MINISTRY OF ENVIRONMENT
INFORMATION NOTE

August 12, 2013
File:280-30
CLIFF/tracking #: 197092

PREPARED FOR: Honourable Mary Polak, Minister of Environment.

ISSUE: Cosens Bay Road in Kalamalka Lake Park.

Background:

Cosens Bay Road within Kalamalka Lake Park is a single lane dirt road that passes through a significant grassland ecosystem and terminates at approximately 90 private cabins, some now year round homes, along the lake. Prior to park establishment in 1975, the cabin owners, whose lots were originally designated as water access only, were permitted by the previous owner (Coldstream Ranch Ltd.) to use the road to reach their cabins. The road length within the park is approximately 5.1 kilometres.

When the Coldstream Ranch Ltd. lands were acquired by the Province in the mid-1970s for park purposes, the land use advisory committee set up to guide management for the new park indicated that vehicular use of Cosens Bay Road would be phased out over time. BC Parks continued to permit vehicular access to the cabin residents until 1992. In 1992, the BC Parks District Manager closed the road because of environmental and management concerns. In 1994, the cabin owners sued the Crown and the District of Coldstream over the closure of the road. In 1996, the court subsequently ruled that Cosens Bay Road was a public road passable by 'one vehicle at a time'. In 1997, following an appeal by the Province, the BC Supreme Court confirmed its previous decision.

Currently, the main portion of the road (4.6 km) is **not** excluded from the park. A short portion of the road (0.5 km) that travels through the former Kalamalka Lake Protected Area (these lands were added to the park in 2008) is excluded from the park. The Ministry of Transportation and Infrastructure (MoTI) maintains operational jurisdiction and responsibility on the travelled portion of the road (defined as shoulder to shoulder) and makes decisions, in coordination with BC Parks, regarding the level of maintenance of the road.

Due to property subdivision and year round use by a few of the property owners, use of Cosens Bay Road has steadily increased along with pressure from some property owners to improve the road and its maintenance. BC Parks and MoTI, responding to concerns from property owners, have in recent years enhanced the regular maintenance on Cosens Bay Road and improved the overall road safety by creating a few pullouts, improving sight lines and installing signage. However, upgrading the road beyond the existing travelled surface to allow for two lane traffic would not be allowable under the *Park Act*.

In 2011, some of the cabin owners interested in getting hydro service to their properties inquired with BC Parks if a hydro electrical line could be buried alongside the road surface through the park. Any installation of electric utility services for residential

purposes would not meet the requirements set out in the *Park Act* [e.g. section 9(1) and (2) – an interest in land must not be granted unless to do so is necessary to preserve or maintain the recreational values of the park] and therefore would be inconsistent with the Act. A park boundary adjustment to remove land for a hydro line right-of-way would be required and the cabin owners were informed of the park boundary adjustment process.

Local citizens, concerned with protection of park values including the sensitive grassland ecosystem, have in the past expressed concern over the court decision regarding the Cosens Bay Road and continued vehicle use through the park, citing inconsistencies with the original intention at the time of park establishment to phase out the use of the road by vehicles.

Some cabin owners have recently contacted MLA Eric Foster for assistance with regards to obtaining a permit to proceed to install the electric power line under the road.

Discussion:

The desire to improve the road or supply hydro electric power to the cabin community may not be a priority or even desirable to all property owners, as these upgrades may lead to increased property taxes (from increased property value) and an increase in the amount of vehicular access to the community. In the past, property owners have not shared the same vision or spoken from a common voice on the issue of road improvement.

s.12

NEXT STEPS:

s.12

Attachment 1: Park Map

Contact:
Lori Halls, ADM
BC Parks and
Conservation Officer
Service
(250) 387-9997

Alternate Contact:
Ken Morrison, Manager
Planning & Land Admin.
Parks Planning & Mgmt Br.
(250) 356-5298

Prepared by:
John Trewhitt, A/ Regional Dir,
Kootenay Okanagan Region
(250) 490-8249

Reviewed by	Initials	Date
DM		
DMO		
ADM		
Exec Dir Regions	TB	
Exec Dir PPM	ER	Aug 12, 2013
Manager PLA	KM	Aug 12, 2013
Author and Regional Manager	JT	July 31, 2013

Environmental Assessment Document
Cambie Creek Bridges Replacement Project
Final

November 2013

Prepared for:

MMM Group
Vancouver, British Columbia

Suite 200 – 850 Harbourside Drive, North Vancouver, British Columbia, Canada V7P 0A3 • **Tel: 1.604.926.3261** • Fax: 1.604.926.5389 • **www.hatfieldgroup.com**

ENVIRONMENTAL ASSESSMENT DOCUMENT

CAMBIE CREEK
BRIDGES REPLACEMENT PROJECT

FINAL

Prepared for:

MMM GROUP
1455 WEST GEORGIA STREET
VANCOUVER, BC
V6G 2T3

Prepared by:

HATFIELD CONSULTANTS
#200 - 850 HARBOURSIDE DRIVE
NORTH VANCOUVER, BC
V7P 0A3

NOVEMBER 2013

MMM5997.2

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

DISTRIBUTION LIST

The following individuals/firms have received this document:

Name	Firm	Hardcopies	CDs	Email	FTP
Keith Holmes	MMM Group			✓	

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND AND JUSTIFICATION

The Cambie Creek Bridges Replacement Project (the Project) was developed to address concerns with the deteriorating condition of three bridges on Highway 3 (Crowsnest Highway) in Manning Provincial Park (Figure 1). The existing bridges, which span the Similkameen River (aka Cambie Creek), include Upper Cambie Creek Bridge No. 1222 (30 m span between abutments), Cambie Creek Bridge No. 1223 (15 m span) and Lower Cambie Creek Bridge No. 1224 (15 m span). The primary justification for the Project relates to enhanced safety and traffic flow.

The three bridges are scheduled for replacement over the period from 2015 to 2018. As these bridges are located in a Provincial Park there is particular concern over potential environmental impacts.

In order to minimize impacts it will be important to confine Project works to an area within the Ministry of Transportation and Infrastructure (MoTI) right-of-way to the greatest extent possible. This Environmental Assessment Document provides a description of environmental values at the Project sites, potential impacts to those values, proposed measures to avoid or mitigate impacts, and a brief discussion of residual impacts and related compensation measures.

The main environmental constraints associated with the Project include the park lands, the fish bearing Similkameen River and associated tributaries and wetlands, listed vegetation, and wildlife values identified during the desktop review and field survey.

1.2 SCOPE

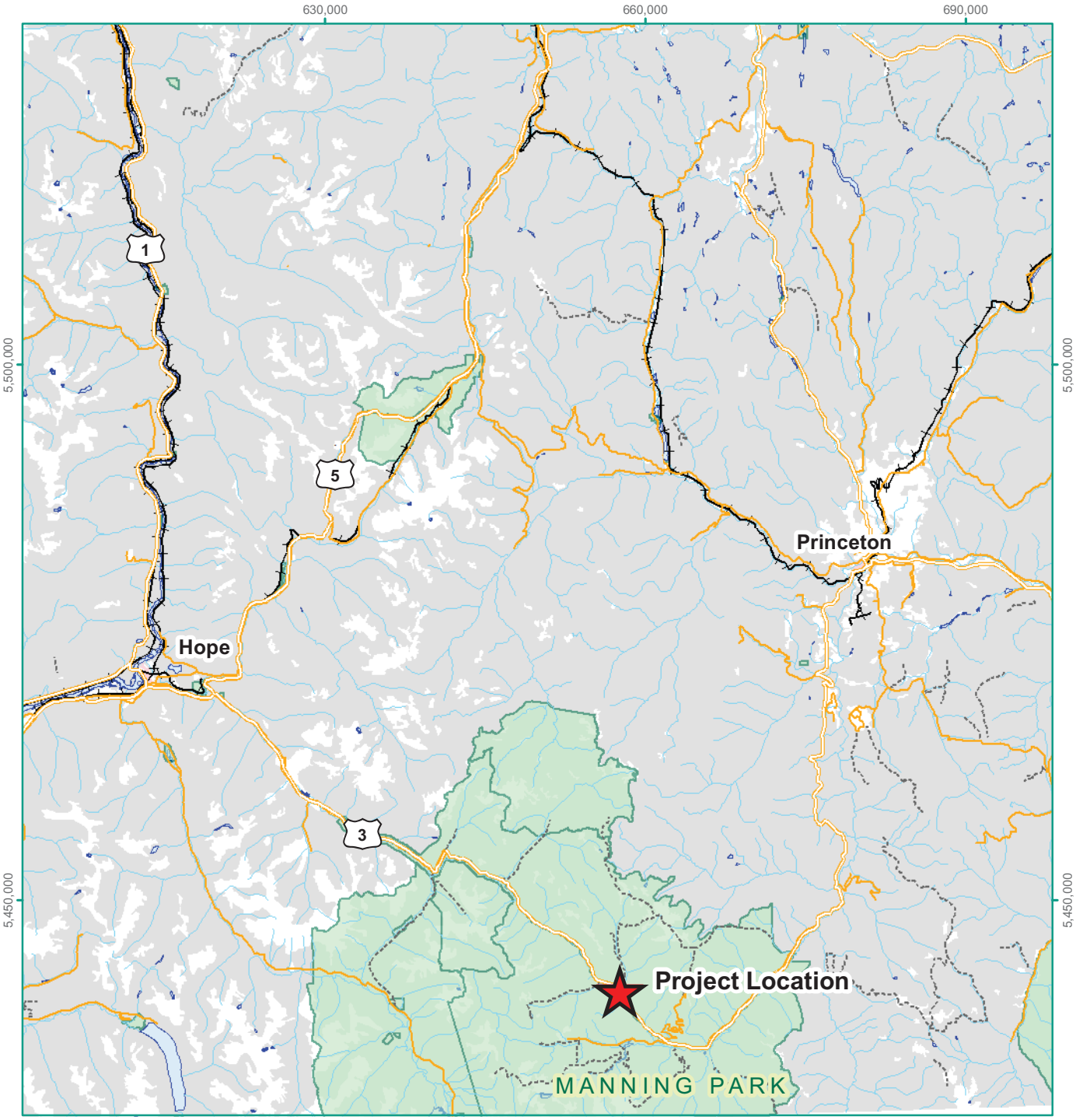
This environmental assessment report provides a review of existing studies and environmental information for the Project areas, and details the results of environmental field studies completed at the Project sites for:

- Fish and aquatic habitat, including riparian areas;
- Watercourse classification;
- Wildlife and wildlife habitat;
- Vegetation and ecosystems within the proposed park boundary adjustment areas; and
- Potential presence of species at risk or provincially listed species.

An archaeological study has been conducted and an independent report produced, which is not included in this document.

On September 5, 2012, biologists from Hatfield Consultants (Hatfield) visited the Project sites to assess environmental values. Aquatic and terrestrial habitat values were assessed in an area 100 m up and downstream of the crossing sites.

Figure 1 Cambie Creek Bridges replacement Project location.



Legend

- Trail
- Railway
- Major Road
- Minor Road
- Provincial Park

0 4 8 16 km

Scale: 1:550,000

Projection: NAD 1983 UTM Zone 10N

Data Sources:

Base data from Canvec 2012

N

Hatfield CONSULTANTS

K:\Data\Project\MMM5997-NV_MXD\MMM5997_A_Overview_20131030.mxd

1.3 PROJECT OVERVIEW AND SCOPE

The locations of the Cambie Creek bridges are shown on the map in Figure 1. Geographic coordinates for the Project sites are as follows:

Name	Code	Site ID	UTM NAD83 10N	
			Latitude	Longitude
Upper Cambie Creek Bridge	1222	C-1222	49° 6'22.62"N	120°50'26.30"W
Middle Cambie Creek Bridge	1223	C-1223	49° 5'30.10"N	120°49'48.93"W
Lower Cambie Creek Bridge	1224	C1224	49° 5'16.20"N	120°49'27.65"W

The proposed bridge structures will replace the existing bridges and will be elevated compared with the current structures.

1.4 REGULATORY CONTEXT

The Similkameen River is an important fish bearing watercourse located within a provincial park and therefore is subject to the highest level of environmental protection.

The proposed Project will largely be contained within the existing MoTI road right-of-way, which runs through Manning Provincial Park lands. Approximately 2.1 ha of parkland will be required to accommodate the Project. Environmental legislation and permits that may be applicable to the Project are summarized below in Table 1.

1.5 CONSULTATION

Consultation with appropriate regulatory agencies will occur as part of the environmental assessment and management process. These agencies include:

- BC Parks for land acquisition and removal of any danger trees outside of the right-of-way;
- Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) is the agency responsible for issuing fish and wildlife salvage permits that may be required, as well as receiving Notifications and granting Approvals under the BC *Water Act*; and
- Fisheries and Oceans Canada (DFO) will be consulted concerning potential impacts to commercial, recreational, and Aboriginal fisheries.

Table 1 Summary of key environmental legislation and regulations applicable to the Project.

Statue	Section / Regulations	Agency	Area of Regulation	Permit or Approval
Fisheries Act	Section 35(1)	Fisheries and Oceans Canada	No person shall carry on any work, undertaking or activity that results in the harmful alteration or disruption, or the destruction, of fish habitat.	A request for Project Review under the Project Notification and Review Application Form.
	Sections 34(1) and 36(3)	Fisheries and Oceans Canada, and Environment Canada	Prohibits the deposit of deleterious substances into waters frequented by fish.	-
Migratory Bird Convention Act	Section 12	Environment Canada	Prohibits injury, molestations, and destruction of migratory birds and their nests.	Surveys required during the bird nesting period.
Water Act	Section 9, Water Regulation, Part 7	MFLNRO	Protects water quality, habitat, and water users by regulating works in and about a watercourse.	An Approval may be required because of the placement of rip rap (140 days needed).
Water Act	Section 8, Water Regulation, Part 7	MFLNRO	Protects water quality, habitat, and water users by regulating works in and about a watercourse.	A short term use of water permit may be required (>90 days needed).
Fish Protection Act	-	Ministry of Environment	Regulates activities that affect flow, fish habitat and riparian areas. Requires the maintenance of flows, the establishment of setbacks, and the designation and protection of sensitive streams.	Compliance only, no permit or approval required.
Wildlife Act	Sections 9, 19, 34 and 35	MFLNRO	Regulates works having impact on wildlife including the damage or removal of beaver dams, the procession, disturbance or destruction of birds, their eggs and nests, and the transportation and procession of carcasses. This act also regulates the collection of freshwater fish from inland waters.	Various permits may be requested for activities such as bird nest removal or relocation (only granted under special circumstances). A fish collection permit will likely be required to salvage fish prior to instream works.
Park Act	Land Use/Occupancy Park Use Permit	MFLNRO	Regulates activities in BC Parks. All activities must align with BC Park's conservation and recreation objectives.	This permit will be required and must be applied for 140 days before project commencement.
Waste Management Act	Special Waste Regulation	Ministry of Environment	Regulates the disposal and storage of hazardous materials and hazardous materials spill reporting.	Application may be required for the transportation, storage or disposal of special wastes
Navigable Waters Protection Act	Part 1 Section 5	Transport Canada	Regulates the obstruction of any navigable water.	Approval received by MOTI.

2.0 PROPOSED PROJECT

2.1 EXISTING INFRASTRUCTURE

The existing bridges are damaged and need to be replaced. There are cracks evident in the bridge structures and large sections of concrete have broken off and been deposited in the watercourse (Figure 2).

Figure 2 Deteriorating condition of the existing Cambie Creek Bridges.

Red marking indicates areas of structural instability at Upper Cambie.

Evidence of rust and damage to the concrete abutment at Upper Cambie.

Evidence of rust and damage to the concrete abutment at Middle Cambie.

Evidence of rust and damage to the concrete abutment at Lower Cambie.

2.2 PROPOSED DEVELOPMENT

2.2.1 Construction Staging

The three bridges are located on Highway 3 (Crowsnest Highway), which connects Hope and Princeton, BC. As such, the bridges must remain open for the duration of the construction of the replacement structures. Construction staging for the new structures will be optimized in order to minimize traffic impacts. The duration of any required bridge closures will be limited to avoid significant traffic delays.

The proposed replacement bridges will span 28 m (Upper and Middle) and 28.5 m (Lower), measured along the control line between abutments. In all three cases the existing abutments will be demolished and rip rap will be used to reinforce the banks under the new bridges. Rip rap will extend from the edge of the new bridge abutments and descend into the channel at a slope of 2H:1V. Rip rap that will be submersed in the stream channel will be covered with the native substrate (Upper Cambie Bridge only).

2.2.2 Demolition of Existing Bridge

Given that the proposed bridges are to be located mostly on the footprint of the existing crossing structures, construction of the new bridges will occur in stages to facilitate traffic movement in the area. In each case, one lane of the new bridge will be constructed within the current bridge footprint and then the bridge will be removed. A demolition plan will be prepared as part of the overall Environmental Management Plan that clearly defines the removal process and the associated environmental mitigation and protection measures that will be implemented.

The existing abutments will not be re-used in construction of the new bridge. As discussed above, the existing abutments will be demolished to allow for installation of the new abutments and support the new rip rap toe (Middle and Lower Cambie Bridges only).

2.2.3 Changes Compared with Existing Bridge Design

2.2.3.1 Upper Cambie Bridge

The existing bridge abutments span 30 m and abutments are currently located in the channel (Figure 3). The western pier is situated below the high water mark but is dry most of the year, while the eastern pier is situated within the wetted area of the stream year-round. The channel under the existing bridge was widened artificially during the installation of the existing bridge in the 1940s and does not reflect the upstream and downstream channel conditions. The hydrotechnical assessment that was conducted by MoTI surveyed the channel 500 m upstream and downstream of the bridge and measured an average width of 15 to 16 m. During the original bridge construction the channel width at the bridge was artificially widened to >19 m. In order to naturalize the channel in this reach of the creek the replacement bridge will reduce the channel width to 16.3 m. The instream piers will be removed and will not be replaced. The bank will be reinforced with rip rap and the rip rap toe will be embedded under natural channel substrate (see Figure 6 and Figure 7).

The proposed fill slope on the east side of the bridge generally follows the existing bottom of bank limit. On the west side of the bridge the proposed fill slope, which extends north towards a small wetland, will extend beyond the existing bottom of bank in many places and will be revegetated to within one metre of the shoulder edge. The new fill slope to the south will also extend beyond the existing bottom of bank and will be reinforced by a berm as part of

seismic mitigation. The only potential environmental impact on the south side will be the berm construction within the 30 m Similkameen riparian area and this will be revegetated as per the directions in Section 4.0.

The primary outfall of the mountain catch basin that flows into the ditch at the northwest end of the alignment has a peak discharge of Q_{25year} = 3.0 m^3/s; this is the primary water source for the wetland located within the alignment. This outfall originates outside of the limit of construction at the west end of the alignment and connects to 80 m of ditch within the limit of construction. The current ditch, which will be maintained as part of the Project, is vegetated and follows a meandering path to the wetland. The section of highway between this feature and the bridge currently has no drainage control, and runoff has eroded the fill slope to the wetland. To control the runoff in this section and prevent bank erosion/sediment deposition, concrete spillways will be installed along the north slope. The three spillways will be designed for a relatively small catchment area and peak discharge (Q_{5year} = 0.027 m^3/s). To control drainage velocity and sediment settling, the fill slopes will be revegetated as described in Section 4.2, and rip rap pads will be placed at the outlet of the catch basin leads and/or the spillway outfalls to dissipate energy. If gulley erosion occurs on the newly constructed fill slopes the eroded areas will be armoured with granular or manufactured fiber blankets.

Figure 3 Existing Upper Cambie Creek Bridge structure panorama.

2.2.3.2 Middle Cambie Bridge

The existing bridge abutments span just over 15 m (Figure 4) and the western abutment is within the wetted area of the stream year-round. The eastern abutment is only seasonally wetted. The new bridge will be 28 m long between abutments and the existing abutments will be cut 100 mm above the existing footings and will not be replaced. The new abutments will be reinforced with rip rap. The rip rap toe will be embedded and any rip rap with potential for submersion will be covered with the native substrate (Figure 8).

Figure 4 Existing Middle Cambie Creek Bridge.

2.2.3.3 Lower Cambie Bridge

The existing bridge abutments span just over 15 m (Figure 5) and the eastern abutment is within the wetted area of the stream year-round. The western abutment is only seasonally wetted. The new bridge will span 28.5 m between abutments. The existing abutments will be cut to 100 mm above the existing footings and will not be replaced. The remaining portion of the existing abutments will be used to support the toe of rip rap revetment around the new abutments (Figure 9).

Figure 5 Existing Lower Cambie Creek Bridge.

