sites. This may have an impact on the spiritual value of Harp Mountain and the quality of experience of SFN people

visiting the site. This may also have an impact on the enjoyment of the harvesting experience for Aboriginal harvesters using hunting, trapping or gathering areas in the vicinity of Harp Mountain, and possible avoidance of this area in the future.

The residual effect on current Aboriginal use near Harp Mountain due to a change in the experience of the natural environment is considered:

- **Magnitude** - The magnitude of the effect is assessed as **medium** because the Visual Quality Assessment (Chapter 19) predicted a moderate alteration of the landscape at these recreation sites.
- **Geographic extent** - The extent of this effect is **discrete** since visual effects are limited to the immediate vicinity of the Project Site.
- **Duration** - This effect is considered **medium term** as reclamation in Closure and Post-Closure will return some of the landscape to sufficient visual quality.
- **Frequency** - The frequency of the effect is assessed as **regular** and is expected to increase from Construction to Operations as the TMF, Open Pit and Stockpile are developed and become operational.
- **Reversibility** - The effect will be **partially reversible** during the Closure and Post-Closure phases.
- **Resiliency** - The context is considered **high** because Harp Mountain is considered culturally important to SFN.

The likelihood of residual effects due to changes in visual quality is considered a **high** probability. The size of the Project will result in a large viewshed.

22.4.4.3 *Characterization and Likelihood of Residual Effects on Current Aboriginal Use - Change in Abundance and Distribution of Resources*

Fish (Fishing)

Despite mitigation measures, a residual effect to fish (Bull Trout) was predicted in upper Harper Creek (between P and T Creeks), lower P Creek and lower T Creek due to changes in water quantity (Section 14.5.3.2). Bull Trout only occur in the lowermost sections of P- and T-Creeks just upstream of the confluence with Harper Creek. The predicted changes in water quantity in upper Harper Creek between P and T creeks, lower T Creek, and lower P Creek may affect the abundance and distribution of Bull Trout. These sections of stream are likely to experience prolonged periods of decreased water quantity (through Post-Closure for upper Harper and lower P Creek and Operations for lower T Creek) below established threshold and pre-mine levels, resulting in the potential to decrease fish habitat area and reduce Bull Trout population size. These changes in abundance and distribution of Bull Trout could affect SFN harvesting success.

In lower Harper Creek and at fisheries listed in the DFO Comprehensive Fisheries Agreement [e.g., Barrière River using a fence for sockeye (SFN)], in-stream flow modeling predicts there will be no residual effects on Bull Trout, Coho Salmon or Rainbow Trout.

The residual effect on current Aboriginal use due to a change in abundance and distribution of resources for SFN as a result of reduced fishing success is considered:

- **Magnitude** - The effect is assessed to be of **low** magnitude as the effects are restricted to Bull Trout, rather than other culturally important species such as salmon;
- **Geographic Extent** - The effect has a **local extent** since effects are limited to the LSA;
- **Duration** - The water quantity effects on Bull Trout will continue into Post-Closure; therefore, the effect is considered to have a **future** duration;
- **Frequency** - The effect is assessed to be of **sporadic** frequency;
- **Reversibility** - the effect will be **partially reversible** during the Closure and Post-Closure phases or as soon as the Fish Habitat Offsetting Plan is effective at offsetting losses; and
- **Resiliency** - the context is considered **low** because specific fishing sites on Harper Creek are not known to be used as an Aboriginal fish harvesting area.

Wildlife (Hunting and Trapping)

Alteration of moose habitat may adversely affect the success of SFN members' harvesting effort with respect to these resources due to changes in distribution. Reduced hunting success in preferred areas may indirectly affect SFN harvesters by increasing the amount of time and effort expended in acquiring wildlife resources, and also changing the locations of hunts to follow wildlife away from the LSA, into the RSA.

The residual effect on current Aboriginal use due to a change in abundance and distribution of resources of reduced SFN hunting and trapping success for moose is considered:

- **Magnitude** - The effect is assessed to be of **low** magnitude. The Project is not expected to significantly affect the abundance and distribution of these species due to habitat loss and alteration. Moose habitat loss will be minor, localized in extent, and reversible over time. Moose are considered to be resilient to disturbed and fragmented habitat and are common throughout BC;
- **Geographic Extent** - The effect has a **local extent** since effects are limited to the LSA;
- **Duration** - The effect will occur throughout the life of the Project; therefore, the effect is considered to have a **long-term** duration;
- **Frequency** - The effect is expected to be **sporadic**;
- **Reversibility** - The effect will cease after reclamation (**partially reversible**);
- **Resiliency** - The effect is assessed to have low context as there is no indication that the Project area is a preferred hunting location for SFN or the historical Lakes Division or MNBC. SFN have identified critical caribou populations on Harp and Baldy mountains; however no caribou were located in the LSA during baseline studies, and potential caribou use of the LSA has been impacted by past and current forest harvesting. The likelihood that a residual effect due to changes in the abundance and distribution of moose will occur is medium. While the abundance and distribution of harvested resources is a key factor affecting harvesting success, other factors which may also contribute to success (e.g., hunter

skill and quality of harvesting equipment) have not been considered in the assessment. Residual effects on current Aboriginal use are summarised in Table 22.4-6.

Table 22.4-6. Summary of Residual Effects on Current Aboriginal Use

Valued Component	Project Phase (Timing of Effect)	Cause-Effect ¹	Mitigation Measure(s)	Residual Effect
Current Aboriginal Use	Construction, Operations, Closure, Post-Closure	Potential heritage or cultural sites (rock cairns) will be impacted by construction of the TMF.	Mitigation measures will be developed in consultation with local First Nations, and the BC Archaeology Branch.	Change in ability to access or use heritage or cultural sites (rock cairns)
Current Aboriginal Use	Construction, Operations 1 and 2, Closure, Post-closure	Alteration to the visual quality of the landscape because of Project components and activities.	Noise Management Plan (Section 24.10); Visual design principles, Closure & Reclamation Plan (Chapter 7), Re-vegetate disturbed areas not directly affected by the Project during construction and operations; Re-vegetate directly disturbed areas following decommissioning and closure.	Change in quality and experience of the natural environment in the Harp Mountain area – visual quality
Current Aboriginal Use	Construction, Operations, Closure	Changes in surface water quantity in areas with fish habitat due to water management and diversions at the Project Site.	Fish Habitat Offsetting Plan, surface water management structures (diversion channels); Fish and Aquatic Effects Monitoring Plan.	Decrease in resource abundance and distribution of Bull Trout in upper Harper Creek, lower P, and lower T creeks
Current Aboriginal Use	Construction, Operations 1 and 2, Closure	Construction and Operation of Project components will cause habitat alteration for moose.	Wildlife Management Plan (Section 24.19), Noise Management Plan (24.10), Spill Prevention and Response Plan; Air Quality Management Plan, Vegetation Management Plan; Prohibition of hunting by staff within Project Site.	Decrease in abundance and distribution of wildlife resources (moose)

22.4.5 Significance of Residual Effects

The significance determination follows a two-step process; first the severity of residual effects is ranked according to a minor, moderate and major scale. Then, consideration of whether the minor, moderate, or major effects are considered significant or not significant is made, as per the following definitions:

- **Not significant (minor, moderate):** Residual effects have low or moderate magnitude; local to regional geographic extent; short- or medium-term duration; could occur at any frequency, and are reversible or partially reversible in either the short or long-term. The effects on the VC (e.g., at a species or local population level) are either indistinguishable from background conditions (i.e.,

occur within the range of natural variation as influenced by physical, chemical, and biological processes), or distinguishable at the individual level. Land and resource management plan objectives will likely be met, but some management objectives may be impaired.

- **Significant (major):** Residual effects have high magnitude; regional or beyond regional geographic extent; duration is long-term or far future; and occur at all frequencies. Residual effects on VCs are consequential (i.e., structural and functional changes in populations, communities, and ecosystems are predicted) and are irreversible. The ability to meet land and resource management plan objectives is impaired. The significance determination is also illustrated in Figure 8.6-1 in the Methods Chapter 8.