2.3 PROJECT SCHEDULE

Bridge replacement is scheduled to commence in the summer of 2015 with the following progression:

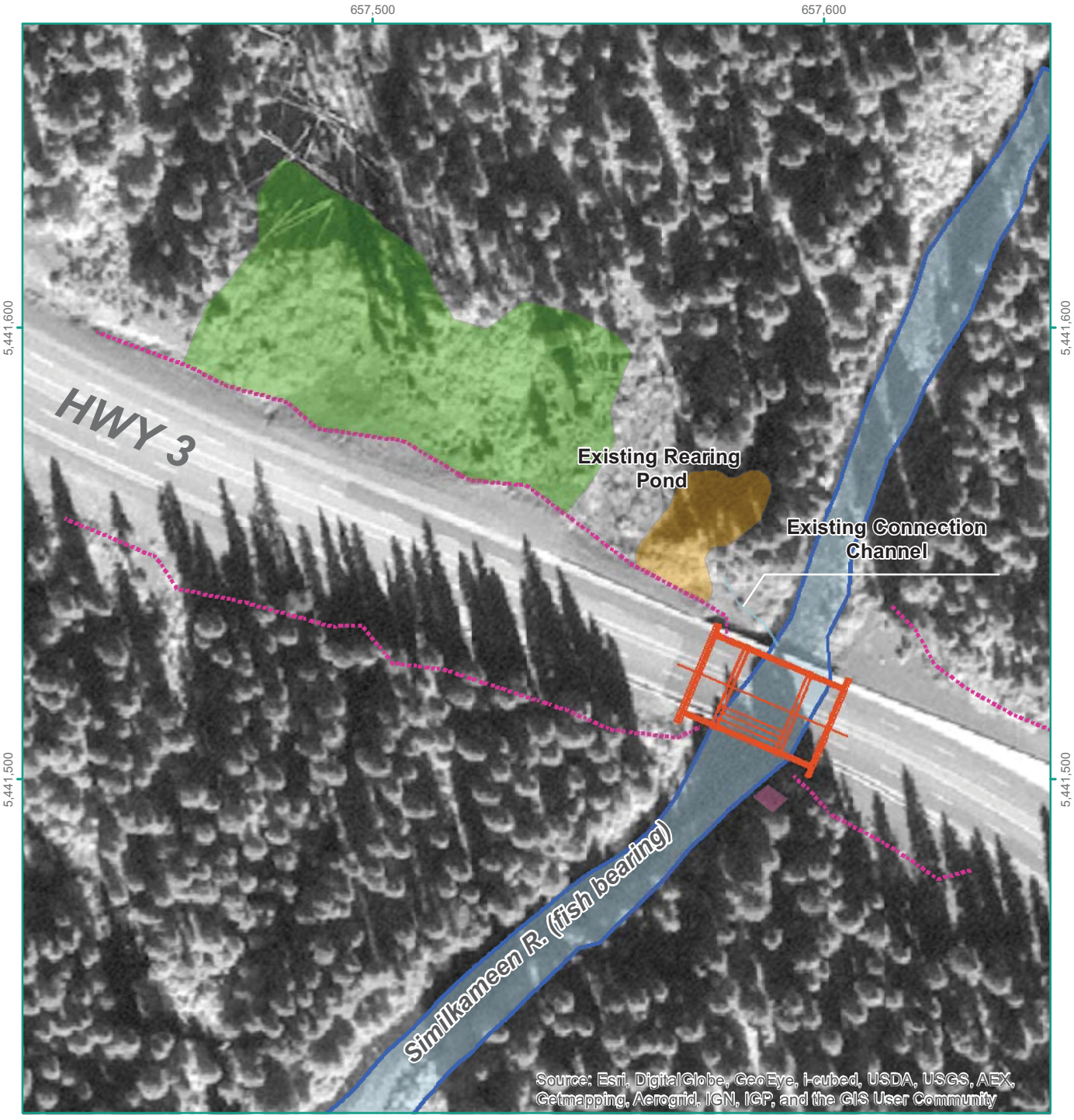
- Upper Cambie Creek Bridge: 2015-2018
- Middle Cambie Creek Bridge: 2016-2018
- Lower Cambie Creek Bridge: 2016-2018

2.4 STAKEHOLDER CONSULTATION

As part of the Project environmental assessment, MoTI is working with BC Parks in order to establish Project limits, discuss the removal of danger trees if required, acquire additional lands to accommodate the Project (Section 3.3.1), and establish appropriate mitigation measures.

MoTI is also leading consultation with First Nations, as well as the required archaeology assessment for the Project.

Figure 6 **Existing environmental values at the Upper Cambie Creek Bridge Project site.**



Legend

- Existing Bridge
- Existing Toe of Slope
- Water Edge
- Existing Connection Channel
- Existing Rearing Pond
- Smooth Willowherb
- Wetland

0 10 20 40 m

Scale: 1:1,300

Projection: NAD 1983 UTM Zone 10N

N

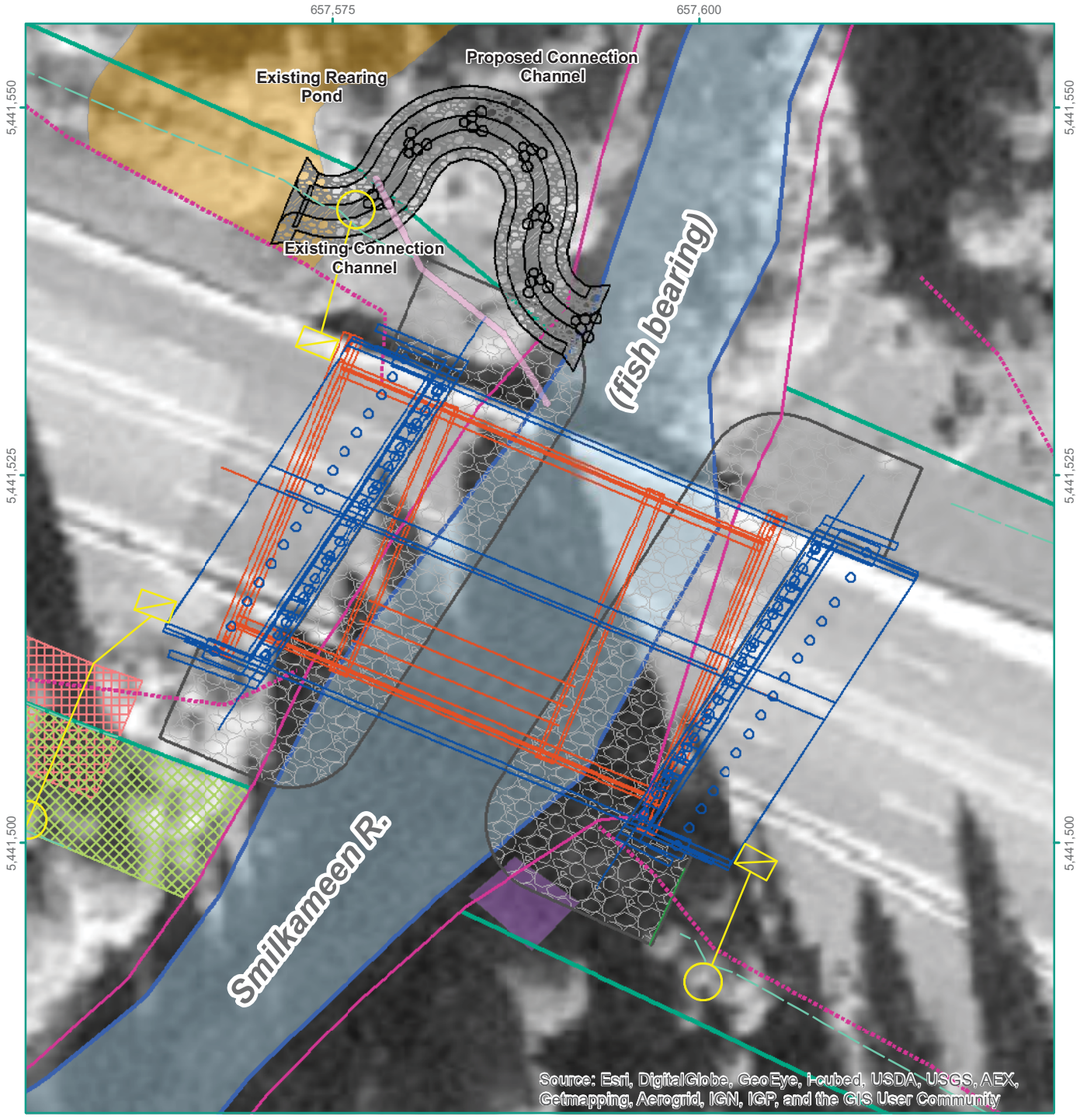
Data Sources:
Base data from Canvec 2012

Hatfield CONSULTANTS

Background Image:
High resolution 50cm satellite imagery. Acquisition date is unknown.
The source information is displayed on the map.

K:\Data\Project\MMM5997-NV_MXD\MMM5997_B_Fig6_Bridge_UP_20131030.mxd

Figure 7 Proposed vs existing Upper Cambie Creek Bridge design.



Legend

- Existing Bridge
- Proposed Bridge
- Proposed Connection Channel
- Proposed Rip rap
- Drainage Features
- Proposed Toe of Fill
- Existing Toe of Slope
- Water Edge

Berm

- Berm 1
- Berm 2

Instream Impact Areas

- EXxisting Connection Channel

Environmental Values

- Existing Rearing Pond
- Smooth Willowherb
- Wetland

0 3 6 12 m

Scale: 1:400

Projection: NAD 1983 UTM Zone 10N

N

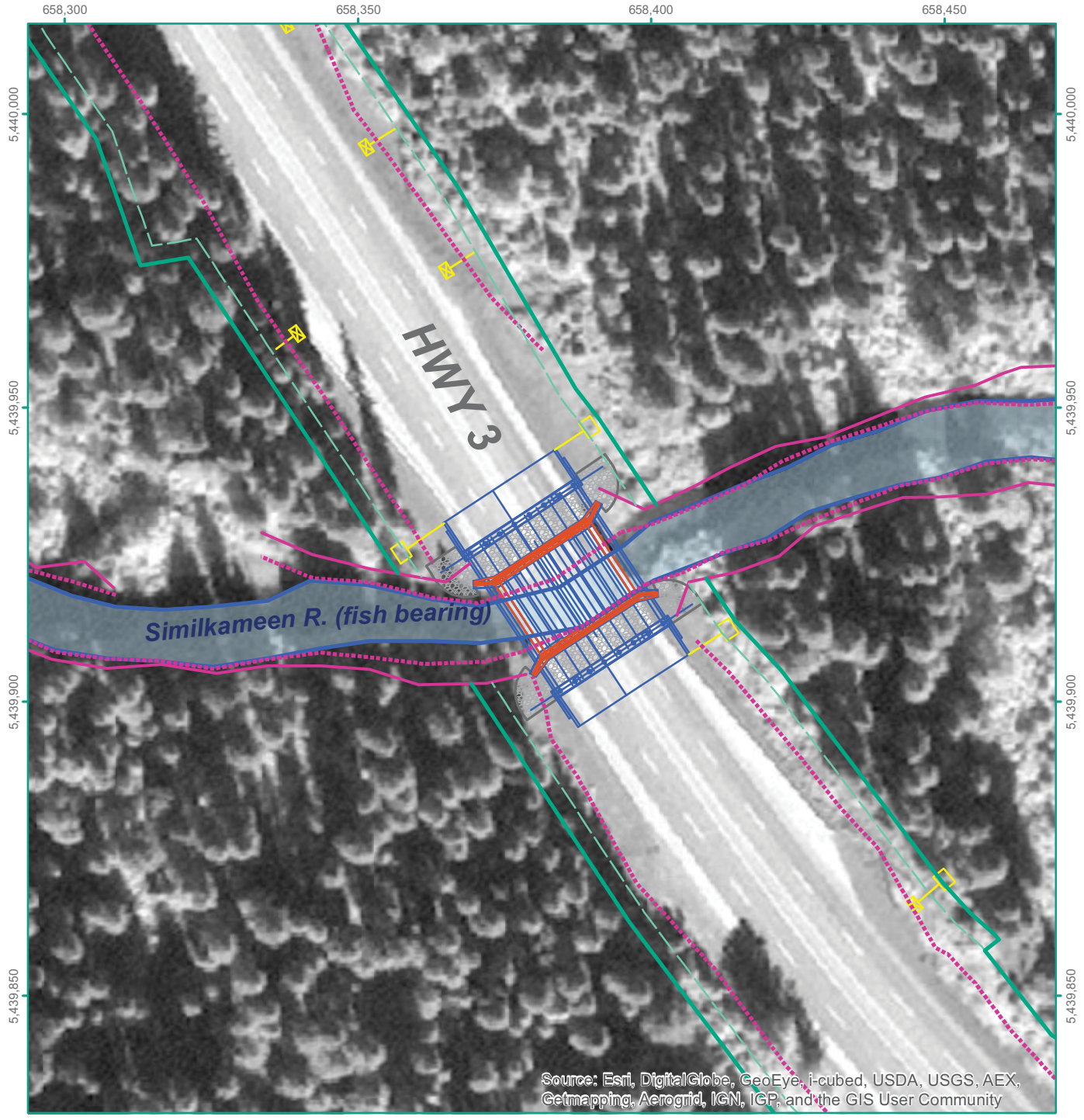
Data Sources:
Base data from Canvec 2012

Hatfield CONSULTANTS

Background Image:
High resolution 50cm satellite imagery. Acquisition date is unknown. The source information is displayed on the map.

K:\Data\Project\MMM5997-NV_MXD\MMM5997_C_Fig7_Compensation_UP_20131030.mxd

Figure 8 **Proposed vs existing bridge design and environmental values at the Middle Cambie Creek Bridge Project site.**



Legend

- Existing Bridge
- Proposed Bridge
- Proposed Rip rap
- Drainage Feature
- Proposed Toe of Fill
- Proposed Clear and Grub Line
- Existing Toe of Slope
- Existing Top of Bank
- Water Edge

Background Image:
High resolution 50cm satellite imagery. Acquisition date is unknown.
The source information is displayed on the map.

0 5 10 20 m

Scale: 1:1,000

Projection: NAD 1983 UTM Zone 10N

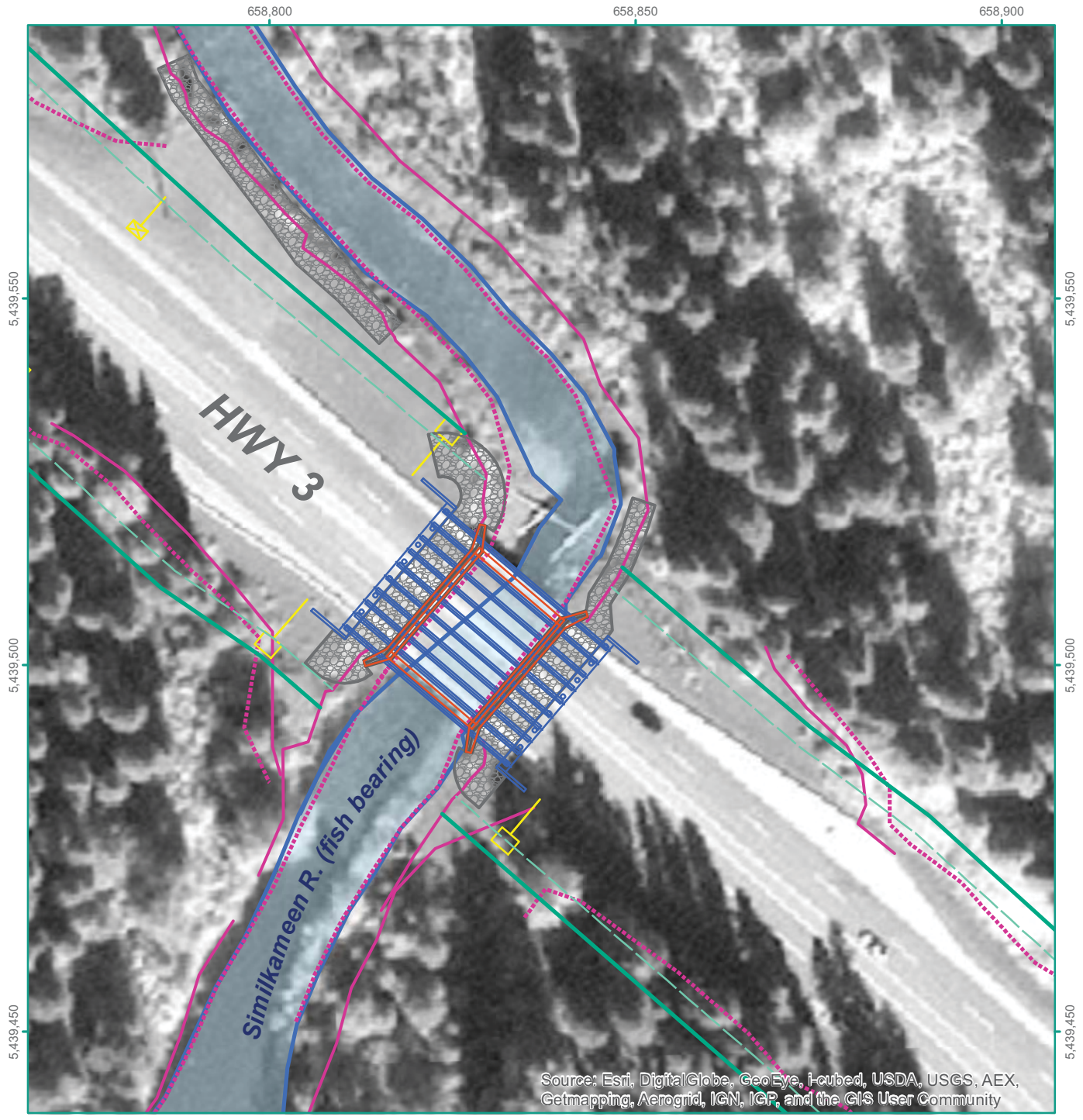
N

Data Sources:
Base data from Canvec 2012

Hatfield CONSULTANTS

K:\Data\Project\MMM5997-NV_MXD\MMM5997_I_Fig8_Bridge_MID_20131030.mxd

Figure 9 **Proposed vs existing bridge design and environmental values at the Lower Cambie Creek Bridge Project site.**



Legend

- Existing Bridge
- Proposed Bridge
- Proposed Rip rap
- Drainage Feature
- Proposed Toe of Fill
- Proposed Clear and Grub Line
- Existing Toe of Slope
- Existing Top of Bank
- Water Edge

Background Image:
High resolution 50cm satellite imagery. Acquisition date is unknown.
The source information is displayed on the map.

0 5 10 20 m

Scale: 1:800

Projection: NAD 1983 UTM Zone 10N

N

Data Sources:
Base data from Canvec 2012

Hatfield CONSULTANTS

K:\Data\Project\MMM5997-NV_MXD\MMM5997_J_Fig9_Bridge_LOW_20131030.mxd

3.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

3.1 LOCATION AND CLIMATE

Manning Park is located along Highway 3 between Hope and Princeton (Figure 1). The Cambie Creek bridges are located within the park, approximately six km west of the Manning Park Lodge. Figure 1 shows the general location of the bridges and the local road system. The surrounding landscape generally consists of an undisturbed coniferous forest within the Park and there is a prominent wetland and existing pond feature to the northwest of the Upper Cambie crossing (Figure 6).

Manning Park contains five of British Columbia's fourteen biogeoclimatic zones. The study area is located in the Lower Mainland, Chilliwack Forest District, Fraser Valley Regional District, and the Engelmann Spruce Subalpine Fir biogeoclimatic zone (CDC 2012a). Average temperature and precipitation data are available for Princeton, located approximately 40 km east of the Project area at an elevation of 701 m (see Table 2). The bridge sites are located at an elevation slightly greater than 1,200 m and have more extreme temperature variations than those observed in Princeton. The tree layer is characterized by subalpine fir (*Albies lasiocarpa*), mountain hemlock (*Tsuga mertensiana*), Engelemann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta var. latifolia*) and black cottonwood (*Populus balsamifera spp. trichocarpa*).

Table 2 Average temperature and precipitation for Princeton, British Columbia, between 1971 and 2000 (Environment Canada 2012).

Month	Daily Average Temp (°C)	Precipitation (mm)
January	-6.2	45.3
February	-2.6	24.7
March	2.5	17.1
April	6.9	17.8
May	11.1	27.7
June	14.6	35.6
July	17.7	29.7
August	17.6	27.7
September	13.1	21.9
October	6.7	21.4
November	-0.5	42.9
December	-5.9	44.6

3.2 FISH AND FISH HABITAT

The Fisheries Information Summary System (FISS) is maintained by the province of British Columbia to collect and make publically available fish and fish habitat data for waterbodies throughout the province. A data search for records from the Similkameen River produced a diverse fish community of at least nine different species-groups including rainbow trout (*Oncorhynchus mykiss*) (see Table 3). The Similkameen River (Watershed Code: 310-367800) drains the east slope of the Cascade Mountains and the Interior Plateau. The Similkameen River is an international river, originating in BC and joining the Okanagan River in Washington, USA. The Okanagan basin in turn feeds into the larger Columbia basin.

Table 3 Documented fish species in the Similkameen River (FISS database).