The residual effect on a change in access to traditional site areas (rock cairns) is considered **not significant (moderate)** as the function of the rock cairns is unknown and there is no documented evidence of use on the Project Site by Aboriginal groups. YMI will consult with BC Archaeology Branch and potentially affected First Nations to mitigate potential effects on the loss of the rock cairns, as appropriate.

Overall the residual effect associated with a change in quality and experience of the natural environment on current Aboriginal use is considered **not significant (moderate)**, due to the fact that Harp Mountain is considered a culturally important site to SFN.

Overall the residual effect associated with a change in abundance and distribution of fish resources on current Aboriginal use is considered **not significant (minor)** due to the low magnitude, local extent, reversible nature of the effect, and low context.

Overall the residual effect associated with a change in abundance and distribution of wildlife resources on current Aboriginal use is considered **not significant (minor)** due to the low magnitude, local extent, reversible extent, and low context of the effect.

22.4.6 Confidence and Uncertainty in Determination of Significance

Confidence, which can also be understood as the level of uncertainty associated with the assessment, is a measure of how well residual effects are understood and the confidence associated with the baseline data, modeling techniques used, assumptions made, effectiveness of mitigation, and resulting predictions.

The confidence rating associated with a change in quality and experience of the natural environment on current Aboriginal use is considered **high**, given the soundness of the methodology utilized to determine visual impacts, and that Harp Mountain is documented to be a culturally important site to SFN.

The confidence in the prediction of a residual effect on abundance, distribution, or quality of resources (and subsequently to harvesting success) is **moderate**. While information is available about predicted effects on the abundance and distribution of harvestable resources, little data exists on current Aboriginal harvesters' success rates or location of resource harvesting areas.

22.4.7 Summary of the Assessment of Residual Effects for Current Aboriginal Use

Residual effects for current Aboriginal use are summarised in Table 22.4-7. This includes the associated characterization criteria, likelihood, significance determination, and confidence evaluations.

Table 22.4-7. Summary of Key Effects, Mitigation, Residual Effects Characterization Criteria, Likelihood, Significance, and Confidence

Key Effect	Mitigation Measures	Summary of Residual Effects Characterization Criteria (Magnitude, Geographic Extent, Duration, Frequency, Reversibility, Resiliency)	Likelihood (High, Moderate, Low)	Significance of Adverse Residual Effects		Confidence (High, Moderate, Low)
				Scale (Minor, Moderate, Major)	Rating (Not Significant; Significant)	
Change in ability to access or use heritage or cultural sites (rock cairns)	Mitigation measures will be developed in consultation with local First Nations, and the BC Archaeology Branch.	Low magnitude; discrete extent; far future duration; continuous frequency; irreversible; low resiliency	High	Moderate	Not Significant	Moderate
Change in quality and experience of the natural environment in the Harp Mountain area – visual quality	Noise Management Plan (Section 24.10); Visual design principles, Closure & Reclamation Plan (Chapter 7), Re-vegetate disturbed areas not directly affected by the Project during construction and operations; Re-vegetate directly disturbed areas following decommissioning and closure, re-vegetate disturbed areas not directly affected by the Project during construction and operations; Re-vegetate directly disturbed areas following decommissioning and closure.	Medium magnitude; Discrete extent; medium term duration; regular frequency; partially reversible; high resiliency	High	Moderate	Not Significant	High
Change in abundance and distribution - fishing	Diverting non-contact and contact water; maintaining natural networks; reusing contact water to minimize the use of freshwater. Implementing the Fish and Aquatic Effects Monitoring and Management Plan (Section 24.6), Site Water Management Plan (Section 24.13), and Sediment and Erosion Control Plan (Section 24.11); Fish Habitat Offsetting Plan (Appendix 14-E).	Low magnitude; local extent; future duration; sporadic frequency partially reversible; low resiliency	Moderate	Minor	Not significant	Moderate
Change in abundance and distribution - hunting and trapping	Wildlife Management Plan (Section 24.19), Noise Management Plan (24.10), Spill Prevention and Response Plan; Air Quality Management Plan, Vegetation Management Plan; Prohibition of hunting by staff within Project site.	Low magnitude; local extent; long-term duration, continuous frequency; reversible; low resiliency	Moderate	Minor	Not significant	Moderate

22.5 CUMULATIVE EFFECTS ASSESSMENT

22.5.1 Scoping Cumulative Effects

22.5.1.1 Valued Components and Project-Related Residual Effects

Following the implementation of mitigation measures, four residual effects to Current Aboriginal Use were identified:

- Change in ability to access and use traditional sites – rock cairns;
- Change in quality and experience of the natural environment (visual quality);
- Change in abundance and distribution – fishing; and
- Change in abundance and distribution – hunting and trapping.

22.5.1.2 Defining Assessment Boundaries

Similar to the Project related effects, assessment boundaries define the maximum limit within which the cumulative effects assessment is conducted. Boundaries relevant to Current Aboriginal Use are described below.

The temporal boundaries for the identification of physical projects and activities have been categorized into past, present and reasonably foreseeable projects and are defined as follows:

- **Past:** no longer operational projects and activities that were implemented in the past 50 years. This temporal boundary enables to take into account any future effects from past projects and activities¹.
- **Present:** active and inactive projects and activities; and
- **Future:** certain projects and activities that will proceed, and reasonably foreseeable projects and activities that are likely to occur. These projects are restricted to those that: 1) have been publicly announced with a defined project execution period and with sufficient project details for assessment; and/or 2) are currently undergoing an environmental assessment, and/or 3) are in a permitting process.

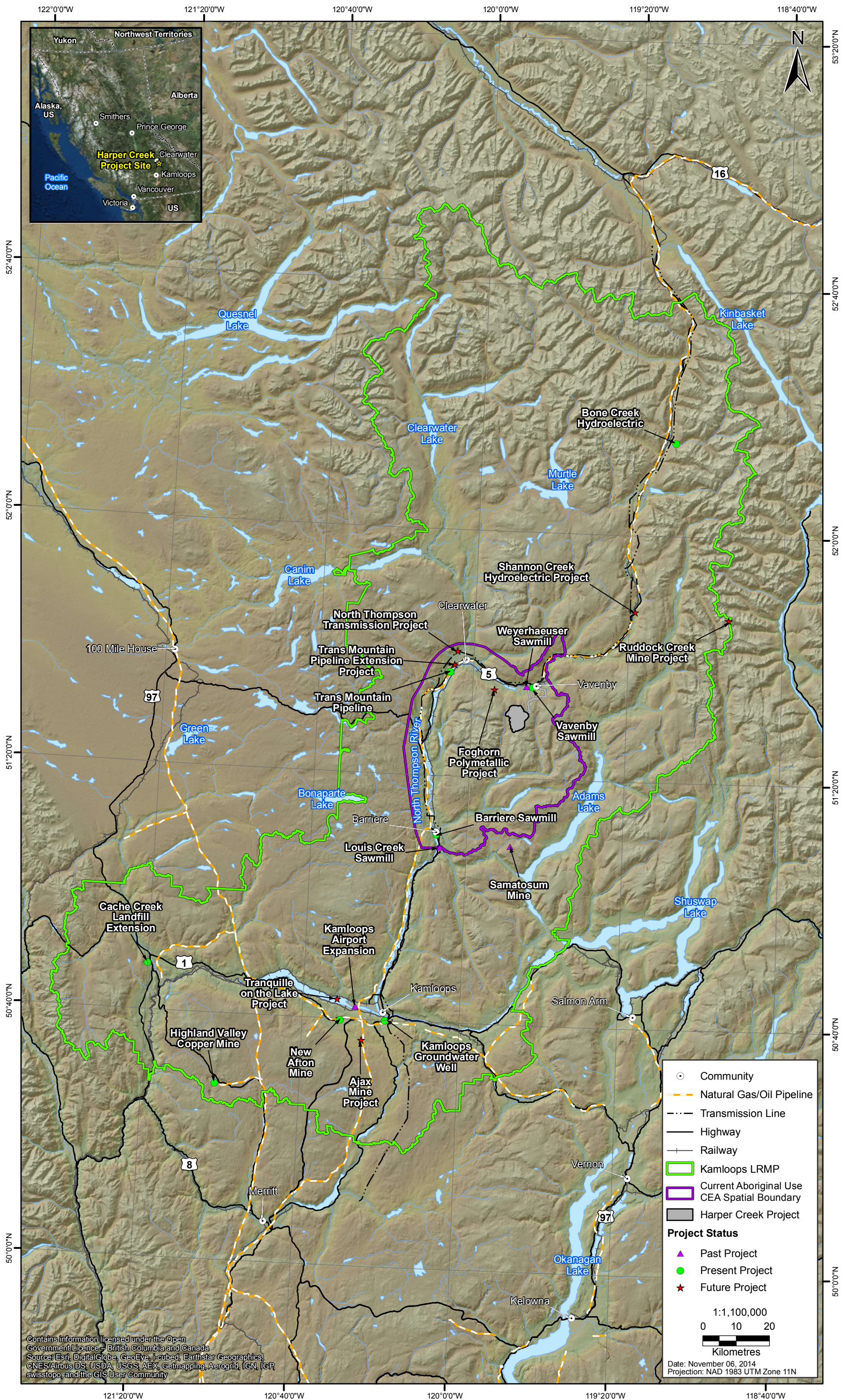
Information on other physical projects and activities has been identified for the Kamloops LRMP boundary² as per the commitments in the AIR (see Figure 8.7-1, Chapter 8). Since all effects to Current Aboriginal Use VCs are local in extent (i.e. restricted to where use of lands and resources overlaps spatially with the Project, which is in the LSA), the LSA will be utilized as the CEA spatial boundary to capture cumulative interactions with Project residual effects. The cumulative effects assessment area for Current Aboriginal Use is shown in Figure 22.5-1.