Species	Management Class
Slimy Sculpin	Not Specified
Black Catfish	Wild Indigenous
Bridgelip Sucker	Not Specified
Mottled Sculpin	Not Specified
Sculpin (general)	Not Specific
Torrent Sculpin	Not Specific
Largescale Sucker	Not Specific
Dolly Varden	Not Specific
Brook Trout	Hatchery production
Leopard Dace	Not Specific
Northern Mountain Sucker	Not Specific
Longnose Dace	Not Specific
Mountain Whitefish	Not Specific
Northern Pikeminnow	Not Specified
Rainbow Trout	Hatchery Production
Rainbow Trout	Not Specified
Sucker (general)	Not Specified
Umatilla Dace	Not Specified
Whitefish (general)	Not Specified

The Habitat Wizard database was also reviewed for fish observations upstream of the Project area. According to this database the only fish species documented upstream of the Project area is rainbow trout.

A detailed habitat survey was conducted at three locations along the Similkameen River at each of the bridge sites: at the bridge crossing location; 100 m upstream of the bridge crossing; and, 100 m downstream of the bridge crossing. Results of the habitat assessments conducted at the bridge sites on September 5, 2012 are shown on the Aquatic Habitat Data Sheets provided in Appendix A1 and are summarized below.

3.2.1 Upper Cambie Creek

At the time of the site assessment water levels were low (0.10 m to 0.25 m). The wetted width upstream and downstream of the bridge averaged 9.0 m and the channel width upstream and downstream of the bridge averaged 16.0 m. The channel width at the bridge crossing site was measured at >19.0 m and was found to be artificially widened during the installation of the original bridge. Channel bank slopes were typically shallow on one side of the channel and steep on the other side, alternating sides depending on the direction of meander and extent of the thalweg. Velocity averaged 0.4 m/s.

Instream cover averaged 10-20% and was dominated by boulders. Overhead cover averaged 0-20% and was dominated by overhanging shrubs growing within the floodplain. There was evidence of flooding at all three sites assessed. With the exception of the disturbed area adjacent to the bridge the landscape surrounding the Similkameen River at the Project site is undisturbed and dominated by shrubs adjacent to the river and mature coniferous forest further back from the river. Gravel was the dominant substrate, followed by cobble, boulder and then sand.

3.2.1.1 The Surrounding Aquatic Environment

The Upper Cambie Bridge area is environmentally complex because of the fish bearing pond located to the northwest and adjacent wetland (Figure 10, Figure 11). The wetland is the low point of the downward sloping highway that facilitates drainage from west to east. Even during the driest time of the year, in September, water was flowing from the highway ditch to the wetland (Figure 6).

Between the wetland and the Similkameen River is an isolated pond that is likely hydraulically connected to both the wetland and the creek during high flow periods. The compensation pond is separated from the wetland during the dry season by raised land and from the creek by a berm. Rainbow trout were observed in the compensation pond making this a valued ecosystem component. The raised area that separates the pond from the wetland during the dry season is likely completely inundated during the wet season. The connection channel to the river follows the existing toe-of-slope and likely provides a physical connection for fish between the compensation pond and the Similkameen River during spring freshet (typically in May). The connecting channel is ill-defined and ephemeral and will have to be moved as part of the Project to accommodate instream rip-rap. Hatfield has collaborated with the Project engineers to design a new connection channel that will facilitate fish passage across a greater range of flows and thus reducing the amount of time fish are isolated in the pond any given year. During the field assessment in September there was approximately 0.3 m of water in the compensation pond with limited cover for the seasonally isolated trout population. During a follow up visit in June of 2013 there was approximately 0.88 m of water in the pond and a hydraulic connection with the Similkameen River and the wetland.

The existing fill slope on the north side of the highway shows evidence of bank erosion and sediment is likely deposited in the wetland during heavy rainfall events. The new bridge approach design will replace the fill slope with a 1.5H:1V embankment. This embankment will extend beyond the existing toe of slope and impact approximately 178 m^2 of wetland/pond area northwest of the bridge (see Section 4.1).

Figure 10 Upper Cambie Creek Bridge crossing location photos (Sept. 5, 2012).

Upper Cambie Creek bridge looking upstream at the bridge.

Upstream looking downstream at the bridge.

Downstream looking upstream at bridge.

Figure 11 Upper Cambie Creek Bridge wetland (Sept. 5, 2012).

The Upper Cambie wetland is inundated year round, and fed by highway drainage and the Similkameen River during high flow events.

Rainbow trout in a rearing pond located between the main wetland and the river.

Looking west at the channel that connects the rearing pond to the Similkameen River.

The pond outlet flows through willows along toe of slope towards the Similkameen River.

Wetland vegetation is characterized by a variety of sedge species.

Bank erosion along the northwest fill slope.

3.2.2 Middle Cambie Creek

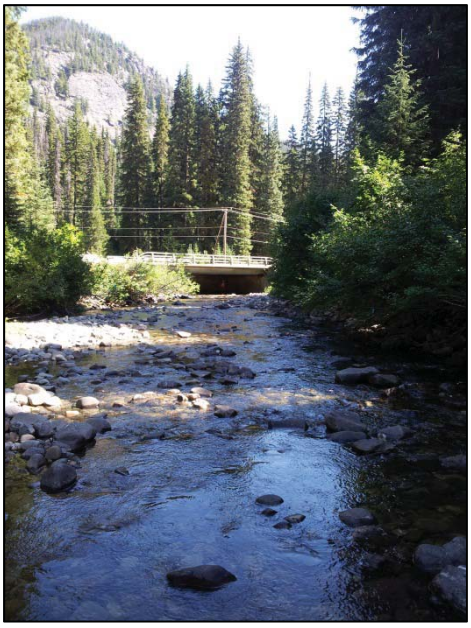
At the time of the site assessment water levels were low (0.2 m to 0.4 m). The wetted width upstream and downstream of the bridge averaged 10.0 m and the channel width upstream and downstream of the bridge averaged 16.0 m. The channel width at the bridge crossing site was measured at approximately 13.0 m with the eastern side of the channel constricted by the existing abutment. Channel bank slopes were typically shallow on one side of the channel and steep on the other side, alternating sides depending on the direction of meander and extent of the thalweg. Water velocity averaged 0.5 m/s.

Instream cover averaged 0-5% and was dominated by boulders, deep pools and large woody debris. Overhead cover averaged 15-30% and was dominated by overhanging shrubs and trees. There was evidence of flooding at all three sites assessed. With the exception of some recent tree falling northeast of the bridge, the landscape surrounding the Similkameen River at the Project site is undisturbed and characterized by shrubs along the river and mature coniferous forest further back from the river. Cobble was the dominant substrate, followed by gravel and boulders.

A large vernal pool (approximately 120 m^2 seasonally inundated depression) is situated outside the highway right-of-way approximately 50 m south of the existing Middle Cambie Bridge and approximately 20 m west of the highway toe-of-fill. The vernal pool conveys flows seasonally to a poorly defined and braided drainage feature alongside the west highway toe-of-fill. The drainage feature lacks evidence of scour and is characterized by organic material, herbaceous and woody vegetation. Flows within the drainage continue southeast towards the Lower Cambie Bridge along the existing highway toe-of-fill. Rilling, caused by surface erosion from highway runoff, was noted along the highway fill-slope adjacent to the drainage. Flows fan out into the forest west of the highway approximately 30 m north of Lower Cambie crossing and connect with a small tributary approximately 50 m west of the highway. The tributary is characterized by a well-defined channel (approximately 2 m wide) with substrate comprised of a gravel and fine. Flows within the tributary are conveyed southwest to the Similkameen River approximately 100 m downstream of the Lower Cambie Bridge. The tributary and vernal pond are located completely outside the Project footprint. The drainage feature will be relocated approximately 5 to 7 m west from its current location following highway upgrades between Middle and Lower Cambie Bridges. The invert elevation of the relocated drainage will be maintained so that the hydrology between the vernal pond and the tributary is not altered.

Figure 12 Middle Cambie Creek Bridge crossing location photos (Sept. 5, 2012).

Middle Cambie Creek Bridge looking at the left bank.



Upstream looking downstream at the bridge.

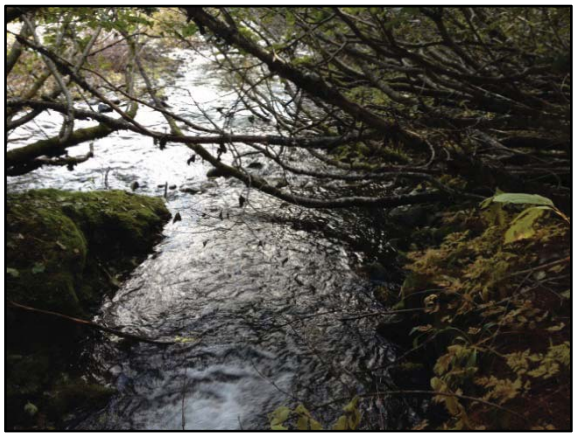
Downstream looking upstream at bridge.

Figure 13 Vernal pool and associated drainage feature located between Middle Cambie Creek Bridge and Lower Cambie Creek Bridge (Oct. 9, 2013).

Vernal pool located southwest of Middle Cambie.

The vernal pool drains flow alongside the west highway toe-of-fill.

Drainage from the vernal pool ultimately flows into an unnamed tributary to the Similkameen River.



Confluence of the unnamed tributary and the Similkameen River.

3.2.3 Lower Cambie Creek

Upstream of the Lower Cambie Creek Bridge the Similkameen River has been artificially straightened and is lined with boulder rip rap. There is a defined pool underneath the bridge and the natural channel resumes downstream of the bridge. At the time of the site assessment water levels were low (0.18 m to 0.62 m). The wetted width upstream and downstream of the bridge averaged 9.0 m and the channel width upstream and downstream of the bridge averaged 10.5 m. The channel width at the bridge crossing site was measured at 15.0 m with the eastern side of the channel constricted by an existing abutment. Channel bank slopes upstream of the bridge were constructed with fairly even slopes. Downstream of the bridge the slopes are typically shallow on one side of the channel and steep on the other side, alternating sides depending on the direction of meander and extent of the thalweg. Velocity averaged 0.3 m/s.

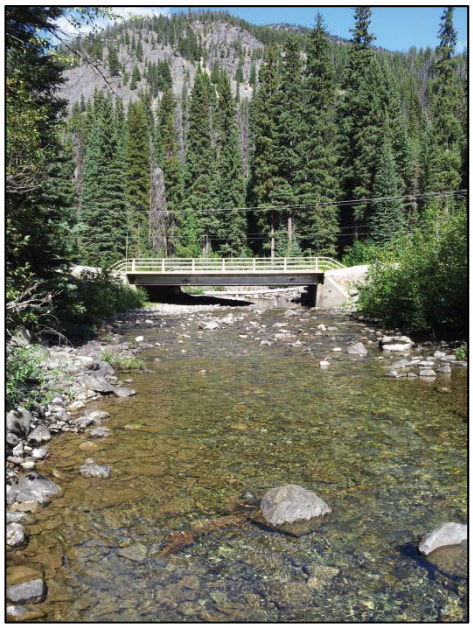
Instream cover averaged 5-15% and was dominated by boulders, deep pools and large woody debris (a tree had fallen across the river in our study area). Overhead cover averaged 5-15% and was dominated by overhanging shrubs. The riparian area northwest of the bridge is characterized by a parking pull out and has no vegetation. There was evidence of flooding at all three sites assessed. The area extending 200 m upstream of the bridge has been disturbed and the landscape downstream is relatively undisturbed. Cobble was the dominant substrate, followed by gravel and boulders.

Apart from the Similkameen River no other aquatic features were noted within or adjacent to the Project area.

Figure 14 Lower Cambie Creek Bridge crossing location photos (Sept. 5, 2012).

Lower Cambie Creek Bridge looking upstream at the bridge.

Upstream looking downstream towards bridge.



Downstream looking up stream at bridge.

3.3 LAND USE

The majority of the Project is located on MoTI owned lands. Manning Provincial Park surrounds the Project and approximately 2.1 ha of the Project will be located on Park land requiring a park boundary adjustment (see Section 3.3.1). The Project will improve road safety and access to the park, which is used primarily for skiing in the winter months, and hiking, swimming and camping in the summer months. The Project will also improve access between Hope and Princeton.

3.3.1 Proposed Park Boundary Adjustment

MoTI requires approximately 2.1 ha of Manning Provincial Park lands to accommodate the Project and is currently in negotiations with BC Parks regarding a proposed park boundary adjustment. MoTI is proposing to exchange approximately 3.2 ha of land located 19 km northwest of the Project location for the 2.1 ha of park land required to facilitate the Project. The land MoTI proposes for exchange currently falls within the MoTI right-of-way south of Highway 3 and adjacent to the Skagit River. The location of the Project acquisition lands and replacement lands are presented in Appendix A2.

A desktop review was conducted to compare ecological values within the referenced land parcels by reviewing BC Ministry of Sustainable Resource Management vegetation maps and terrestrial ecosystem mapping (TEM) data (iMapBC 2013).

3.3.1.1 Proposed Project Acquisition Lands

The proposed acquisition lands are located in the moist warm subzone within the Engelmann Spruce Subalpine Fir biogeoclimatic zone (ESSFmw). Forest stands are characterized by an old climax successional status and old forest structural stage. Tree species are characterized by Engelmann spruce, subalpine fir and lodgepole pine (approximately 60% crown closure). Downed woody debris and snags (standing dead trees) were present, but not abundant. TEM data is not available for this area; however, given the presence of various indicator plant species the site series is estimated to be subalpine fir – amabilis fir/white-flowered rhododendron (ESSFmw/01) (Green and Klinka 1994). The late seral stage of this site series is yellow-listed (i.e., not at risk) by the BC Conservation Data Centre (CDC) and typical on zonal sites. Zonal sites are characterized by intermediate soil moisture and nutrient regimes within a given area and are felt to best reflect the influence of regional climate (Green and Klinka 1994).

The acquisition lands are contiguous with the existing highway and influenced by edge effects. The environmental conditions produced along edges, especially hard edges (e.g., highways) may modify habitat values that are important to interior forest species. Sun and wind are responsible for the temperature and moisture gradients observed within edge environments. Therefore, exposed edges are influenced by temperatures that may be more extreme, and often fluctuate substantially between day and night (BC MoF 1998). The effects of edge

within the Pacific Northwest generally extend two to three tree heights (i.e. greater than 150 m) into a stand of trees (Kremaster and Bunnell 1999). The level of effect becomes less pronounced further from the edge. As such, the new edge created by the Project is not expected to adversely impact existing interior habitat within the park.

3.3.1.2 Proposed Replacement Lands

The proposed replacement lands are located in the southern variant of the moist submaritime subzone within the Coastal Western Hemlock biogeoclimatic zone (CWHms1). Forest stands are characterized by a maturing climax successional status and old forest structural stage. Tree species are characterized by black cottonwood, Douglas-fir, western hemlock, western redcedar and amabilis fir (approximately 50% to 60% crown closure). Three TEM polygons associated with the Hope IFPA TEM project have been previously established within the proposed replacement lands. Site series for two of the polygons have been identified as western hemlock – amabilis fir/step moss (CWHms1/01) while the other (i.e., eastern most polygon) is identified as Sitka spruce/salmonberry moist submaritime (CWHms1/07). CWHms1/01 is blue-listed by the CDC and typical of zonal sites. CWHms1/07 is red-listed by the CDC and characteristic of high bench floodplains (Green and Klinka 1994).

The proposed replacement lands are characterized by a riparian forest contiguous with the Skagit River and located approximately 60 m and 150 m south of the highway at the closest and furthest points, respectively. Therefore, the replacement lands are less influenced by the effects of edge. Blue-listed ecological communities are of special concern while red-listed ecological communities are considered endangered or threatened in British Columbia. Amending the park boundary such that these ecological communities are encompassed by the park will ensure the long-term protection of this valuable riparian habitat.

3.4 TERRESTRIAL RESOURCES

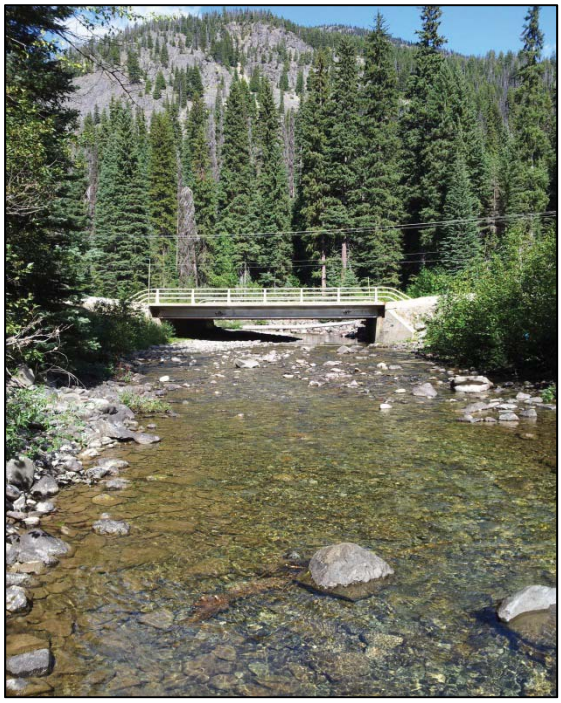
3.4.1 Vegetation

As discussed in Section 3.3.1 Upper, Middle and Lower Cambie Bridges are located in the moist warm subzone within the Engelmann Spruce Subalpine Fir biogeoclimatic zone (ESSFmw). Forest stands on either side of the existing highway shoulders are characterized by an old climax successional status and old forest structural stage (Figure 15). A wetland complex characterized by emergent vegetation and areas of shallow open water is located west of Upper Cambie Creek Bridge site and north of Highway No. 3 (Figure 6). A hydraulic connection links the wetland complex to the Similkameen River via a small channel along the northwest fill slope of the existing bridge.

Figure 15 The Cambie Creek Bridges are located in the Engelmann spruce subalpine fir biogeoclimatic zone (ESSFmw).

Looking east at Upper Cambie Creek Bridge approach.

Looking downstream from Middle Cambie Creek Bridge.



Looking upstream at Lower Cambie Creek Bridge from approximately 50 m downstream.

3.4.1.1 Species at Risk

Species at risk are identified by both provincial and national ranking systems. The provincial ranking system applies to species that have been assessed by the CDC. The national ranking system applies to species that have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The CDC and COSEWIC publish lists of species at risk.

A preliminary list of listed plant species was generated from the provincial database by querying the CDC Species and Ecosystem Explorer database to identify listed species and ecological communities that occur within the Lower Mainland, Chilliwack Forest District, Fraser Valley Regional District, and the Engelmann Spruce Subalpine Fir biogeoclimatic zone (CDC 2012a).

Habitat suitability information was used to refine the preliminary list of species for consideration. Scientific literature was further used to evaluate the suitability of habitat features found within the Project site to support critical life history functions for each species on the preliminary species list. Examples of critical life history functions include: breeding, foraging, nesting/denning, roosting, hibernating, and migrating for wildlife; or germination, flowering, and seed dispersal for plants.

The CDC mapping service was queried for records of element occurrences within 3.0 km of the Project site (Appendix A3) and included records of two blue-listed plants and one red-listed lepidopteran. Species identified by the CDC Species and Ecosystems Explorer database and mapping service with the potential to occur in the Project areas along with the status of each species, per CDC, SARA and COSEWIC databases are provided in Table 4.

The current design footprints of the proposed bridge replacements are located primarily within previously disturbed areas (i.e., existing highway shoulders subject to routine highway maintenance) and with the exception of smooth willowherb, outside areas capable of supporting listed-species identified in Table 4.

Table 4 Plant species at risk potentially occurring within the Project areas.

Common Name	Scientific Name	Status		
		CDC	SARA	COSEWIC
pointed broom sedge	*Carex scoparia*	blue	-	-
smooth willowherb	*Epilobium glaberrimum* ssp. *fastigiatum*	blue	-	-
small-fruited willowherb	*Epilobium leptocarpum*	blue	-	-
western St. John's-wort	*Hypericum scouleri* ssp. *nortoniae*	blue	-	-
dwarf bramble	*Rubus lasiococcus*	blue	-	-
two-edged water-starwort	*Callitriche heterophylla* ssp. *heterophylla*	blue	-	-
Brandegee's lomatium	*Lomatium brandegeei*	blue	-	-

A brief description of the range and preferred habitat of plant species which have the potential to occur within the Project area is provided below.

Pointed Broom Sedge

Pointed broom sedge is blue-listed by the CDC and not addressed by the SARA or the COSEWIC. This species is rare in southern and east central BC (Douglas et al. 2001). Pointed broom sedge prefers moist to wet ditches, lakeshores, marshes, meadows and lowlands in the montane zones (Douglas et al. 2001). This species was not observed during the field survey.

Smooth Willowherb

Smooth willowherb is blue-listed by the CDC and not addressed by the SARA or the COSEWIC. This species is rare in BC (Douglas et al. 1999a). Smooth willowherb prefers moist stream banks, rocky slopes and open forests (Douglas et al. 1999a). Smooth willowherb was observed along the east stream bank immediately downstream of the Upper Cambie Creek Bridge (Figure 16) and northwest stream bank downstream of Middle Cambie Creek Bridge. This listed plant species may be impacted by the proposed bridge replacements.

Figure 16 Blue-listed smooth willowherb.

Smooth willowherb growing on the southeast bank downstream of the Upper Cambie Bridge.