¹ Far future effects are defined as effects that last more than 37 years, as per Table 8.6-2: Attributes for Characterization of Residual Effects.

² Note that the CEA area only refers to the spatial boundaries for the identification of other physical projects and activities, i.e., the Kamloops LRMP boundary. Each assessment chapter will define its own spatial and temporal boundaries.

Figure 22.5-1

Location of Past, Present and Reasonably Foreseeable Future Projects for the Current Aboriginal Use Cumulative Effects Assessment



22.5.1.3 *Projects and Activities Considered*

Past, present, and reasonably foreseeable future projects and activities within the boundaries described above were considered in the CEA. The project list was developed from a wide variety of information sources, including municipal, regional, provincial, and federal government agencies; other stakeholders; and companies' and businesses' websites. The projects and activities considered in the CEA are presented in Chapter 8 in Tables 8.7-1 and 8.7-2, respectively. The methodology used in the CEA is provided in Chapter 8, Section 8.7. All project-related residual effects were considered for their potential to interact with the projects and activities identified within the CEA area.

22.5.2 **Screening and Analyzing Cumulative Effects**

Table 22.5-1 presents the projects and activities with the potential to interact cumulatively with the predicted residual effects for Current Aboriginal Use identified in Table 22.4-6.

As shown by the table, the activity "Aboriginal Harvest" is essentially the same as the Current Aboriginal Use. No interaction between the residual effect of the Project on Current Aboriginal Use and "Aboriginal Harvest" was indicated since a VC cannot cumulatively interact with itself.

As the rock cairns identified at the Project site can only interact with the Project (since it is within the Project site), no cumulative interaction is possible with any past, present or reasonably foreseeable future projects or activities. This effect is not discussed further.

Past and present projects and activities, including forestry and recreation, have already altered the visual landscape and, in the case of past projects, may have already reclaimed areas utilized during project operations. Any visual quality impacts created by these Projects and activities have already occurred and are presently or not presently visible. Therefore it is not possible for these projects to interact cumulatively with the Harper Creek Project.