Small-Fruited Willowherb

Small-fruited willowherb is blue-listed by the CDC and not addressed by the SARA or the COSEWIC. This species is rare throughout BC (Douglas et al. 1999a). Small-fruited willowherb prefers moist meadows and stream banks in the montane to alpine zones (Douglas et al. 1999a). This species was not observed during the field survey.

Western St. John's-Wort

Western St. John's-wort is blue-listed by the CDC and not addressed by the SARA or the COSEWIC. This species is rare throughout BC (Douglas

et al. 1999b). Western St. John's-wort prefers moist to wet streamsides, estuaries, marshes and open slopes in all zones except the alpine and steppe zones (Douglas et al. 1999b). This species was not observed during the field survey.

Dwarf Bramble

Dwarf bramble is blue-listed by the CDC and not addressed by the SARA or the COSEWIC. This species is rare in southwestern BC (Douglas et al. 1999c). Dwarf bramble prefers mesic to moist thickets and open forests in the montane and lower subalpine zones (Douglas et al. 1999c). This species was not observed during the field survey.

Two-Edged Water-Starwort

Two-edged water-starwort is blue-listed by the CDC and not addressed by the SARA or the COSEWIC. This species is rare coastal BC north to Alaska, Yukon and the Northwest Territories (Douglas et al. 2002). Two-edged water-starwort prefers shallow ponds, slow-moving streams and shorelines in the lowland zone (Douglas et al. 2002). This species was not observed during the field survey; however, an element occurrence is documented within 3 km of the Project site.

Brandegee's Lomatium

Brandegee's lomatium is blue-listed by the CDC and not addressed by the SARA or the COSEWIC. This species is rare in southwest and south central BC south to Washington State (Douglas et al. 2002). Brandegee's lomatium prefers mesic to dry grasslands, shrublands and open forests in the montane zone (Douglas et al. 2002). This species was not observed during the field survey; however, an element occurrence is documented within 3 km of the Project site.

The field component of the rare plant survey was conducted in accordance with the Protocols for Rare Vascular Plant Surveys (Penny and Klinkenberg 2012). During the survey one provincially blue-listed plant species (i.e., smooth willowherb) was observed within the Project area. No federally listed plant species were observed. A summary of plant species observed within the Project area is presented in Table 5. Given that the Project footprint is located almost exclusively within the existing highway maintenance corridor and will not impact interior forest stands, surveys for listed ecological communities were not conducted; however, it should be noted that two listed-ecological communities occur within the ESSFmw biogeoclimatic unit:

- swamp horsetail – beaked sedge (ESSFmw/Wm02); and
- narrow-leaved cotton-grass – shore sedge (ESSFmw/Wf13).

Table 5 Plant species observed within the Project areas.

Layer	Common Name	Scientific Name
Trees	subalpine fir	*Abies lasiocarpa*
	mountain hemlock	*Tsuga mertensiana*
	Engelmann spruce	*Picea engelmannii*
	lodgepole pine	*Pinus contorta* var. *latifolia*
	black cottonwood	*Populus balsamifera* ssp. *trichocarpa*
Shrubs	Sitka mountain-ash	*Sorbus sitchensis*
	Sitka willow	*Salix sitchensis*
	mountain alder	*Alnus incana* ssp. *tenuifolia*
	black huckleberry	*Vaccinium membranaceum*
	Utah honeysuckle	*Lonicera utahensis*
	thimbleberry	*Rubus parviflorus*
	black hawthorn	*Crataegus douglasii*
	soopolallie	*Shepherdia canadensis*
	black gooseberry	*Ribes lacustre*
	black twinberry	*Lonicera involucrata*
	red elderberry	*Sambucus racemosa*
	false azalea	*Menziesia ferruginea*
	red-osier dogwood	*Cornus stolonifera*
	falsebox	*Pachistima myrsinites*
	prince's-pine	*Chimaphila umbellata*
	Saskatoon	*Amelanchier alnifolia*
	highbush cranberry	*Viburnum edule*
Forbs	showy aster	*Aster conspicuous*
	yarrow	*Achillea millefolium*
	goat's-beard	*Aruncus dioicus*
	pink monkey flower	*Mimulus lewisii*
	arrow-leaved groundsel	*Senecio triangularis*
	pearly everlasting	*Anaphalis margaritacea*
	rosy twisted stalk	*Streptopus roseus*
	false Solomon's-seal	*Smilacina racemosa*
	fireweed	*Epilobium angustifolium*
	smooth willowherb	*Epilobium glaberrimum* ssp. *fastigiatum*
	western meadowrue	*Thalictrum occidentale*
	mountain arnica	*Arnica latifolia*
	cow parsnip	*Heracleum maximum*
	birch-leaved spirea	*Spiraea betulifolia* ssp. *lucida*
	Canby's lovage	*Ligusticum canbyi*
	baneberry	*Actaea rubra*
	mountain sweet-cicely	*Osmorhiza berteroi*
	beaked sedge	*Carex utriculata*
	small-flowered bulrush	*Scirpus microcarpus*
	dagger-leaf rush	*Juncus ensifolius*
	awl-fruited sedge	*Carex stipata*
	oak fern	*Gymnocarpium dryopteris*
	wild strawberry	*Fragaria virginiana*
	bunchberry	*Cornus Canadensis*

Table 5 (Cont'd.)

Layer	Common Name	Scientific Name
Forbs	reed canary grass	*Phalaris arundinacea*
	quack grass	*Elymus repens*
	common tansy	*Tanacetum vulgare*
	common dandelion	*Taraxacum officinale*
	queen's cup	*Clintonia uniflora*
	bull thistle	*Cirsium vulgare*
	white sweet-clover	*Melilotus alba*
	spotted knapweed	*Centaurea maculosa*
	oxeye daisy	*Leucanthemum vulgare*
	pineapple weed	*Matricaria discoidea*
	common horsetail	*Equisetum arvense*
Lichens	horsehair	*Bryoria* sp.
	witch's hair	*Alectoria* sp.

Figure 17 Examples of flora found at Upper Cambie Creek Bridge (Sept. 5, 2012).

Cambie Upper – Beaked sedge

Cambie Upper – Canby's lovage

Cambie Upper – Emergent wetland

Cambie Upper – Dagger-leaf rush

Cambie Upper – Mountain alder

Cambie Upper – Mountain arnica

Cambie Upper – Mountain sweet-Cicely

Cambie Upper – Utah honeysuckle

Figure 18 Examples of flora found at Middle Cambie Creek Bridge (Sept. 5, 2012).

Cambie Middle – Arrow-leaved groundsel

Cambie Middle – Spotted knapweed

Cambie Middle – Pink monkey-flower

Cambie Middle – Oxeye daisy

Cambie Middle – Showy aster

Cambie Middle – Smooth willowherb

Vegetation observed at the lower Cambie Creek Bridge site consisted of the same species observed at Middle and Upper Cambie Bridges, and as such photographs are not presented.

3.4.1.2 Non-Native, Noxious or Invasive Plant Species

Non-native, noxious or invasive plant species were relatively infrequent at the Cambie Project sites and restricted to the highway shoulders; however, it should be noted that spotted knapweed (*Centaurea maculosa*) and oxeye daisy (*Leucanthemum vulgare*) were observed at Middle Cambie Creek Bridge slightly east of the Project site. Non-native, noxious or invasive plant species observed within or in proximity to the Project areas are summarized in Table 6.

Table 6 Non-native/noxious/invasive plant species observed within or in proximity to the Project areas.

Common Name	Scientific Name
quackgrass	*Elymus repens*
common tansy	*Tanacetum vulgare*
common dandelion	*Taraxacum officinale*
pineapple weed	*Matricaria discoidea*
spotted knapweed	*Centaurea maculosa*
oxeye daisy	*Leucanthemum vulgare*
bull thistle	*Cirsium vulgare*
white sweet-clover	*Melilotus alba*

3.5 WILDLIFE

3.5.1 Species at Risk

Wildlife species with the potential to occur within the study areas (as determined using methodology described in Section 3.4.1.1) are provided in Table 7 along with the status of each species, in accordance with the CDC, SARA and COSEWIC databases.

The footprints of the proposed bridge replacements are located primarily within previously disturbed areas (i.e., existing highway shoulders subject to routine highway maintenance) and do not include habitat capable of supporting critical life-history functions (e.g., nesting and denning) of listed-species identified in Table 7. Temporary construction disturbances to habitat capable of supporting incidental occurrences (e.g., ditches for western toad and grassy roadsides for butterflies and snails) will be fully restored following construction. Listed-species were not observed during the field survey; however, it should be noted that the field survey was not intended to confirm species absence, rather document habitat suitability for species with the potential to occur within the Project areas.

Table 7 Wildlife species at risk potentially occurring within the Project areas.

Common Name	Scientific Name	Status		
		CDC	SARA	COSEWIC
western toad	*Anaxyrus boreas*	blue	special concern	special concern
Hoffman's checkerspot	*Chlosyne hoffmanni*	red	-	-
olive-sided flycatcher	*Contopus*	blue	threatened	threatened
monarch	*Danaus plexippus*	blue	special concern	special concern
Indra swallowtail	*Papilio indra*	red	-	-
Sonora skipper	*Polites sonora*	red	special concern	special concern
northern tightcoil	*Pristiloma arcticum*	blue	-	-
grizzly Bear	*Ursus arctos*	blue	-	special concern

Brief descriptions of the range and preferred habitat of wildlife species that could potentially occur within the Project areas are provided below.

Western Toad (Anaxyrus boreas)

The western toad is blue-listed by the CDC and categorized as Special Concern by the COSEWIC and the SARA. The western toad occurs from Baja California, Mexico to Alaska and southern areas of the Yukon Territory. It is also found in Nevada, Colorado, Utah and Montana, western Alberta, and most of BC, excluding the northern interior (E-fauna BC 2012).

The Western Toad will breed in a range of natural and artificial aquatic habitats including the shallow margins of lakes and roadside ditches. Tree or shrub canopy cover, coarse woody debris, or emergent vegetation is not required at the breeding sites. Adult toads can be found in forested areas, wet shrublands, avalanche slopes and meadows. They prefer dense shrub cover, likely because it provides protection from desiccation and predators (Species at Risk Public Registry 2012a).

Hoffman's Checkerspot

Hoffman's checkerspot is red-listed by the CDC and not addressed by the SARA or the COSEWIC. In BC this species is rare and has only been documented in EC Manning Provincial Park (CDC 2012b).

Habitat for this species is not well documented; however, rare element occurrences were documented in subalpine and alpine areas at forest edges and openings (CDC 2012b). Approximately 20 individuals were seen flying in mid-July at Gibson's Pass Ski Hill (CDC 2012b). Asters (*Aster* sp.) are the preferred larval plant for this species (CDC 2012b).

Olive-Sided Flycatcher

The olive-sided flycatcher is blue-listed by the CDC and categorized as Threatened by the SARA and the COSEWIC. In Canada the olive-sided flycatcher is found mainly in the southern Yukon and coastal forests of British Columbia. This bird species migrates and winters in Panama and the Andes Mountains, from Venezuela to Peru and Bolivia (Species at Risk Public Registry 2012b).

This species is typically associated with open areas containing large trees and/or snags for perching. Open areas vary from forest clearings, forest edges near natural openings (e.g., rivers) or anthropogenic openings (e.g., logged areas). Forest habitat for this species is either coniferous or mixed woodland (Species at Risk Public Registry 2012b).

Monarch

The monarch butterfly is blue-listed by the CDC and categorized as Special Concern by the SARA and the COSEWIC. The monarch ranges from Central America to southern Canada and from coast to coast in North America (Species at Risk Public Registry 2012c). There are three distinct populations including the

western, central and eastern populations. The western population includes monarchs found in BC and encompasses an area west of the Rocky Mountains to the Pacific Coast. The western population overwinters in Eucalyptus trees along the coast of California (Species at Risk Public Registry 2012c).

Monarchs in Canada prefer farmland, roadsides and other open-areas where milkweed (*Asclepius* sp.) or wildflowers (e.g., goldenrod, asters and purple loosestrife) are abundant (Species at Risk Public Registry 2012c).

Indra Swallowtail

The Indra swallowtail butterfly is red-listed by the CDC and not addressed by the SARA or the COSEWIC. This species occurs within a 5,000 km^2 range including EC Manning Park to the Skagit River valley (CDC 2012c). The Indra swallowtail has been documented at Lightening Lakes in Manning Park, Gibson's Pass and the Skagit River valley area (CDC 2012c).

The Indra swallowtail is known to occur within forests, wetlands and sparsely vegetated rocky areas. Larval food plants are documented to include species from the carrot family (e.g., mountain sweet-cicely, Canby's lovage and cow parsnip) (CDC 2012c).

Sonora Skipper

The Sonora skipper is red-listed by the CDC and categorized as Special Concern by the SARA and the COSEWIC. In BC this species occurs in the Cascade Mountains from E.C. Manning Park east to Crater Mountain and the Thompson Plateau just south of Princeton. In Manning Park the species is documented at Twenty Minute Lake (Species at Risk Public Registry 2012d).

This species is known to occur in moist, grassy openings in mountainside forests, particularly along rivers. The Sonora skipper has also been documented to utilize grassy roadside areas, agricultural meadows and small logged areas (Species at Risk Public Registry 2012d).

Northern Tightcoil

The northern tightcoil snail is blue-listed by the CDC and not addressed by the SARA or the COSEWIC. In BC this species is known to occur in the Skeena and Cascade Mountains (CDC 2012d).

This species is known to occur in montane forests, under rocks and vegetation in wet subalpine forests, meadows, seeps and bogs (CDC 2012d).

Grizzly Bear (Ursus arctos)

The grizzly bear is blue-listed by the CDC and categorized as Special Concern by the COSEWIC and is not addressed by the SARA. The North Cascades population is extremely small estimated to be less than 25 animals (COSEWIC 2002). The grizzly bear sub-unit associated with the Project site includes the Manning West sub-subunit (North Cascades Grizzly Bear Recovery Team 2004).

The grizzly bear is the largest omnivore in BC and requires large tracts of suitable habitat to meet their ecological requirements. High and moderate berry producing habitats and riparian habitats are identified as important habitat features for the North Cascades population. A number of site series in the CWHdm, CWHms1, CWHvm2, ESSFdc2, ESSFmw and MHmm2 BEC zones have been identified as important berry producing habitats for grizzly bears (North Cascades Grizzly Bear Recovery Team 2004).

3.5.1.1 Wildlife Observations

Observations of wildlife and/or wildlife sign within and in proximity to the Project sites include:

- Spruce grouse (*Falcipennis Canadensis*), common raven (*Corvus corax*) and pileated woodpecker (*Dryocopus pileatus*) sightings;
- Unidentified frog in wetland complex;
- Multiple cavity nests associated with the wetland complex north of Highway No. 3 and west of Similkameen River;
- Black bear (*Ursus americanus*) and mule deer (*Odocoileus hemionus*) tracks; and
- Coyote (*Canis latrans*) or wolf (*Canis lupus*) scat; likely coyote scat given the presence of a coyote den near Upper Cambie Bridge (Ed Atkinson Pers. Comm.).

Figure 19 Examples of wildlife and/or wildlife sign within and in proximity to the Project sites.

Cambie Upper – Spruce grouse

Cambie Upper – Cavity nest in snag

Cambie Upper – Canine scat

3.6 ARCHAEOLOGICAL AND HERITAGE RESOURCES

Archaeological and heritage resources have been assessed and reported on by another consultant.

3.7 POTENTIAL CONTAMINANTS

Although a contaminated site investigation is beyond the scope of this assessment, it is anticipated that any potential on-site contamination will be limited to heavy metals present in roadside soils. If necessary, these materials can be managed on-site as specified in MoTI (2011) Standard Specifications Section 165.14.03, in the event that potentially contaminated material is identified within the Project Area, the MoTI Ministry Representative is to be notified immediately to determine disposal recommendations in consultation with the BC Ministry of Environment.

3.8 NOISE AND AIR QUALITY

Background information regarding ambient noise or air quality at the Project site was not collected and beyond the scope of this assessment. It is notable that the alignment runs adjacent to park lands with very low population density and development. During the operation phase of the Project it is not expected that there will be any significant increase in local noise levels or decline in ambient air quality. In general, during the construction phase potential noise and air quality issues can be avoided or effectively mitigated through the application of Best Management Practices to be provided in the Project Construction Environmental Management Plan as specified in MoTI (2011) Standard Specifications for Highway Construction, Section 165.16.

4.0 CONSIDERATION OF POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED PREVENTATIVE OR MITIGATIVE MEASURES

General requirements of current applicable environmental legislation, regulations, standards, and best management practices (BMPs) will be followed throughout the duration of the Project. A number of the most important legislation/BMPs/guidance documents include:

- *2012 Standard Specifications for Highway Construction*: *Section 165 Protection of the Environment,* Ministry of Transportation and Infrastructure, Nov 2011;
- Canadian Environmental Protection Act, 1999;
- Migratory Birds Convention Act, 1994;
- Species at Risk Act, 2002;
- Wildlife Act, 1996;
- Fisheries Act, 1985;
- BC Environmental Management Act (2003) and Applicable Regulations;
- Transportation of Dangerous Goods Act, 1992;
- Pacific Region Operational Statement: Clearspan Bridges Version 3.0, Fisheries and Oceans Canada, 2007 (as applicable);
- *Land Development Guidelines for the Protection of Aquatic Habitat*, Department of Fisheries and Oceans Canada and Ministry of Environment, Lands and Parks, 1992;
- *Urban Stormwater Guidelines for Protection of Fish and Fish Habitat*, Department of Fisheries and Oceans, 2005;
- *Stormwater Planning: A Guidebook for British Columbia*, Ministry of Water, Land and Air Protection, 2002;
- *Best Management Practices for Highway Maintenance Activities*, Ministry of Transportation document, October 2010;

- *Best Practices for Managing Invasive Plants on Roadsides,* Ministry of Transportation and the Invasive Plant Council of BC, 2010;
- *Habitat Conservation and Protection Guidelines*, Department of Fisheries and Oceans Canada, 1998;
- *Standards and Best Management Practices for Instream Works*, Ministry of Water, Land and Air Protection, March 2004;
- *Develop with Care 2012: Environmental Guidelines for Urban and Rural Land development in British Columbia*, Ministry of Environment, 2012c; and
- *Manual of Control of Erosion and Shallow Slope Movement*, Ministry of Transportation (and Highways), August 22, 1997.

4.1 FISH HABITAT ASSEMENT AREA

The area used for assessing potential impacts to fish and fish habitat from the Project is based on the 100% design drawings for Upper Cambie Bridge and the 90% design drawings for Middle and Lower Cambie Bridges, and guidelines provided in the Fish-stream Crossing Guidebook (BC Ministry of Forests and BC Environment 2012). The resulting study area consists of an area upstream and downstream of each bridge crossing site. Instream impacts to the Similkameen River are assessed below the river top of bank. Riparian impacts are assessed within the area 30 m landward the river top of bank. Anticipated habitat impact areas are summarized in Table 8 and presented in Figure 21, Figure 22 and Figure 23. Potential construction related impacts are reviewed in section 4.4.

Areas that fall within the above referenced assessment area, but are previously disturbed (e.g., instream and riparian areas characterized by existing rip rap or gravel areas devoid of woody vegetation) are excluded from the impact assessment (Figure 20).

Figure 20 Examples of previously disturbed areas within the Project footprint.

Upper Cambie – NE Riparian

Middle Cambie – NE Instream / Riparian

Lower Cambie – SE Instream / Riparian

Lower Cambie – SW Instream / Riparian

Lower Cambie – NE Instream / Riparian

Lower Cambie – NE Riparian

Table 8 Impact area by environmental value.

Environmental Value	Impact Area (m^2)				Comment
	Habitat Losses	Habitat Gains	Net Loss Instream	Net Loss Riparian	
Upper Cambie					
Instream	263	157[1]	106	-	Includes the loss of the existing connection channel and instream impacts excluding rip rap embedded with native substrate and the footprint of the existing abutments.
Wetland/ Rearing Pond [2]	178	31[1]	147	-	The area includes impacts to the wetland and existing rearing pond associated with the new highway toe of fill and drainage features.
Riparian Area [2]	560	371[3]	-	189	Calculated within 30 m of the river top of bank and includes impacts associated with new toe of fill, berms and bridge rip rap above the river top of bank excluding previously disturbed areas.
Middle Cambie					
Instream	23	-	23	-	Includes rip rap located below the river top of bank excluding previously disturbed areas.
Riparian[2]	575	429	-	146	Calculated within 30 m of the river top of bank and includes impacts associated with new toe of fill, and bridge rip rap above the river top of bank excluding previously disturbed areas.
Lower Cambie					
Instream	8	-	8	-	Includes rip rap located below the river top of bank excluding previously disturbed areas.
Riparian[2]	41	535[3]	-	-494	Calculated within 30 m of the river top of bank and includes impacts associated with new toe of fill, and bridge rip rap above the river top of bank excluding previously disturbed areas.
Total :	**1,648**	**1,523**	**284**	**-159**	

[1] Includes habitat gained at the Upper Cambie Creek Bridge site by removing a portion of the existing fill slope from the wetland and, the improved rearing pond connection channel.