Of the four foreseeable future projects in the greater area, namely the Shannon Creek Hydroelectric Project, North Thompson Transmission Project, Trans Mountain Pipeline Extension Project, and Foghorn Polymetallic Project, only the Foghorn Polymetallic project warrants consideration, since the others may be discounted as they would fall outside the areas of potential visibility. There has been no registration reserve under the *Mineral Tenure Act* (1996f) Chapter 292 for uranium and thorium since 2008. As a result, there is a high level of uncertainty as to the timing for the development of this project and whether the project would be constructed during the life of the Harper Creek project. Due to the low likelihood of a cumulative residual adverse effect, and the unknown timeline of the Foghorn Polymetallic Project, further assessment is not warranted.

The residual effects due to the Project on changes in fish abundance and distribution are due to changes in water quantity in P, T, and upper Harper creeks. No past, present, or reasonably foreseeable future projects have spatial interactions with Project residual effects. There are no known water use activities that would spatially overlap with the Project residual effects. Although a number of activities were identified to potentially have a spatial overlap with Project residuals effects to fish (see Figures 14.5-2 to 14.5-5), only fishing and forestry are expected to interact with fish in a manner that might affect abundance or distribution of the resource. No commercial or recreational

fishing has been reported for Harper Creek. Minimal forestry activities were identified within the LSA (see Figure 14.5-2), and the risk of cumulative effects on fish abundance or distribution from forestry activities was determined to be negligible. The other activities, including recreation, mining and mineral exploration, transportation, and agriculture, are not anticipated to interact substantively with fish in a manner that would affect abundance or distribution of fish. Therefore, no interactions between Project residual effects and any other past, present, or future projects are expected. As such, no cumulative effects analysis was carried out, consistent with the results of Section 14.6.1.4 (cumulative effects assessment of the fish VC).

22.5.3 Mitigation Measures

The mitigation measures that can be implemented by HCMC to minimize their contribution to the cumulative effect were identified and considered for their effectiveness in accordance with the methodology described in Chapter 8, Section 8.7.3. Table 22.5-2 outlines the means by which mitigation of cumulative effects was considered in the assessment.

22.5.4 Cumulative Residual Effects and Characterization for Current Aboriginal Use

22.5.4.1 Change in Abundance and Distribution of Resources

Wildlife (Hunting and Trapping)

The residual effect on current Aboriginal use due to a change in abundance and distribution of resources and reduced hunting and trapping success for moose is described in Section 22.4.2.3.

Other present and foreseeable future mining, hydroelectric, and other activities, such as forestry and agriculture have the potential to act cumulatively on wildlife, resulting in a nibbling loss of habitat in the LSA.

Qualitative ranking of potential adverse effects associated with past, present and foreseeable future activities and Projects on moose was based primarily on proximity of these activities and Projects to critical moose winter range habitat. The Weyerhaeuser Sawmill, Vavenby Sawmill, Trans Mountain Pipeline, North Thompson Transmission Project and Trans Mountain Pipeline Expansion are located within Critical Moose Winter Range (CMWR) habitat, which is considered the most limiting habitat for moose. Right of way clearing often creates favourable conditions for moose so the effect of these Projects is unknown. CMWR areas were designated in the Kamloops LRMP and are managed to maintain attributes beneficial to moose.

Moose are currently hunted in the LSA by SFN, though site-specific harvesting locations for moose have not been identified. Given the conclusions of the wildlife CEA and the mitigation planned by the Project, a residual cumulative effect on current Aboriginal use is assessed.

Table 22.5-1. Impact Matrix for Screening and Ranking Potential Cumulative Effects