[2] Permanent impacts are associated with the design footprint of the new highway (e.g., toe of fill). Clear and grub limits will be revegetated and are considered as temporary impacts only.

[3] Includes riparian gains associated with riparian plantings proposed at Upper and Lower Cambie Bridges and planting along the new highway fill slope within the impacted area between Middle and Lower Cambie Bridges (north side).

4.2 IMPACT MITIGATION

The following is a summary of environmental improvements and impact mitigation strategies being incorporated into the new design compared with the existing bridges. These are also discussed in Section 2.2. Construction related impact mitigation strategies are presented in Section 4.4.

4.2.1 Upper Cambie Creek Bridge

Instream Improvements:

- During the original bridge construction the channel width at the bridge was artificially widened to >19 m. In order to naturalize the channel and improve fish passage through the definition of a thalweg at low flow the replacement bridge will reduce the channel width to 16.3 m complete with scour protection along the banks (i.e., rip rap revetment).

- The instream abutments will be removed and will not be replaced. The bank will be reinforced with rip rap and partially embedded under natural channel substrate (embedded rip rap considered a temporary/construction impact and not calculated as a permanent impact).

- Existing stream bed substrate will be salvaged and stockpiled above the natural high watermark of the Similkameen River during rip rap placement. The substrate will be washed to remove fine sediment and placed overtop rip rap revetment installed below the natural high watermark.

Wetland/Compensation Pond Area:

- The primary drainage feature to the wetland at the northwest end of the Project site will be maintained and concrete spillways and/or catch basins will replace the existing erodible fill slope that contributes runoff to the wetland. Although the spillways present a new design footprint within the wetland, they will reduce the amount of bank erosion and sediment deposition into the wetland.

- The existing connection between the rearing pond and the Similkameen River will be relocated and has been designed to improve fish passage. The new design will consist of a sinuous channel with a gentle (approximately 5%) gradient complete with upstream v-boulder weirs. The boulder weirs will provide grade control whereby design substrates are sustained within the channel and gradient is maintained. The upstream V configuration directs flows to the center of the channel which prevents bank erosion during high flow and improves fish passage during low flow. The weirs will be complete with a low flow notch to allow for improved fish passage during low flow conditions. The design will improve fish passage across a greater range of flows than the existing channel.

Similkameen Riparian Area:

- The bridge will be elevated which will allow for more light and potential for enhanced vegetation growth.
- Approximately 371 m^2 of low growing shrub and forb species will be planted adjacent to the new connection channel and within a previously impacted riparian area southeast of the Similkameen River (Figure 24). See section 4.2.3 for riparian planting specifications.
- Once the berm and other riparian works have been completed an application equivalent to the Denbow Ecoblanket will be used for revegetation (see Section 4.6).

4.2.2 Middle and Lower Cambie Creek Bridges

Instream Improvements:

- The existing abutments will be removed and cut to an elevation equivalent to the top of the proposed rip rap toe; the remaining portions of the existing abutment will stabilize the proposed rip rap toe. Using the existing abutments to key in the proposed rip rap eliminates the requirement to expand the rip rap into the channel. The rip rap toe will not extend beyond the location of the existing abutments. This new design will reduce channel constriction at the bridge locations.

Similkameen Riparian Area:

- The bridges will be elevated which will allow for more light and potential for enhanced vegetation growth.
- Approximately 44 m^2 and 70 m^2 of willow live stakes will be installed below the top of bank around the rip rap at Middle Cambie Creek Bridge and Lower Cambie Creek Bridge, respectively. Approximately 385 m^2 of low growing shrub and forb species will be planted on the lower northeast highway fill slope between the two bridges a minimum of eight metres from the highway fog line (Figure 25). Approximately 465 m^2 of low growing shrub and forb species will be planted within previously disturbed areas beyond the proposed toe of fill at the Lower Cambie Creek Bridge (Figure 26). See section 4.2.3 for riparian planting specifications.

4.2.3 Riparian Planting Standards

The proposed riparian planting areas are located within or adjacent to an existing transmission line right-of-way. As such, plant species selection will be consistent with the recommendations presented in the Riparian Planting Standard of the Approved Work Practices for Managing Riparian Vegetation (BC Hydro et al. 2003) and suited to site conditions (Table 9). Plants are to be of guaranteed nursery stock and installed at one plant per square metre density (BC MoE 2008). Prior to installation of the plant material, a layer of growing medium (minimum

400 mm thick) must be placed within the planting area. Growing medium shall meet the specifications identified in Section 751 of the 2012 Standard Specifications for Highway Construction (BC MoTI 2011). Large woody debris from clearing works will be stockpiled and placed within the planting areas at a density of 80 pieces per hectare. Large woody debris pieces will have a minimum diameter of 30 centimeters and a minimum length of six metres. A detailed landscape plan will be prepared for review and approval prior to the commencement of construction activities.

Table 9 Riparian plant species to be installed within riparian planting areas.

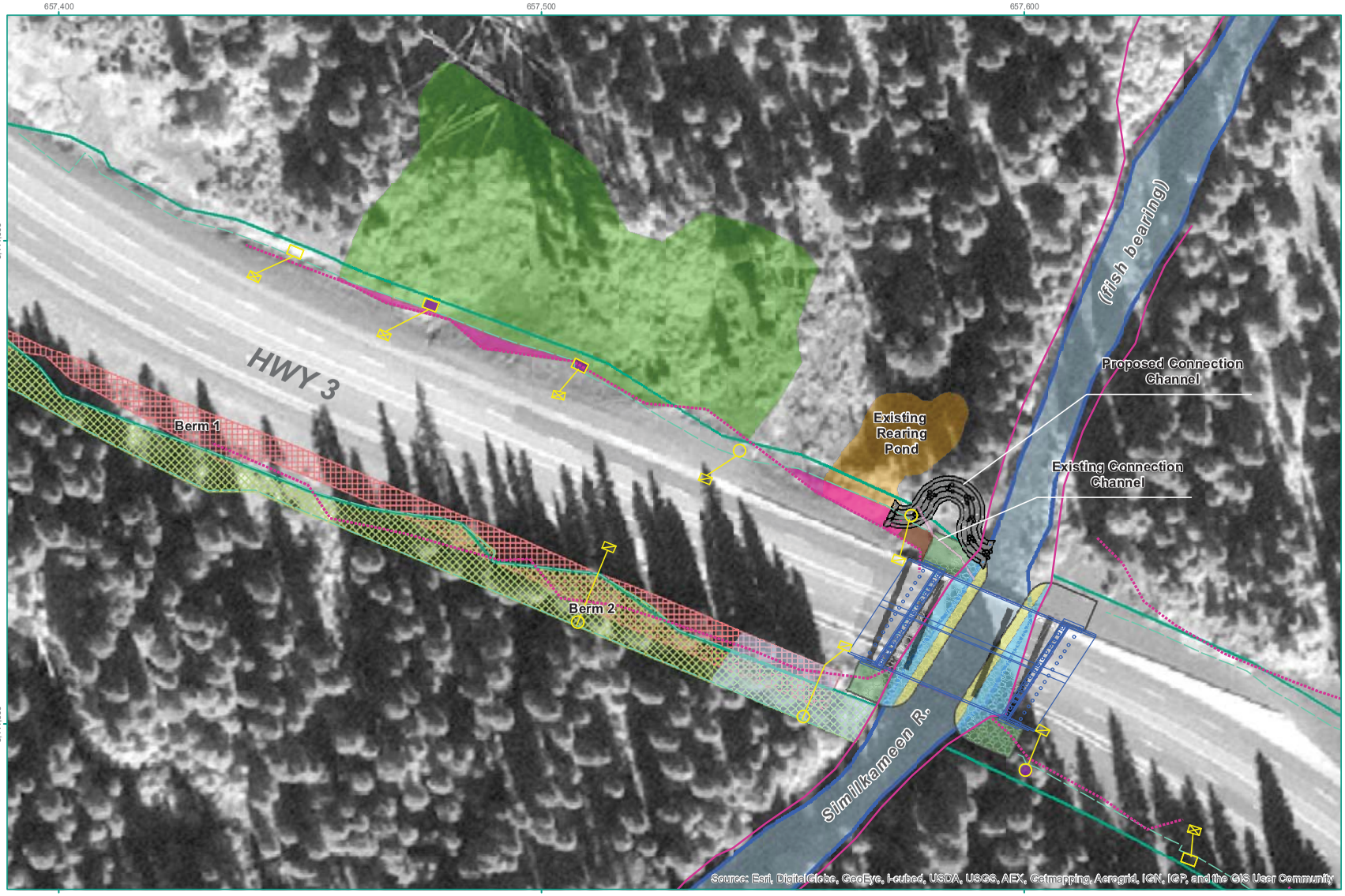
Common Name	Latin Name
Utah honeysuckle	*Lonicera utahensis*
Sitka mountain-ash	*Sorbus sitchensis*
false box	*Pachistima myrsinites*
Saskatoon	*Amelanchier alnifolia*
thimbleberry	*Rubus parviflorus*
soopolallie	*Shepherdia canadensis*
black gooseberry	*Ribes lacustre*
black twinberry	*Lonicera involucrata*
black huckleberry	*Vaccinium membranaceum*
oak fern	*Gymnocarpium dryopteris*

4.3 RESIDUAL EFFECTS

Residual effects (i.e., effects predicted to occur after all mitigation is considered) for fish are not expected to occur. There will be a net gain of 159 m^2 of functional riparian habitat following implementation of mitigation measures described in Section 4.2. Although there is a net loss of instream habitat (Table 8), the quality of habitat effected (i.e., main-channel Similkameen River in proximity to the high watermark) is common in the system and accessible to fish only during periods of elevated flow. Further, this type of habitat is not critical to the life-history functions of rainbow trout. Although there is a net loss of area to the wetland and rearing pond located at Upper Cambie Creek Bridge (147 m^2), the improved connection channel is anticipated to prevent fish stranding which currently occurs within the rearing pond. Additionally, the proposed catch basins and spillways will reduce surface erosion and improve water quality to the wetland and rearing pond. These improvements to the wetland and rearing pond are expected to outweigh the minor losses of habitat area. As such, serious harm to fish (i.e., death of fish or any permanent alteration to, or destruction of, fish habitat) is not expected to occur as a result of the Project.

This page intentionally left blank for printing purposes.

Figure 21 **Anticipated impact areas based on 100% design at Upper Cambie Creek Bridge.**



Legend

- Proposed Bridge
- Proposed Connection Channel - 157 m²
- Rip rap
- Drainage Features
- Proposed Toe of Fill
- Proposed Clear and Grub Line
- Existing Top of Bank
- Existing Toe of Slope
- Water Edge
- Existing abutment to be removed

Wetland/Pond Impact Areas
- Toe of Fill - 161 m²
- Drainage Features - 17 m²

Riparian Impact Areas
- Berm within riparian - 364 m²
- Rip rap riparian - 166 m²
- Toe of Fill - 30 m²

Instream Impact Areas
- Rip Rap embedded - 130 m²
- Rip Rap instream - 253 m²
- Existing Connection Channel - 10 m²

Environmental Values
- Existing Rearing Pond
- Wetland

Berm
- Berm 1
- Berm 2

Background Image:
High resolution 50cm satellite imagery. Acquisition date is unknown. The source information is displayed on the map.

0 5 10 20 m

Scale: 1:800

Projection: NAD 1983 UTM Zone 10N

N

Data Sources:
Base data from Canvec 2012

Hatfield CONSULTANTS

K:\Data\Project\MMM5997-NVI_MXD\MMM5997_G_Fig21_ ImpactAreas_UP_20131030.mxd

Figure 22 Anticipated impact areas based on 90% design at Middle Cambie Creek Bridge.

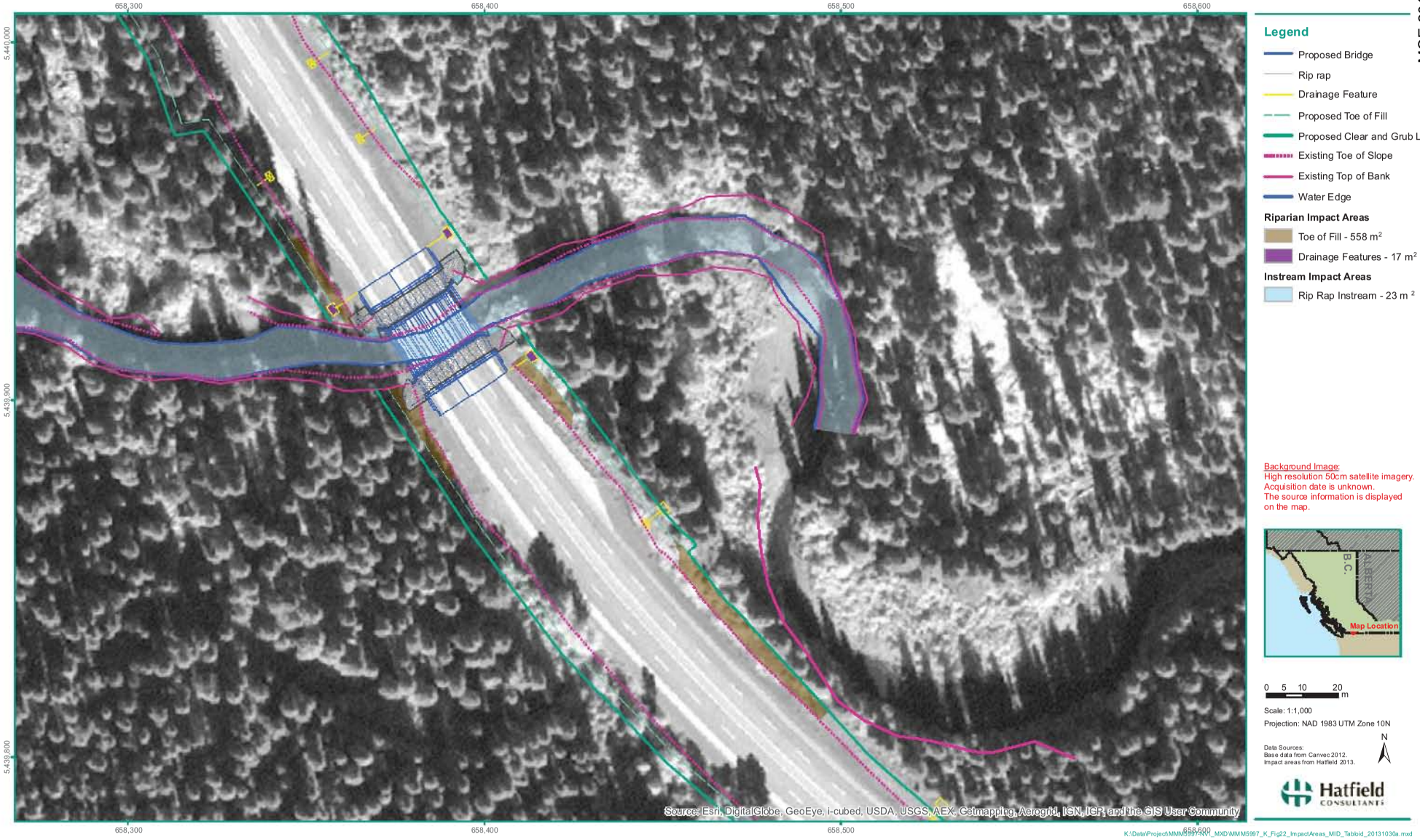
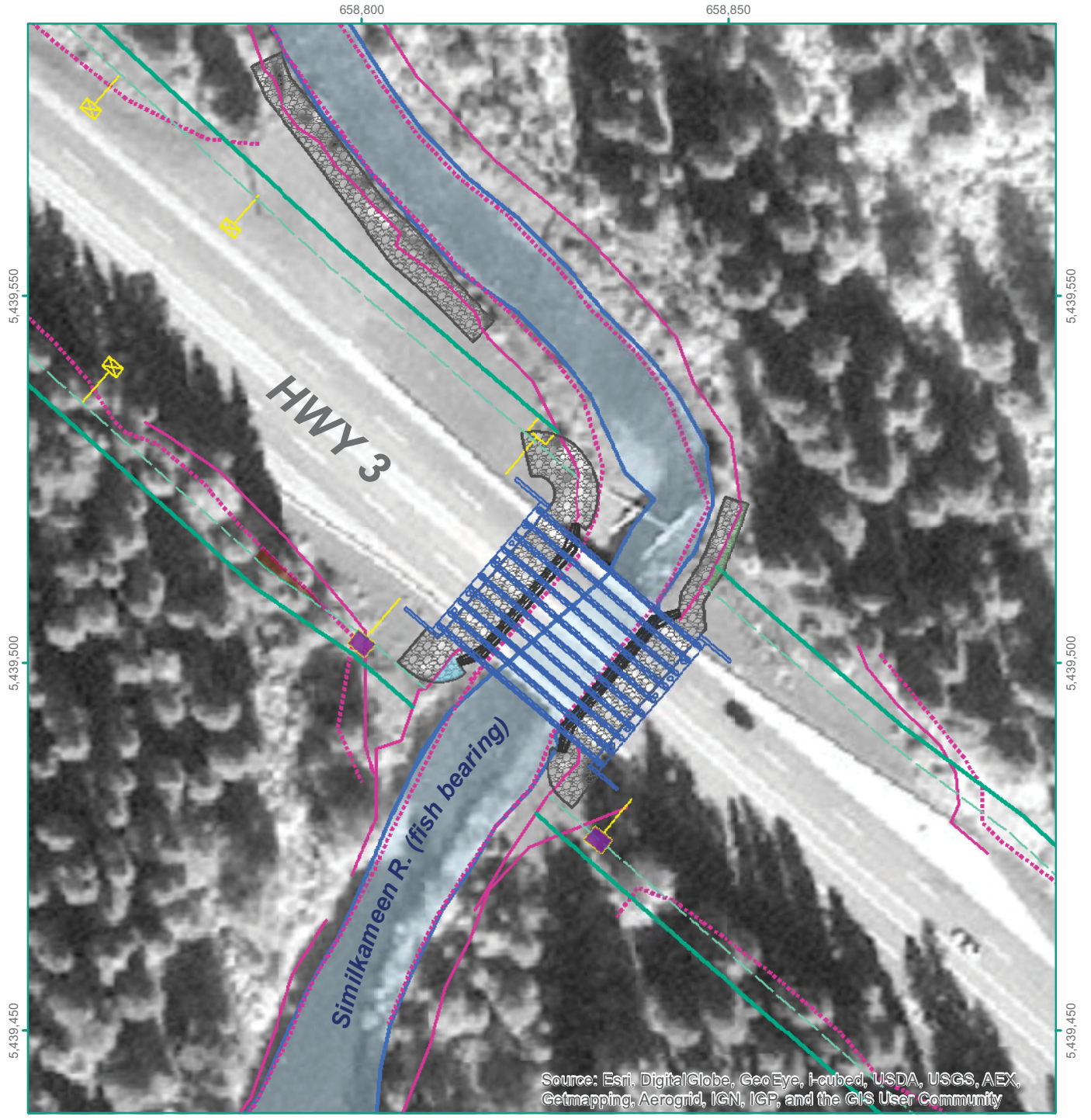


Figure 23 Anticipated impact areas based on 90% design at Lower Cambie Creek Bridge.



Legend

- Proposed Bridge
- Proposed Rip rap
- Drainage Feature
- Proposed Toe of Fill
- Proposed Clear and Grub Line
- Existing Toe of Slope
- Existing Top of Bank
- Water Edge

Instream Impact Areas

- Rip Rap Instream - 8 m^2

Riparian Impact Areas

- Toe of Fill - 13 m^2
- Rip Rap Riparian - 14 m^2
- Drainage Features - 14 m^2

Background Image:
High resolution 50cm satellite imagery. Acquisition date is unknown.
The source information is displayed on the map.

0 5 10 20 m

Scale: 1:800

Projection: NAD 1983 UTM Zone 10N

N

Data Sources:
Base data from Canvec 2012.
Impact areas from Hatfield 2013.

Hatfield CONSULTANTS

K:\Data\Project\MMM5997-NV_MXD\MMM5997_L_Fig23_ImpactAreas_LOW_20131030.mxd

This page intentionally left blank for printing purposes.

Figure 24 **Upper Cambie Creek Bridge riparian compensation area.**

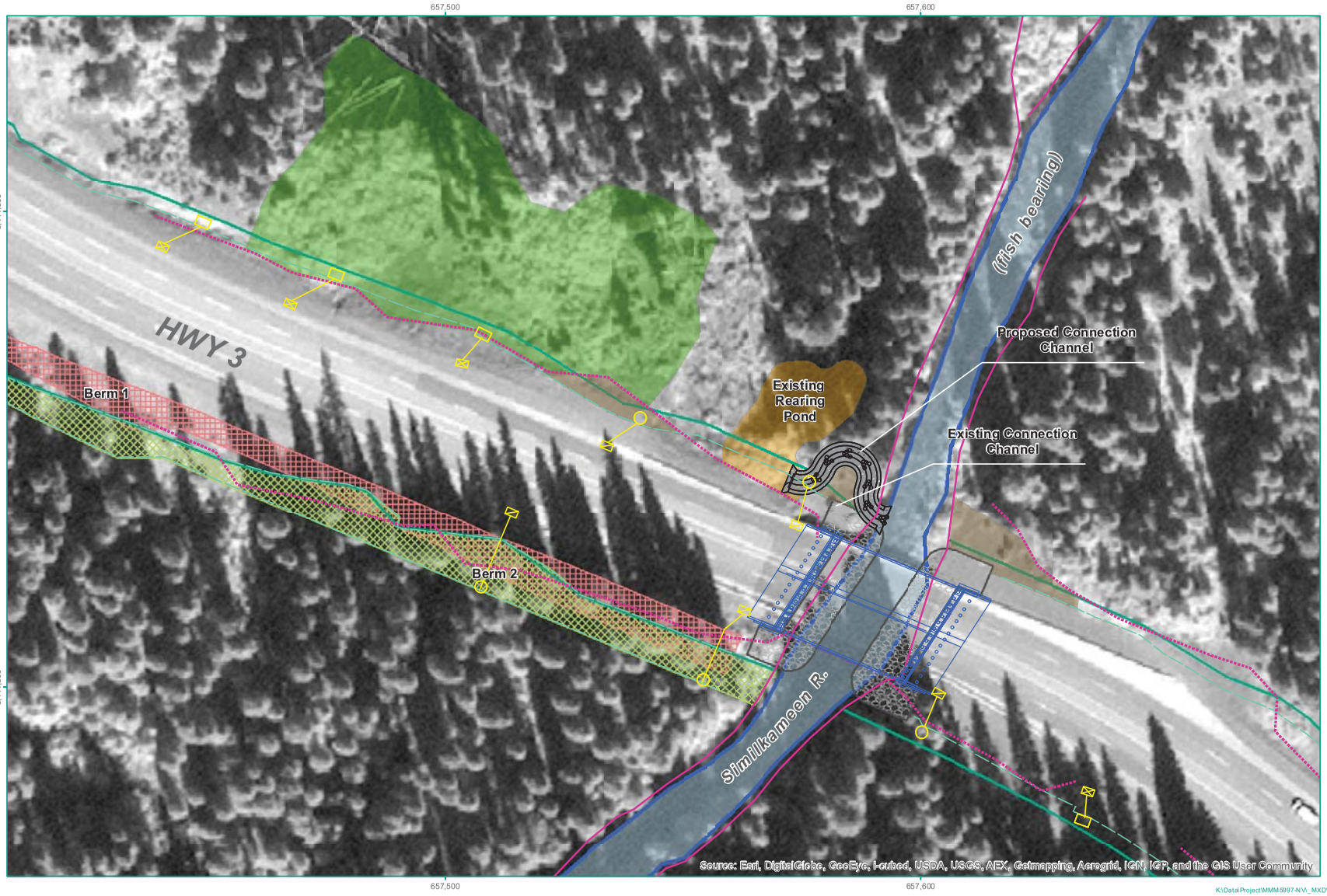


Figure 25 Middle Cambie Creek Bridge riparian compensation area.

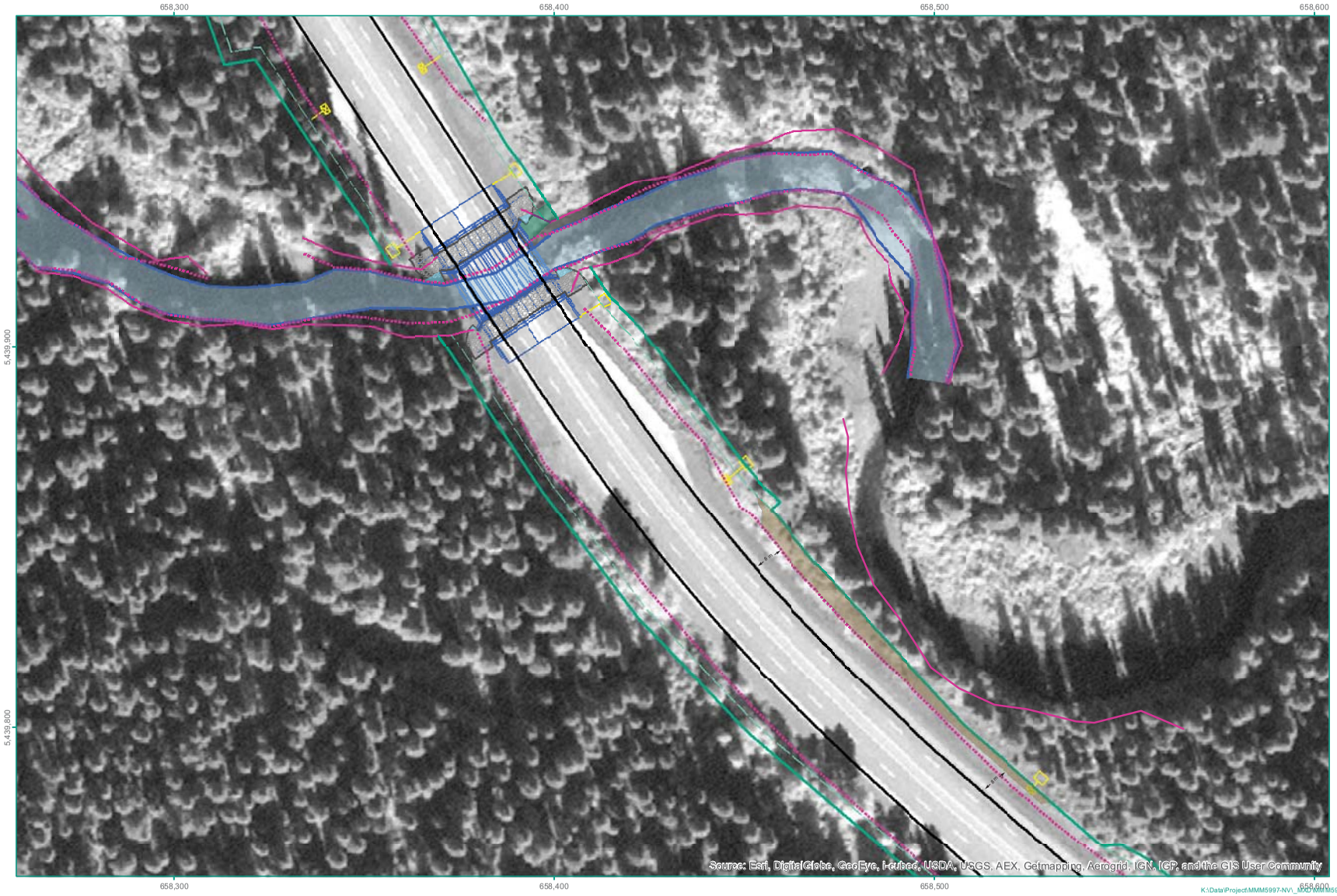
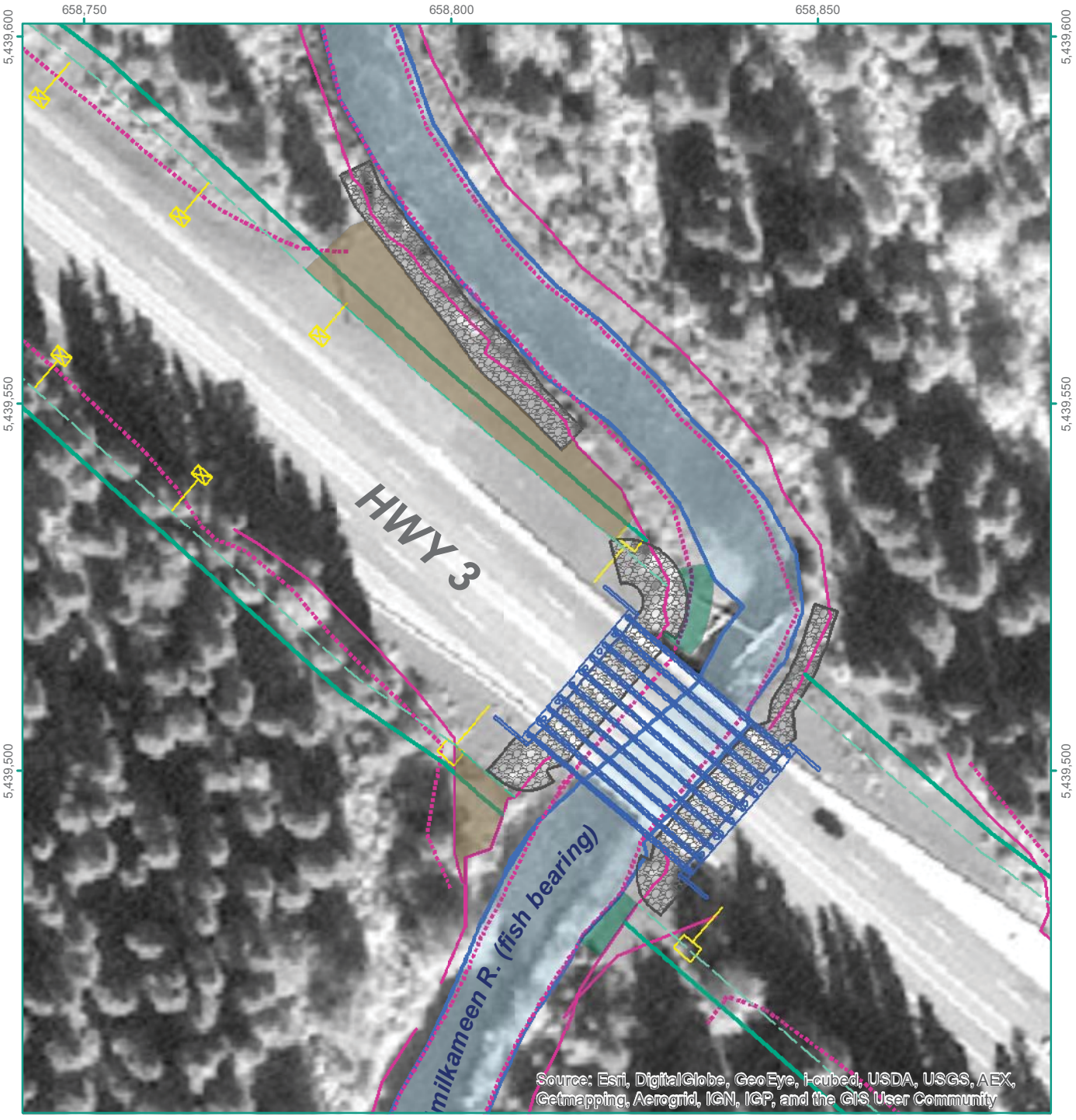


Figure 26 Lower Cambie Creek Bridge riparian compensation area.



Legend

- Proposed Bridge
- Rip rap
- Drainage Feature
- Proposed Toe of Fill
- Proposed Clear and Grub Line
- Existing Toe of Slope
- Existing Top of Bank
- Water Edge
- Riparian Compensation Area - 465 m^2
- Live Staking - 70 m^2

0 5 10 20 m

Scale: 1:800

Projection: NAD 1983 UTM Zone 10N

N

Data Sources:
Base data from Canvec 2012.
Impact areas from Hatfield 2013.

Hatfield CONSULTANTS

Background Image:
High resolution 50cm satellite imagery. Acquisition date is unknown.
The source information is displayed on the map.

K:\Data\Project\MMM5997-NV_MXD\MMM5997_P_Fig26_ImpactAreas_LOW_20131030.mxd

4.4 WORKING IN A PROVINCIAL PARK

The area adjacent to the Project area is designated as a BC Provincial Park. Because of the protected nature of the surrounding environment it is paramount that all potential impacts be constrained within the Project and permit limits during construction. The only potential exception will be the removal of danger trees on parklands on a small scale, and this will only be done through consultation and approval with and from BC Parks.

4.5 SITE PREPARATION

There are several potential effects to aquatic and terrestrial resources that will occur while preparing the site for construction and bridge construction/demolition, these include:

- Terrestrial habitat loss and alteration due to vegetation clearing at bridge access/egress and laydown areas;
- Soil erosion caused by machinery movement during site preparation and land clearing resulting in soil compaction that may affect plant growth;
- Erosion from soil exposure leading to increased levels of total suspended solids (TSS) in watercourses, which may affect fish and invertebrate populations;
- Increased incidence of idling vehicles during traffic disruptions; and
- Disturbing or removing vegetation during the breeding season for birds (March 1st to August 31st).

Most effects will be mitigated through use of best management practices outlined in the Construction Environmental Management Plan developed for the Project and the appropriate BMPs and standards listed above. Other potential mitigative measures that require additional consideration during site preparation include:

- The demarcation of environmentally sensitive areas and the installation of exclusion fencing as appropriate prior to site preparation;
- Vegetation clearing schedules that reduce the amount of time soil is exposed to rain and other sources of erosion;
- The translocation of smooth willowherb as per the "Guidelines for the Translocation of Plant Species at Risk in British Columbia" (BC MOE 2009); and
- In general, within BC, clearing should not occur between March 1st and August 31st. Although raptor nests were not observed in the Project area during our field studies the species least risk windows are listed below (BC MOE 2012b). One consideration to Project timing is that the wetland will likely have a number of active nests during the nesting season.

Species Least Risk Window

Bald eagle September 1 – December 31

Osprey September 16 – March 31

Heron September 1 – February 15

Other raptors October 1 – February 28

Passerines September 1 – February 28

- If these windows cannot be met bird sweeps will be carried out in areas where vegetation removal or disturbance is to occur to ensure that no nesting birds are affected. If an active nest is encountered ensure that nests are marked with the appropriate buffer area and that the buffer (30 m or more depending on the species) is respected until after the nesting period is complete; and
- Communicating effectively with park users, park staff and First Nations regarding Project scheduling and any traffic restrictions/alterations and site safety.

4.5.1 Danger Trees

All clearing of vegetation will be limited to the MoTI right-of-way (including acquisition lands from BC Parks). The only exception may be the removal of Danger Trees adjacent to the Project area that are threatening the safety of work crews and highway operations. If the removal of danger trees is necessary MoTI will work with Parks personnel to determine appropriate removal mitigation measures.

4.6 CONSTRUCTION

A Construction Environmental Management Plan (CEMP) will be prepared by the contractor to address environmental protection during Project construction. Best Management Practices (BMPs) and industry-standard approaches to mitigating environmental impacts outlined in this document will also be followed. Appropriate environmental monitoring and quality control procedures will be implemented as specified in the Project CEMP and relevant permits and approvals issued by regulatory agencies.

Each existing bridge will be decommissioned and removed once half the new bridge has been built. Removal and disposal of the existing bridge structures and components will be done following all regulations and any instream works associated with removal of collapsed structures will occur within the designated instream work window (i.e., August 7 – September 30 or as determined by DFO). Pile driving will likely have to take place within the riparian area outside of the fish timing window. Scheduling and logistics will be discussed with DFO and all mitigation measures outlined in this report will apply. A demolition/decommissioning plan will be included as a component plan of the Project CEMP.

The proposed Project, including the new bridge and associated approach road realignment, has the potential to affect aquatic and terrestrial resources in and around the Similkameen River. Potential general impacts include:

- Physical loss, alienation or alteration of aquatic and terrestrial habitat (including minor hydrological changes in flow velocities) due to any placement of bridge abutments and bank armoring rip rap, and the construction of approach roads;
- Release of suspended solids and other materials, particularly during rip rap placement, resulting in water quality impacts (e.g., high turbidity, decreased oxygen content) that might affect invertebrate and fish populations;
- Soil and bank erosion and subsequent deposition of sediment to the Similkameen River during excavation and construction activities (e.g., clearing, grubbing, rough grading and use of ancillary laydown areas near watercourses) that may destroy, or make unavailable, important habitat used by wildlife or fish;
- Disturbance to contaminated soils associated with the existing roadbed and utility corridor that may affect fish and fish habitat;
- Localized impacts to water quality (e.g., pH) from concrete pouring activities;
- Wildlife and human disturbance associated with excessive noise;
- Air quality issues associated with fugitive dust and exhaust emissions;
- Spills or accidental releases of fuels, hydrocarbons (e.g., hydraulic oil, oils, greases, etc.), or antifreeze from construction machinery into waterways;
- Accidental release of construction and other materials, including concrete, into the river channel when placing the bridge spans and assembling the decking;
- Incidental occurrences of species at risk; and
- Discovery of archaeological artifacts during construction.

This section outlines a range of mitigation strategies intended to minimize or prevent the potential effects on the environment during the construction phase of the new bridges. Detail on Best Management Practices (BMPs) for avoiding and mitigating impacts to aquatic environments during the design and construction phases of river crossing project can be found in a wide range of documents prepared by provincial and federal government agencies (e.g., Chilibeck et al. 1992). Impact mitigation will be required wherever construction activities have the potential to impact water quality, aquatic and riparian habitat. Construction mitigation measures will include, but not be limited to:

- A detailed construction and environmental management plan will be prepared by the contractor, and accepted by the proponent, prior to construction works beginning. The plan will describe construction methods, the timing of construction activities (to minimize environmental impacts), and measures to be taken to protect fish and wildlife, species at risk, and any identified archaeological aspects;

- The development of an invasive plant management plan in accordance with the "Best Practices for Managing Invasive Plants on Roadsides"(MoTI and IPCBC 2010);

- Delineation of environmentally-sensitive "no work" areas adjacent to the Similkameen River (i.e., high water mark corresponding to top-of-bank) will be established to minimize or prevent riverbank erosion, sedimentation and disruption to fish habitat, and resident and migrating fish caused by the temporary operation of machinery and equipment, and the presence of construction materials;

- As noted above, the Similkameen River is a salmonid-bearing river and the instream work window specified by the regulatory agencies is between August 7 and September 30 (BC MOE 2012b), or as determined by DFO;

- Completion of a fish salvage following isolation of the work area during instream works as required;

- Environmental monitoring shall be conducted by a qualified professional as outlined in SS165 and other applicable guidelines/regulations throughout the construction phase of the Project to ensure that activities associated with Project works have no adverse effects on the stream and riparian habitat;

- Standard BMPs should be applied for stormwater management, sedimentation and erosion control to minimize water quality impacts to downstream aquatic resources during construction, and for the long-term management of the road and bridge system. These may include but are not limited to:

    - Additional stormwater requirements for activities during periods of high precipitation and minimized works to reduce the risk of erosion;

    - The use of sediment control methods including cutoff trenches, silt fences, flow barriers, temporary and/or permanent sediment control ponds and/or traps, and ditches to minimize or eliminate sediment transport from exposed soil areas into receiving waterbodies and watercourses;

- Site preparation near watercourses will be done to avoid or minimize the deposition of sediment into watercourses, and use of approved instream construction practices. During periods of instream works (if required), the contractor will employ an on-site technician to monitor suspended sediment levels;
- Minimization of disturbed areas and stripping of vegetation and soils, particularly on steep slopes, and within the high watermark (top-of-bank) and stabilization of denuded soils;
- Minimization of the time interval between clearing/grubbing and subsequent construction works, particularly at or in the vicinity of watercourses, the wetland, or in areas susceptible to erosion;
- Special provision should be made for protection of surface watercourses and waterbodies from concrete works. This will include: prohibition from discharging concrete wash water into any watercourse or waterbody, and containment and isolation of any concrete-affected water for either treatment until it meets water quality criteria suitable for discharge to the natural environment, or else transported to a facility approved for related containment and/or disposal; and
- Appropriate revegetation and/or planting/replanting using suitable native plant species of a size that will quickly re-establish riparian and upland cover (see Section 4.2.3). Riparian revegetation in the Project area should be monitored to ensure the re-establishment of habitat to pre-construction conditions. Previously within Manning Park the Denbow Ecoblanket was used for revegetation with the following seed mix: Interior Forestland Mix + Fall Rye at 50 kg/ha + slow release fertilizer and Microblend tackifier. Seed mixes will be reviewed and approved by a qualified environmental professional prior to use.

- During construction, ensure stormwater runoff from the bridge deck, side slopes and approaches is directed into a collection basin or vegetated area having suitable features to remove suspended solids, dissipate velocity and prevent sediment and other deleterious substances from entering the Similkameen River or other local watercourses;
- Stabilization of any waste materials removed from the work area well back from the high water mark (top-of-bank) of the river, and contain using silt fences, tarps or other appropriate methods;
- Use of measures to prevent deleterious substances, such as new concrete (e.g., pre-cast, cured and dried concrete), grout, paint, and preservatives from entering the river;
- Basic training of on-site construction personnel in environmental protection measures and their related roles and responsibilities including the identification of species at risk with the potential to occur at the

Project site; works will stop and the environmental monitor will be notified immediately should incidental encounters of species at risk occur during construction;

- Removal and appropriate disposal or stockpile of any contaminated soils and other related materials at the site; and

- BMPs for mitigating excessive construction noise (scheduling works with potential for excessive noise during daytime), mitigating the effect of construction activities on air quality, and managing construction waste.

4.6.1 Spills and Accidents

Spills or accidental releases of fuels, hydrocarbons (e.g., hydraulic oil, oils, greases, etc.), or antifreeze from construction machinery into riparian areas and waterways are toxic to fish and wildlife. The potential for environmental impacts from accidental spills or releases should be addressed in the Project CEMP and more specifically in a Spill Response and Emergency Contingency Plan.