Residual Effects of the Harper Creek Project on Current Aboriginal use	Past Projects				Present Projects								Reasonably Foreseeable Future Projects							Activities											
	Weyerhaeuser Sawmill	Samatosum Project	Weyerhaeuser Sawmill	Louis Creek Sawmill	Highland Valley Copper	Bone Creek	Trans Mountain Pipeline	Kamloops Groundwater Project	New Afton	Cache Creek Landfill Extension	Vavenby Sawmill	Barriere Sawmill	North Thompson Transmission Project	Ruddock Creek Project	Trans Mountain Pipeline Expansion	Foghorn Project	Tranquille on the Lake	Shannon Creek	Ajax Project	Aboriginal Harvesting	Hunting	Trapping	Fishing	Non-commercial Recreation	Commercial Recreation	Mining and Mineral Exploration	Transportation	Agriculture	Forestry	Water Use	
Change in ability to access and use traditional sites – rock cairns																															
Change in quality and experience of the natural environment in the Harp Mountain area – Visual Quality													●	●	●	●	●	●	●						●	●	●	●	●	●	●
Change in Abundance and Distribution of Resources - Fishing																							●	●	●	●	●	●	●	●	●
Change in Abundance and Distribution of Resources - Hunting and Trapping (moose)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Notes:
 N/A= Not Applicable
 ● = Negligible to minor risk of adverse cumulative effect; will not be carried forward in the assessment.
 ● = Moderate risk of adverse cumulative effect; will be carried forward in the assessment.
 ● = Major risk of adverse cumulative effect or significant concern; will be carried forward in the assessment.

Table 22.5-2. Proposed Mitigation Measures for Potential Cumulative Effects and their Effectiveness

Potential Cumulative Effect	Proposed Mitigation Measure	Mitigation Effectiveness (Low/Moderate/ High/Unknown)	Cumulative Residual Effect (Y/N)
Change in quality and experience of the natural environment	Visual design principles, Re-vegetate disturbed areas not directly affected by the Project during Construction and Operations; Re-vegetate directly disturbed areas following decommissioning and Closure; Noise Management Plan (Section 24.10); Closure and Reclamation Plan (Chapter 7)	Moderate	Y
Change in Abundance and Distribution of Resources - Hunting and Trapping	Wildlife Management Plan (Section 24.19), Noise Management Plan (Section 24.10), Spill Prevention and Response Plan (Section 24.15); Air Quality Management Plan (Section 24.2), Vegetation Management Plan (24.17); Closure and Reclamation Plan (Chapter 7); Prohibition of hunting by staff within Project Site.	Moderate	Y

Characterization of Change in Abundance and Distribution of Resources on Current Aboriginal Use

Wildlife (Hunting and Trapping)

The wildlife CEA concluded that low magnitude cumulative residual effects on the population of moose. In the event that all reasonably foreseeable future projects commence on time and as designed, the cumulative change in harvesting success as a result of the activities of these projects is not expected to change the magnitude, extent, duration, or reversibility of the effect. In other words, the level of impact on harvesting success remains the same with the addition of other Projects and activities.

Likelihood of Change in Abundance and Distribution of Resources on Current Aboriginal Use

The likelihood of cumulative effects to abundance and distribution of moose, and therefore on SFN harvesting success, is **medium** because of the fact that wildlife habitat will be altered as a result of site clearing and infrastructure development for Projects and other activities. However, while the abundance and distribution of harvested resources is a key factor affecting harvesting success, other factors which may also contribute to success (e.g., hunter skill and quality of harvesting equipment) have not been considered in the assessment.

22.5.4.2 Summary of Cumulative Residual Effects on Current Aboriginal Use

A summary of cumulative residual effects to Current Aboriginal Use is provided Table 22.5-3.

Table 22.5-3. Summary of Cumulative Residual Effects on Current Aboriginal Use

	Cause-Effect ¹	Mitigation Measure(s)	Cumulative Residual Effect
Change in Abundance and Distribution of Resources- Hunting and Trapping	Construction and Operation of other Project components and activities in the CEA spatial boundary may cause additional habitat loss for moose.	Wildlife Management Plan (Section 24.19), Noise Management Plan (Section 24.10), Spill Prevention and Response Plan (Section 24.15); Air Quality Management Plan (Section 24.2), Vegetation Management Plan (Section 24.17); Prohibition of hunting by staff within Project site; Closure and Reclamation Plan (Chapter 7)	Cumulative decrease in moose in the wildlife RSA leading to a cumulative change in abundance and distribution of wildlife resources (moose)

22.5.5 Significance of Cumulative Residual Effects

The determination of significance of the cumulative residual effects to Current Aboriginal Use was conducted in a similar manner to that detailed in Section 22.5.4.