Several potential mitigative measures should be used to reduce the environmental impacts in the event of spills and accidents. These measures could include:

- Preparation and implementation of a Spill Response and Emergency Contingency Plan appropriate to the scale of the proposed construction activities and in accordance with industry-accepted practices consistent with relevant authorities will be required. The Contractor Spill Response and Emergency Contingency Plan will address all potential spills of hazardous materials including fuel, oil, lubricants, chemicals and other substances that, under the applicable laws, are either considered hazardous or toxic, or considered to contaminate the environment, brought on site or used in the performance of the work;
- Proper storage of all hazardous materials, the implementation of spill prevention and control plans, secondary containment for vehicle fueling, and washing and maintenance areas;
- A spill containment kit and supplies should be on-site and available. All persons with proper training in spill containment should know the location of this kit and how to use it; and
- Storage of fuel, paints, and other deleterious substances should not be within 15 m of any ditch, storm drain or watercourse.

4.6.2 Archaeological Chance Finds

If any archaeological artifacts are found during construction, work will stop immediately and the Archaeology Branch of the MFLNRO will be contacted. For more information about archaeological chance finds procedures please refer to the Archaeological assessment report and to SS165.20.

4.7 CUMULATIVE ENVIRONMENTAL EFFECTS

Cumulative effects are defined by the Canadian Environmental Assessment Agency (CEAA) as:

> *The effect on the environment, which results from effects of a project when combined with those of other past, existing and imminent projects and activities. These may occur over a certain period of time and distance.*

Implementation of avoidance, mitigation and compensation measures within, and adjacent to, the Project area will limit any environmental effects resulting from the construction and operation phases. Because the newly constructed bridge will replace a similar existing structure there are no foreseen additional effects post-construction. Furthermore, since the Project is located in a Provincial Park it is unlikely that for the foreseeable future there will be any additional infrastructure or other significant development activities undertaken in the general Project area. Therefore, no cumulative effects are anticipated to occur in conjunction with the proposed Project.

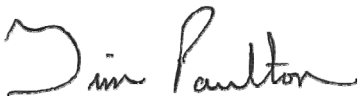
5.0 CONCLUSION

Providing the avoidance and mitigation measures outlined above are followed during the construction phases, it is unlikely that the Project will cause significant long-term adverse impacts to the environmental attributes identified in this report.

6.0 CLOSURE

We trust the above information meets your requirements. If you have any questions or comments, please contact the undersigned.

HATFIELD CONSULTANTS:

Approved by:  November 19, 2013

Tim Poulton R.P.Bio.
Project Manager

Date

Approved by:  November 19, 2013

Alan Stockwell, M.Sc., R.P.Bio.
Project Director

Date

7.0 REFERENCES

BC Ministry of Forests and BC Environment. 2012. Fish-stream Crossing Guidebook Revised Edition. Forest Practices Code. Victoria, BC.

BC Ministry of Environment. 2012a. Fisheries Inventory: Fisheries Information Summary System [Internet]. [Cited December 3, 2012]. Available from: http://www.env.gov.bc.ca/fish/fiss/index.html

BC Ministry of Environment. 2012b. Ministry of Environment Okanagan Region [Internet]. [Cited December 13, 2012]. Available from: http://www.env.gov.bc.ca/wsd/regions/okr/wateract/workwindows.html

Ministry of Environment. 2012c. Develop with Care 2012: Environmental Guidelines for Urban and Rural Land development in British Columbia (BC) [Internet]. [Cited April 10, 2013]. Available from: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare2012/

BC Ministry of Environment. 2009. Guidelines for Translocation of Plant Species at Risk in British Columbia. Victoria (BC)

BC Ministry of Environment. 2003. Environmental Management Act. SBC 2003. Current to 2012-12-5. Queen's Printer. Victoria (BC).

BC Ministry of Forests Research Program. 1998. Extension Note 21, Biodiversity and Interior Habitats: The need to Minimize Edge Effects Part 6 of 7. [Internet]. [Cited November 15, 2013]. Available from: http://www.for.gov.bc.ca/hfd/pubs/docs/en/en21.pdf

BC Hydro, BC Ministry of Water, Land and Air Protection, BC Transmission Corporation, and Fisheries and Oceans Canada. 2003. Approved Work Practices for Managing Riparian Vegetation. A Guide to Incorporating Riparian Environmental Concerns into the Management of Vegetation in BC Hydro's Transmission and Distribution Corridors. Appendix B.

BC Ministry of Transportation. 2011. 2012 Standard Specifications for Highway Construction: Section 165 Protection of the Environment (BC).

BC Ministry of Transportation. 2010. Best Management Practices for Highway Maintenance Activities, Ministry of Transportation document (BC).

BC Ministry of Transportation (and Highways). 1997. Manual of Control of Erosion and Shallow Slope Movement (BC).

[CDC] BC Conservation Data Centre. 2012a. BC Species and Ecosystems Explorer: Species and Ecosystems Search [Internet]. [Cited December 7, 2012]. Available from: http://a100.gov.bc.ca/pub/eswp/

CDC. 2012b. BC Species and Ecosystems Explorer: Species and Ecosystems Search. Hoffman's checkerspot Conservation Status Report [Internet]. [Cited December 7, 2012]. Available from: http://a100.gov.bc.ca/pub/eswp/esr.do?id=19357

CDC. 2012c. BC Species and Ecosystems Explorer: Species and Ecosystems Search. Indra swallowtail Conservation Status Report [Internet]. [Cited December 10, 2012]. Available from: http://a100.gov.bc.ca/pub/eswp/esr.do?id=14498

CDC. 2012d. BC Species and Ecosystems Explorer: Species and Ecosystems Search. Northern tightcoil Conservation Status Report [Internet]. [Cited December 10, 2012]. Available from: http://a100.gov.bc.ca/pub/eswp/esr.do?id=21295

Chilibeck B, Sterling M. 2005. Urban Stormwater Guidelines and Best Management Practices for Protection of Fish and Fish Habitat: Draft Discussion Document. Department of Fisheries and Oceans.

Chilibeck B, Chislett G, Norris G. 1992. Land Development Guidelines for the Protection of Aquatic Habitat. Department of Fisheries and Oceans. 129 pp.

Department of Justice. 2002. Species at Risk Act. S.C. 2002, c. 29. Act current to 2012-11-25 and last amended on 2012-07-06. Department of Justice. Ottawa (ON).

Department of Justice. 1999. Canadian Environmental Protection Act S.C. 1999, c. 33. Act current to 2012-11-25 and last amended on 2012-11-01. Department of Justice. Ottawa (ON).

Department of Justice. 1994. Migratory Birds Convention Act S.C. 1994, c. 22. Act current to 2012-11-25 and last amended on 2010-12-10. Department of Justice. Ottawa (ON).

Department of Justice. 1992. Transportation of Dangerous Goods Act S.C. 1992, c. 34. Act current to 2012-11-25 and last amend on 2009-06-16. Department of Justice. Ottawa (ON).

Douglas GW, Meidinger D, Pojar J, editors. 2001. Illustrated Flora of British Columbia. Vol. 6. Monocotyledons (Acoraceae Through Najadaceae). Victoria BC: BC Ministry of Environment, Lands and Parks and BC Ministry of Forests. p. 134.

Douglas GW, Meidinger D, Pojar J, editors. 1999a. Illustrated Flora of British Columbia. Vol. 3. Dicotyledons (Diapensiaceae Through Onagraceae). Victoria BC: BC Ministry of Environment, Lands and Parks and BC Ministry of Forests. p. 348-364.

Douglas GW, Meidinger D, Pojar J, editors. 1999b. Illustrated Flora of British Columbia. Vol. 2. Dicotyledons (Balsaminaceae Through Cuscutaceae). Victoria BC: BC Ministry of Environment, Lands and Parks and BC Ministry of Forests. p. 340.

Douglas GW, Straley GB, Meidinger D, Pojar J, editors. 1999c. Illustrated Flora of British Columbia. Vol. 4. Dicotyledons (Orobanchaceae Through Rubiaceae). Victoria BC: BC Ministry of Environment, Lands and Parks and BC Ministry of Forests. p. 350.

Douglas GW, Meidinger DV, Penny JL. 2002. Rare Native Vascular Plants of British Columbia 2nd. ed. BC Ministry of Sustainable Resource Management and BC Ministry of Forestry, Victoria, BC. 359 p.

E-Fauna BC. 2012. Electronic Atlas of the Wildlife of British Columbia. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia [Internet]. [Cited December 10, 2012]. Available from: http://linnet.geog.ubc.ca/efauna/Atlas/Atlas.aspx?sciname=Anaxyrus%20boreas

Environment Canada. 2012. National Climate Data and Information Archive [Internet]. [Cited November 22, 2012]. Available from: http://www.climate.weatheroffice.gc.ca/Welcome_e.html

Fisheries and Oceans Canada. 2007. Pacific Region Operational Statement: Clearspan Bridges Version 3.0. Fisheries and Oceans Canada. Vancouver (BC).

Fisheries and Oceans Canada. 1998. Habitat Conservation and Protection Guidelines, 2nd Ed. Department of Fisheries and Oceans Canada. Ottawa (ON).

Green RN, Klinka K. 1994. A Field Guide to Site Identification and Interpretation for the Vancouver Forest Region. Ministry of Forests, Province of British Columbia, BC. 285p.

Kremaster LL, Bunnell FL. 1999. Edges: Theory, evidence, and implications upon management of western forests. In J.A. Rochelle, L.A. Lehmann and J. Winsniewksi (Eds.), Forest fragmentation: Wildlife and Management Implications (pp. 117-153).

Maslovat C. 2009. Guidelines for Translocation of Plant Species at Risk in British Columbia. Ministry of Environment (BC).

Ministry of Water, Land and Air Protection. 2004. Standards and Best Management Practices for Instream Works (BC).

North Cascades Grizzly Bear Recovery Team. 2004. Recovery Plan for Grizzly Bears in the North Cascades of British Columbia. BC Ministry of Water, Land and Air Protection, Biodiversity Branch.

Penny J, Klikenberg R. 2012. E-Flora BC: Electronic Atlas of Flora of BC [Internet]. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver. [Cited December 7, 2012]. Available from: www.geog.ubc.ca/biodiversity/eflora/

Species at Risk Public Registry. 2012a. Government of Canada. Western Toad Species Profile [Internet]. [Cited December 10, 2012]. Available from: http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=748

Species at Risk Public Registry. 2012b. Government of Canada. Olive-sided flycatcher Species Profile [Internet]. [Cited December 10, 2012]. Available from: http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=999

Species at Risk Public Registry. 2012c. Government of Canada. Monarch Species Profile [Internet]. [Cited December 10, 2012]. Available from: http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=294

Species at Risk Public Registry. 2012d. Government of Canada. Sonora skipper Species Profile [Internet]. [Cited December 10, 2012]. Available from: http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=923

Stephens KA, Graham P, Reid D. 2002. Stormwater Planning: A Guidebook for British Columbia, Ministry of Water, Land and Air Protection. Vancouver (BC).

APPENDICES

Appendix A1

Aquatic Habitat Data Sheets

Referencing Information

Watershed:	Upper Cambie Bridge 1222
Station (%):	100m upstream
Date Assessed:	September 5, 2012
Time Assessed:	09:28
UTM:	0657621N 5441597E
UTM NAD:	83
Access:	Truck

Morphology

Stream Morphology Types (%):	Riffle 100%		
Depth/Pool (m):			
Channel Slope (°):			
Section Length (m):	20		
Velocity (m/s):	0.459		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.14	0.21	0.24
Wetted Width (m):	10.7		
Channel Width (m):	18		
Bank slope (5°):	L – 10 Shallow R – 80 Steep		

Cover

Instream Cover (Total % coverage):	20
Overhead Cover (Total % coverage):	15
Instream Cover (Sum 100%):	
Small Woody Debris	2
Large Woody Debris	5
Boulders	85
Undercut banks	5
Deep pools	0
Instream vegetation	3
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	20
Overhanging shrubs	70
Overhanging debris (>15cm)	5
Overhanging debris (<15cm)	5
Riparian Zone (25 m Buffer) circle:	Coniferous forest

Substrate Composition (Sum 100%)

% Organics	% Sand	5	% Cobble	40
% Fines	% Gravel	40	% Boulder	15

Miscellaneous

High Water mark:	8 m
Flood Evidence (Debris on plants, etc.):	8 m
Air Temperature:	6°C
Cloud Cover (5%):	100
Weather (prev 24 hrs):	Clear

In situ Water Parameters

Sample Depth (m)	5	**Channel Features**	**Dimensions**
Dissolved Oxygen (%)		Islands	None
Dissolved Oxygen (mg/L)	12	Bars	None
Secchi Depth (m)			
Temperature (°C)	6.1		
pH	5.36		
Turbidity (NTU)	0.13		
Conductivity (µS/cm)	109		

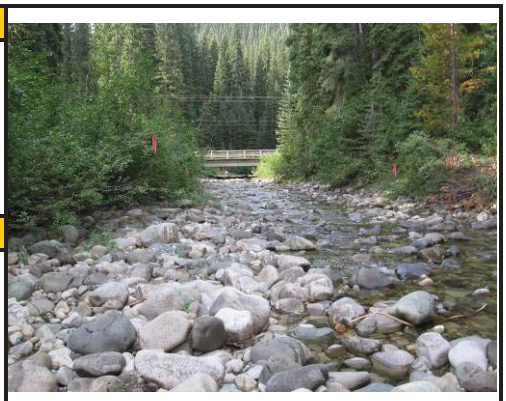
Landscape (Beyond 25 m Buffer)

Coniferous forest, shrubs, roads, hills

Visible Disturbance

Bridge

Comments



Downstream

Upstream

Right Downstream Bank

Left Downstream Bank

Referencing Information

Watershed:	Upper Cambie Bridge 1222
Station (%):	At bridge
Date Assessed:	September 5, 2012
Time Assessed:	10:00
UTM:	0657594N 5441528E
UTM NAD	10
Access:	Truck

Morphology

Stream Morphology Types (%):	Riffle 100%		
Depth/Pool (m):			
Channel Slope (°):	3		
Section Length (m):			
Velocity (m/s)	0.418		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.10	0.22	0.10
Wetted Width (m):	12.4		
Channel Width (m):	19.6		
Bank slope (5°):	L – 30 Steep; R – 20 Medium		

Cover

Instream Cover (Total % coverage):	20
Overhead Cover (Total % coverage):	0
Instream Cover (Sum 100%):	
Small Woody Debris	5
Large Woody Debris	10
Boulders	85
Undercut banks	0
Deep pools	0
Instream vegetation	0
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	0
Overhanging shrubs	70
Overhanging debris (>15cm)	15
Overhanging debris (<15cm)	15
Riparian Zone (25 m Buffer) circle:	Roads, shrubs, cutlines, bridge

Substrate Composition (Sum 100%)

% Organics	% Sand	15	% Cobble	20
% Fines	% Gravel	50	% Boulder	15

Miscellaneous

High Water mark:	8 m
Flood Evidence (Debris on plants, etc.):	8 m
Air Temperature:	15°C
Cloud Cover (5%):	100% High
Weather (prev 24 hrs):	Sunny

In situ Water Parameters

Sample Depth (m)	0.05
Dissolved Oxygen (%)	
Dissolved Oxygen (mg/L)	13
Secchi Depth (m)	
Temperature (°C)	6.5
pH	5.74
Turbidity (NTU)	3.48
Conductivity (µS/cm)	108

Channel Features	Dimensions
Islands	None
Bars	2x40m

Landscape (Beyond 25 m Buffer)

Grasses, coniferous forest, roads, hills

Visible Disturbance

Bridge

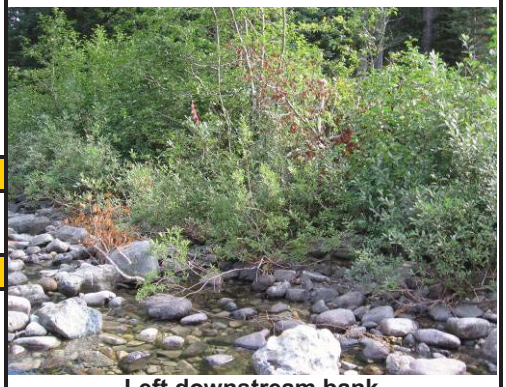
Comments

The channel has been artificially widened at the bridge crossing site.

Downstream

Upstream

Right downstream bank



Left downstream bank

Referencing Information

Watershed:	Upper Cambie Bridge 1222
Station (%):	100 below
Date Assessed:	September 5, 2012
Time Assessed:	10:30
UTM:	0657594 5441528
UTM NAD	10
Access:	Truck

Morphology

Stream Morphology Types (%):	Riffle 100		
Depth/Pool (m):	0.10		
Channel Slope (°):	3		
Section Length (m):			
Velocity (m/s):	0.351		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.10	0.15	0.25
Wetted Width (m):	6.8		
Channel Width (m):	13.7		
Bank slope (5°):	L – 90 R – 30		

Cover

Instream Cover (Total % coverage):	10
Overhead Cover (Total % coverage):	20
Instream Cover (Sum 100%):	
Small Woody Debris	10
Large Woody Debris	10
Boulders	30
Undercut banks	10
Deep pools	30
Instream vegetation	10
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	40
Overhanging shrubs	20
Overhanging debris (>15cm)	10
Overhanging debris (<15cm)	30
Riparian Zone (25 m Buffer) circle:	Roads, coniferous forest, shrubs

Substrate Composition (Sum 100%)

% Organics	% Sand	5	% Cobble	40
% Fines	% Gravel	40	% Boulder	15

Miscellaneous

High Water mark:	
Flood Evidence (Debris on plants, etc.):	Yes
Air Temperature:	12°C
Cloud Cover (5%):	100% High cloud
Weather (prev 24 hrs):	Clear

In situ Water Parameters

Sample Depth (m)	0.05
Dissolved Oxygen (%)	
Dissolved Oxygen (mg/L)	11.6
Secchi Depth (m)	
Temperature (°C)	6.7
pH	5.88
Turbidity (NTU)	0.35
Conductivity (µS/cm)	103

Channel Features	**Dimensions**
Islands	None
Bars	None

Landscape (Beyond 25 m Buffer)

Coniferous forest, shrubs, roads

Visible Disturbance

Culvert

Comments

Piece of bridge – concrete foundation L-shape 3 m x 1 m in channel.