Overall the cumulative residual effect associated with a change in abundance and distribution of wildlife resources (for hunting/trapping) on SFN current Aboriginal use is still considered **not significant (minor)** due to the fact that little to no cumulative residual effects to wildlife are anticipated.

22.5.6 Confidence and Uncertainty in Determination of Significance

The confidence in the prediction of a cumulative residual effect on abundance and distribution of resources, and therefore on SFN harvesting success, is **moderate**. While some information is available about predicted effects on the abundance and distribution of harvestable resources, little information exists on current Aboriginal harvesters' success rates.

The cumulative residual effect and its characterization criteria, significance determination, likelihood, and confidence evaluations is summarized in Table 22.5-4.

22.6 CONCLUSIONS FOR CURRENT ABORIGINAL USE

The effects assessment for Current Aboriginal Use concludes that four residual and one cumulative residual effects are anticipated. These are related to a change in access to heritage features in the Project site, change in quality and experience of the natural environment for SFN harvesters and other users of the landscape near Harp Mountain, and changes in the harvesting success of SFN harvesters, due to the change in abundance and distribution of fish and wildlife resources. The Project is considered unlikely to result in significant adverse effects on Current Aboriginal Use.

Table 22.5-4. Summary of Key Cumulative Effects, Mitigation, Cumulative Residual Effects Characterization Criteria, Likelihood, Significance, and Confidence

Key Cumulative Effect	Mitigation Measures	Summary of Cumulative Residual Effects Characterization Criteria <i>(Magnitude, Geographic Extent, Duration, Frequency, Reversibility, Resiliency)</i>	Likelihood <i>(High, Moderate, Low)</i>	Significance of Adverse Cumulative Residual Effects		Confidence <i>(High, Moderate, Low)</i>
				Scale <i>(Minor, Moderate, Major)</i>	Rating <i>(Not Significant; Significant)</i>	
Cumulative Change in abundance and distribution of resources-hunting and trapping	Wildlife Management Plan (Section 24.19), Noise Management Plan (24.10), Spill Prevention and Response Plan; Air Quality Management Plan, Vegetation Management Plan; Prohibition of hunting by staff within Project site; Closure and Reclamation Plan (Chapter 7).	low magnitude; long term duration, continuous frequency; local extent; reversible; low resiliency	Moderate	Minor	Not significant	Moderate

The results of the Project effects assessment and CEA for Current Aboriginal Use are summarized in Table 22.6-1.

Table 22.6-1. Summary of Key Project and Cumulative Residual Effects, Mitigation, and Significance for Current Aboriginal Use

Key Residual Effects	Project Phase	Mitigation Measures	Significance of Residual Effects	
			Project	Cumulative
Decrease in Access to Potential Heritage Sites (rock cairns)	Construction, Operations, Closure, Post-Closure	Mitigation measures will be developed in consultation with local First Nations, and the BC Archaeology Branch	Not significant (moderate)	N/A
Change in Quality and Experience of the Natural Environment	Construction, Operations 1 and 2, Closure, Post-closure	Visual design principles, Re-vegetate disturbed areas not directly affected by the Project during construction and operations; Re-vegetate directly disturbed areas following decommissioning and closure	Not significant (moderate)	N/A
Change in abundance and distribution of resources-fishing	Construction, Operations 1 and 2, Closure	Diverting non-contact and contact water; maintaining natural networks; reusing contact water to minimize the use of freshwater. Implementing the Fish and Aquatic Effects Monitoring and Management Plan (Section 24.6), Site Water Management Plan (Section 24.13), and Sediment and Erosion Control Plan (Section 24.11); Fish Habitat Offsetting Plan (Appendix 14-E)	Not significant (minor)	N/A
Change in abundance and distribution of resources-hunting and trapping	Construction, Operations 1 and 2, Closure	Wildlife Management Plan (Section 24.19), Noise Management Plan (Section 24.10), Selenium Management Plan (Section 24.12); Spill Prevention and Response Plan (Section 24.14); Air Quality Management Plan (Section 24.2), Vegetation Management Plan (Section 24.17); Prohibition of hunting by staff within the Project site.	Not significant (minor)	Not significant (minor)

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