Upstream

Downstream

Referencing Information

Watershed:	Cambie Bridge 1223
Station (%):	100 above
Date Assessed:	September 5, 2012
Time Assessed:	12:10
UTM:	0658322N 5439919E
UTM NAD	10
Access:	Truck

Morphology

Stream Morphology Types (%):	50% Run 50% Riffle		
Depth/Pool (m):			
Channel Slope (°):	2		
Section Length (m):			
Velocity (m/s):	0.313		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.20	0.40	0.40
Wetted Width (m):	10.4		
Channel Width (m):	16.80		
Bank slope (5°):	L – 10 R – 70		

Cover

Instream Cover (Total % coverage):	5
Overhead Cover (Total % coverage):	30
Instream Cover (Sum %):	
Small Woody Debris	10
Large Woody Debris	30
Boulders	30
Undercut banks	10
Deep pools	20
Instream vegetation	0
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	30
Overhanging shrubs	30
Overhanging debris (>15cm)	20
Overhanging debris (<15cm)	20
Riparian Zone (25 m Buffer) circle:	Flooded, roads, coniferous forest, shrubs

Substrate Composition (Sum 100%)

% Organics	% Sand	5	% Cobble	40
% Fines	% Gravel	40	% Boulder	15

Miscellaneous

High Water mark:	8 m
Flood Evidence (Debris on plants, etc.):	3 m
Air Temperature:	20°C
Cloud Cover (5%):	5%
Weather (prev 24 hrs):	Sunny

In situ Water Parameters

Sample Depth (m)	0.10
Dissolved Oxygen (%)	
Dissolved Oxygen (mg/L)	10
Secchi Depth (m)	
Temperature (°C)	8.5
pH	6.19
Turbidity (NTU)	0.05
Conductivity (µS/cm)	126

Channel Features	Dimensions
Islands	None
Bars	None

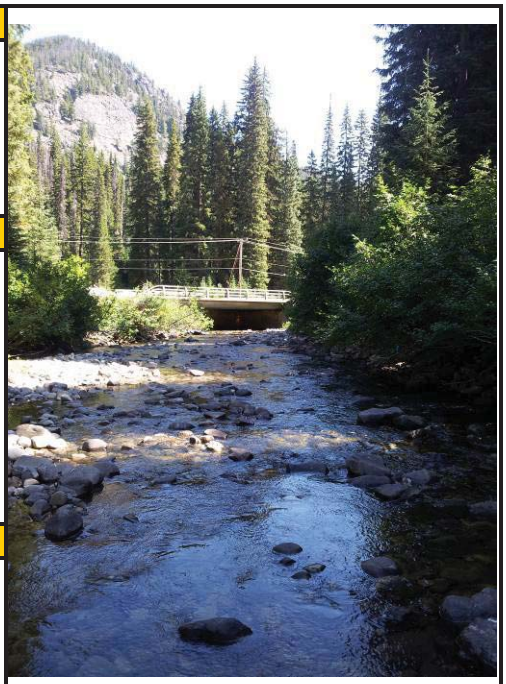
Landscape (Beyond 25 m Buffer)

Coniferous forest, roads, shrubs, hills

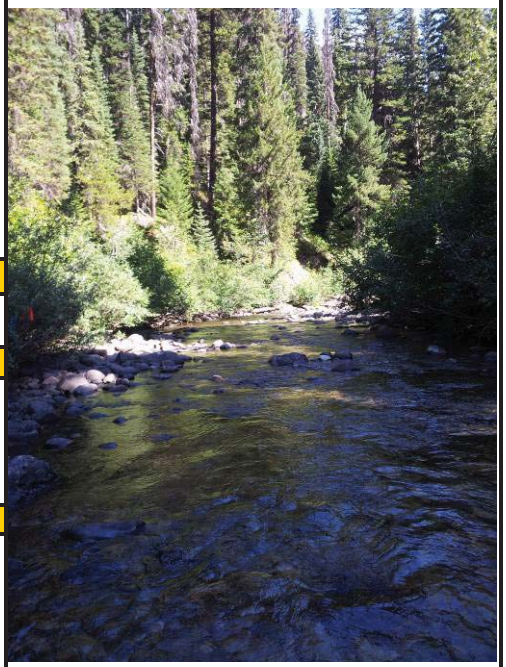
Visible Disturbance

Collapsed bank

Comments



Downstream



Upstream

Referencing Information

Watershed:	Cambie Bridge 1223
Station (%):	At bridge
Date Assessed:	September 5, 2012
Time Assessed:	12:30
UTM:	0658359N 5439898E
UTM NAD	10
Access:	Truck

Morphology

Stream Morphology Types (%):	Riffle 100%		
Depth/Pool (m):			
Channel Slope (°):	1		
Section Length (m):			
Velocity (m/s):	0.740		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.38	0.38	0.24
Wetted Width (m):	7.5		
Channel Width (m):	13.3		
Bank slope (5°):			

Cover

Instream Cover (Total % coverage):	0
Overhead Cover (Total % coverage):	100 Under bridge
Instream Cover (Sum 100%):	
Small Woody Debris	3
Large Woody Debris	0
Boulders	25
Undercut banks	0
Deep pools	66
Instream vegetation	6
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	0
Overhanging shrubs	0
Overhanging debris (>15cm)	100 Under bridge
Overhanging debris (<15cm)	0
Riparian Zone (25 m Buffer) circle:	Roads, Bridge (under)

Substrate Composition (Sum 100%)

% Organics	% Sand	10	% Cobble	35
% Fines	% Gravel	20	% Boulder	35

Miscellaneous

High Water mark:	
Flood Evidence (Debris on plants, etc.):	
Air Temperature:	20°C
Cloud Cover (5%):	Clear
Weather (prev 24 hrs):	Clear

In situ Water Parameters

Sample Depth (m)	0.10	**Channel Features**	**Dimensions**
Dissolved Oxygen (%)		Islands	None
Dissolved Oxygen (mg/L)		Bars	1 20x40m
Secchi Depth (m)			
Temperature (°C)	8.7		
pH	6.6		
Turbidity (NTU)	1.67		
Conductivity (µS/cm)	124		

Landscape (Beyond 25 m Buffer)	Visible Disturbance

Comments

In-stream moss on boulders in channel.

Upstream

Downstream

Left downstream bank

Referencing Information

Watershed:	Cambie Bridge
Station (%):	100 m downstream
Date Assessed:	September 5, 2012
Time Assessed:	12:45
UTM:	0658430N 5439941E
UTM NAD	10
Access:	Truck

Morphology

Stream Morphology Types (%):	Run 50, Riffle 50		
Depth/Pool (m):	0.25		
Channel Slope (°):	1		
Section Length (m):	20		
Velocity (m/s):	0.632		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.24	0.25	0.24
Wetted Width (m):	12.1		
Channel Width (m):	14.6		
Bank slope (5°):	L – 30, R – 80		

Cover

Instream Cover (Total % coverage):	5
Overhead Cover (Total % coverage):	15
Instream Cover (Sum 100%):	
Small Woody Debris	0
Large Woody Debris	5
Boulders	90
Undercut banks	5
Deep pools	0
Instream vegetation	0
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	0
Overhanging shrubs	80
Overhanging debris (>15cm)	20
Overhanging debris (<15cm)	0
Riparian Zone (25 m Buffer) circle:	Shrubs

Substrate Composition (Sum 100%)

% Organics	% Sand	% Cobble	70
% Fines	% Gravel 25	% Boulder	5

Miscellaneous

High Water mark:	
Flood Evidence (Debris on plants, etc.):	5 m
Air Temperature:	16°C
Cloud Cover (5%):	10%
Weather (prev 24 hrs):	Clear

In situ Water Parameters

Sample Depth (m)	0.05
Dissolved Oxygen (%)	
Dissolved Oxygen (mg/L)	8.0
Secchi Depth (m)	
Temperature (°C)	9.3
pH	6.74
Turbidity (NTU)	5.13
Conductivity (µS/cm)	129

Channel Features	**Dimensions**
Islands	None
Bars	1 upstream

Landscape (Beyond 25 m Buffer)

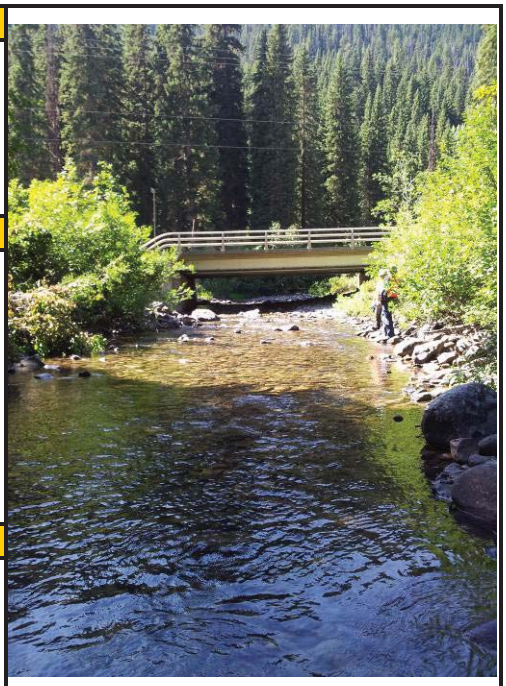
Coniferous forest, shrubs, roads, hills

Visible Disturbance

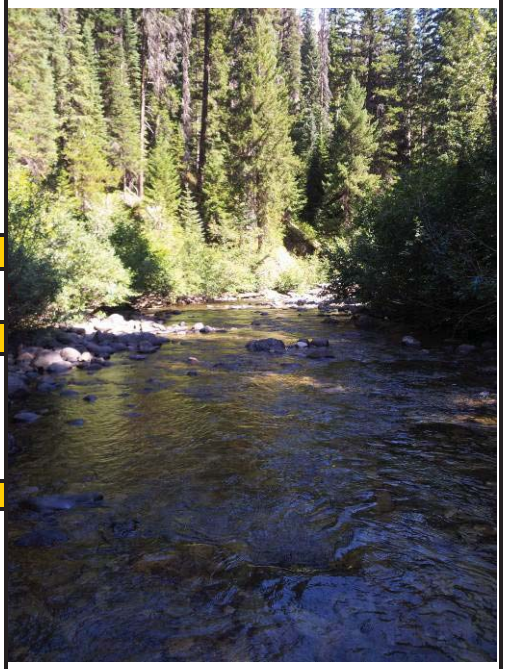
Bridge

Comments

Concrete sections of the bridge washed about 100 m downstream.



Upstream



Downstream

Referencing Information

Watershed:	Lower Cambie Bridge 1224
Station (%):	100 above
Date Assessed:	September 5, 2012
Time Assessed:	13:40
UTM:	0658792N 5439575E
UTM NAD	10
Access:	Truck

Morphology

Stream Morphology Types (%):	Run 75, Riffle 25		
Depth/Pool (m):			
Channel Slope (°):	2		
Section Length (m):	20		
Velocity (m/s):	0.249		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.18	0.30	0.19
Wetted Width (m):	9.1		
Channel Width (m):	5.1		
Bank slope (5°):	L – 35, R – 80		

Cover

Instream Cover (Total % coverage):	15
Overhead Cover (Total % coverage):	10
Instream Cover (Sum 100%):	
Small Woody Debris	10
Large Woody Debris	0
Boulders	90
Undercut banks	0
Deep pools	0
Instream vegetation	0
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	0
Overhanging shrubs	80
Overhanging debris (>15cm)	10
Overhanging debris (<15cm)	10
Riparian Zone (25 m Buffer) circle:	Grasses, roads, coniferous forest, shrubs

Substrate Composition (Sum 100%)

% Organics	% Sand	% Cobble	80
% Fines	% Gravel 10	% Boulder	10

Miscellaneous

High Water mark:	2 m
Flood Evidence (Debris on plants, etc.):	
Air Temperature:	24°C
Cloud Cover (5%):	3%
Weather (prev 24 hrs):	Sunny

In situ Water Parameters

Sample Depth (m)	0.05
Dissolved Oxygen (%)	
Dissolved Oxygen (mg/L)	10.4
Secchi Depth (m)	
Temperature (°C)	10.3
pH	7.04
Turbidity (NTU)	1.12
Conductivity (µS/cm)	123

Channel Features	Dimensions
Islands	None
Bars	None

Landscape (Beyond 25 m Buffer)

Coniferous forest.

Visible Disturbance

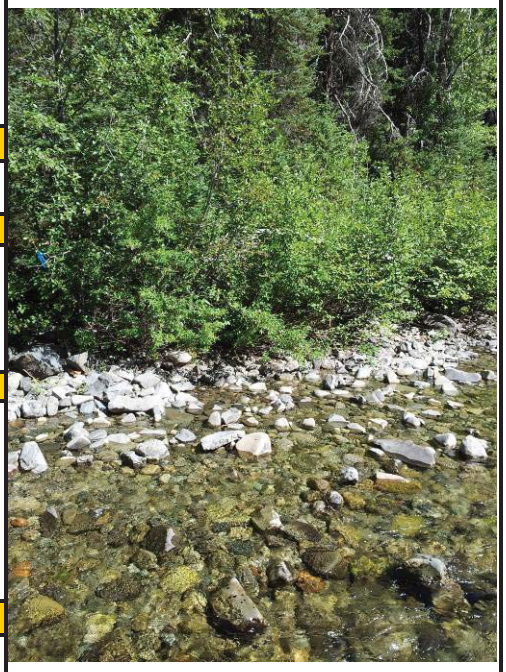
Surface debris, engine part

Comments

Mechanical engine part in channel. Size of a football.

150m upstream looking upstream

150m upstream looking downstream



Left downstream bank

Referencing Information

Watershed:	Lower Cambie Bridge 1224
Station (%):	100 m Below
Date Assessed:	September 5, 2012
Time Assessed:	14:15
UTM:	0658793N 5439458E
UTM NAD	10
Access:	Truck

Morphology

Stream Morphology Types (%):	Run 100		
Depth/Pool (m):			
Channel Slope (°):	1		
Section Length (m):	20		
Velocity (m/s):	0.157		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.24	0.36	0.28
Wetted Width (m):	11.8		
Channel Width (m):	15.5		
Bank slope (5°):			

Cover

Instream Cover (Total % coverage):	5
Overhead Cover (Total % coverage):	15
Instream Cover (Sum 100%):	
Small Woody Debris	10
Large Woody Debris	0
Boulders	25
Undercut banks	0
Deep pools	65
Instream vegetation	0
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	10
Overhanging shrubs	90
Overhanging debris (>15cm)	0
Overhanging debris (<15cm)	0
Riparian Zone (25 m Buffer) circle:	Flooded, roads, coniferous forest, shrubs

Substrate Composition (Sum 100%)

% Organics	% Sand	% Cobble	70
% Fines	% Gravel 5	% Boulder	25

Miscellaneous

High Water mark:	2
Flood Evidence (Debris on plants, etc.):	1.5
Air Temperature:	23°C
Cloud Cover (5%):	25%
Weather (prev 24 hrs):	Sunny

In situ Water Parameters

Sample Depth (m)	0.05
Dissolved Oxygen (%)	
Dissolved Oxygen (mg/L)	10.4
Secchi Depth (m)	
Temperature (°C)	10.7
pH	7.10
Turbidity (NTU)	0.38
Conductivity (µS/cm)	124

Channel Features	Dimensions
Islands	None
Bars, welded	None

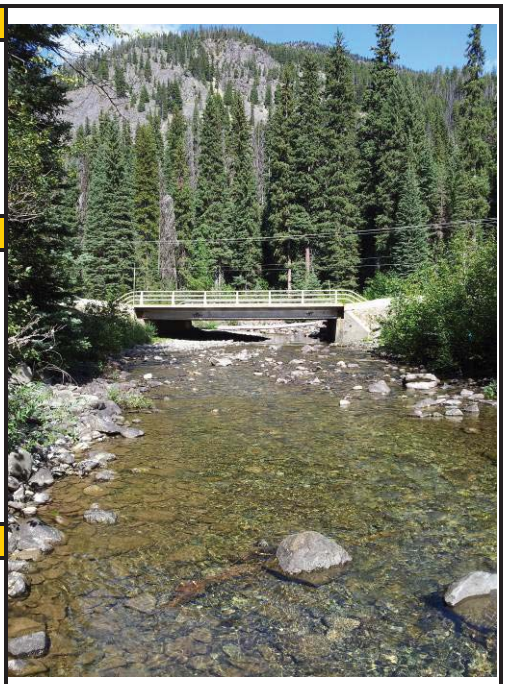
Landscape (Beyond 25 m Buffer)

Re-growth forest, coniferous forest, shrubs, roads, hills

Visible Disturbance

Comments

Fallen log over channel, not blocking flow.



Upstream

Downstream

Referencing Information

Watershed:	Lower Cambie Bridge 1224
Station (%):	At bridge
Date Assessed:	September 5, 2012
Time Assessed:	14:55
UTM:	0658836N 5439515E
UTM NAD	10
Access:	Truck

Morphology

Stream Morphology Types (%):	Pool 100		
Depth/Pool (m):			
Channel Slope (°):	1		
Section Length (m):	20		
Velocity (m/s):	0.359		
Depth Transect (m):	**25% width**	**50%**	**75%**
	0.35	0.62	0.30
Wetted Width (m):	6.3		
Channel Width (m):	14.8		
Bank slope (5°):			

Cover

Instream Cover (Total % coverage):	10
Overhead Cover (Total % coverage):	5
Instream Cover (Sum 100%):	
Small Woody Debris	5
Large Woody Debris	30
Boulders	25
Undercut banks	0
Deep pools	40
Instream vegetation	0
Overhead Cover (Sum 100%):	
Overhanging grasses	0
Overhanging trees	0
Overhanging shrubs	0
Overhanging debris (>15cm)	100 – log overhanging stream and powerlines
Overhanging debris (<15cm)	0
Riparian Zone (25 m Buffer) circle:	Roads, coniferous forest, shrubs, bridge

Substrate Composition (Sum 100%)

% Organics	% Sand	% Cobble	30
% Fines	% Gravel 40	% Boulder	30

Miscellaneous

High Water mark:	1.5 m
Flood Evidence (Debris on plants, etc.):	
Air Temperature:	22°C
Cloud Cover (5%):	40% - high cirrus
Weather (prev 24 hrs):	Clear

In situ Water Parameters

Sample Depth (m)	0.05
Dissolved Oxygen (%)	
Dissolved Oxygen (mg/L)	9.9
Secchi Depth (m)	
Temperature (°C)	10.5
pH	6.94
Turbidity (NTU)	0.33
Conductivity (µS/cm)	124

Channel Features	**Dimensions**
Islands	None
Bars, welded	20x40m

Landscape (Beyond 25 m Buffer)

Re-growth forest, coniferous forest, hills

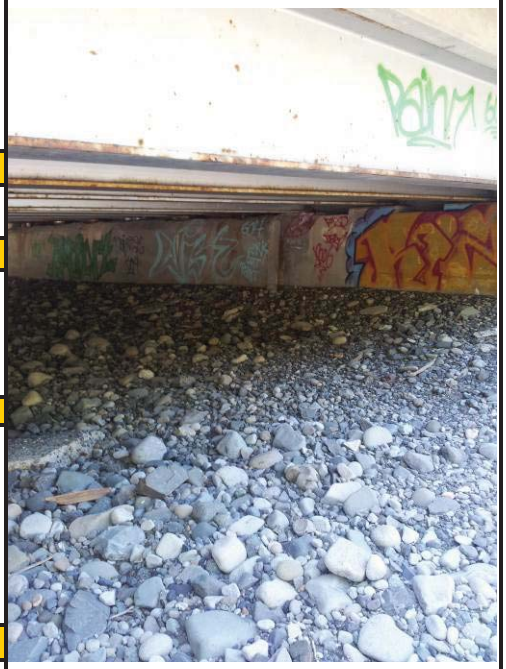
Visible Disturbance

Comments

Fallen log over channel, not blocking flow.

Upstream

Downstream

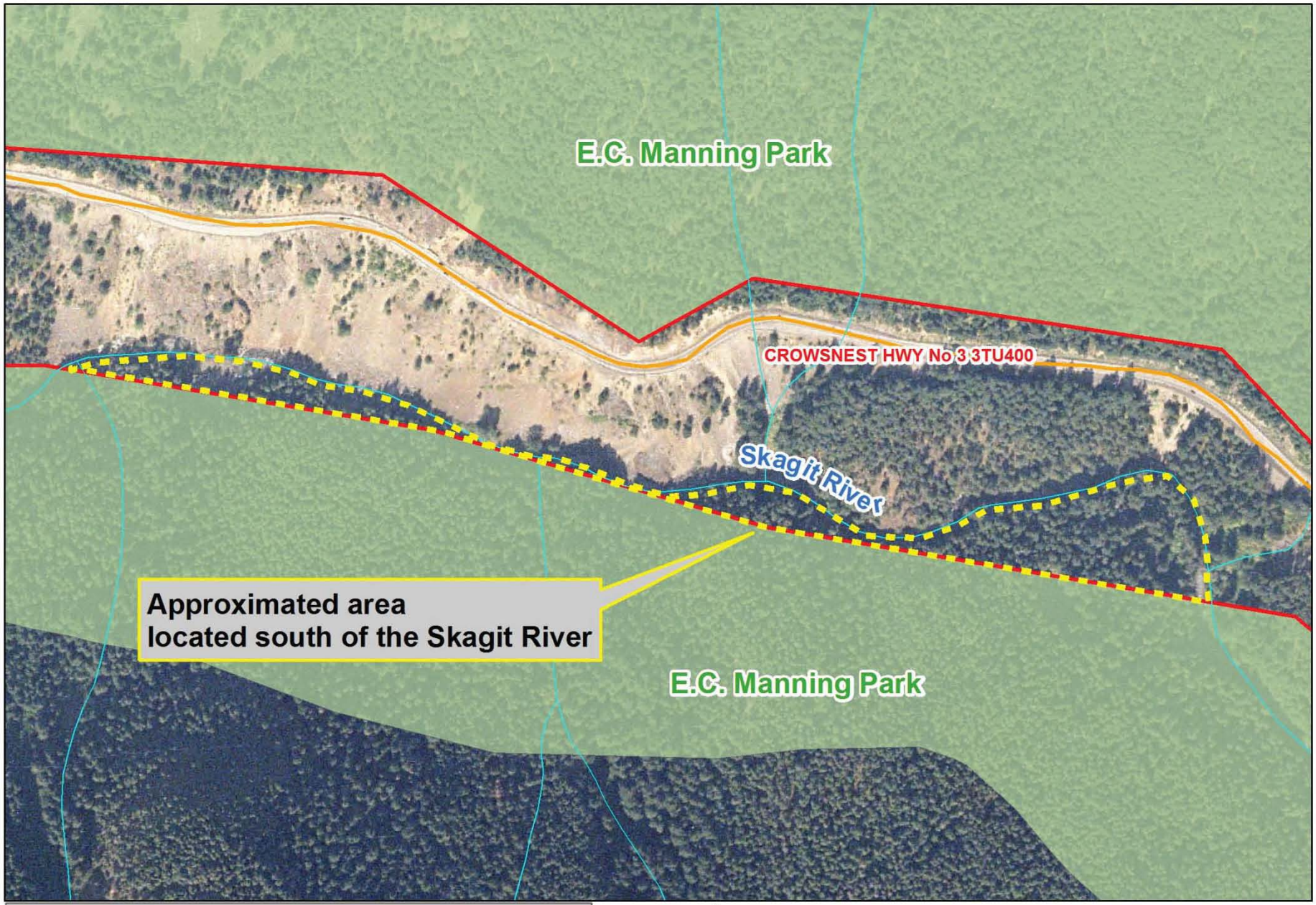


Right downstream bank

Appendix A2

Park Boundary Adjustment Maps

Skagit River Replacement Land Option

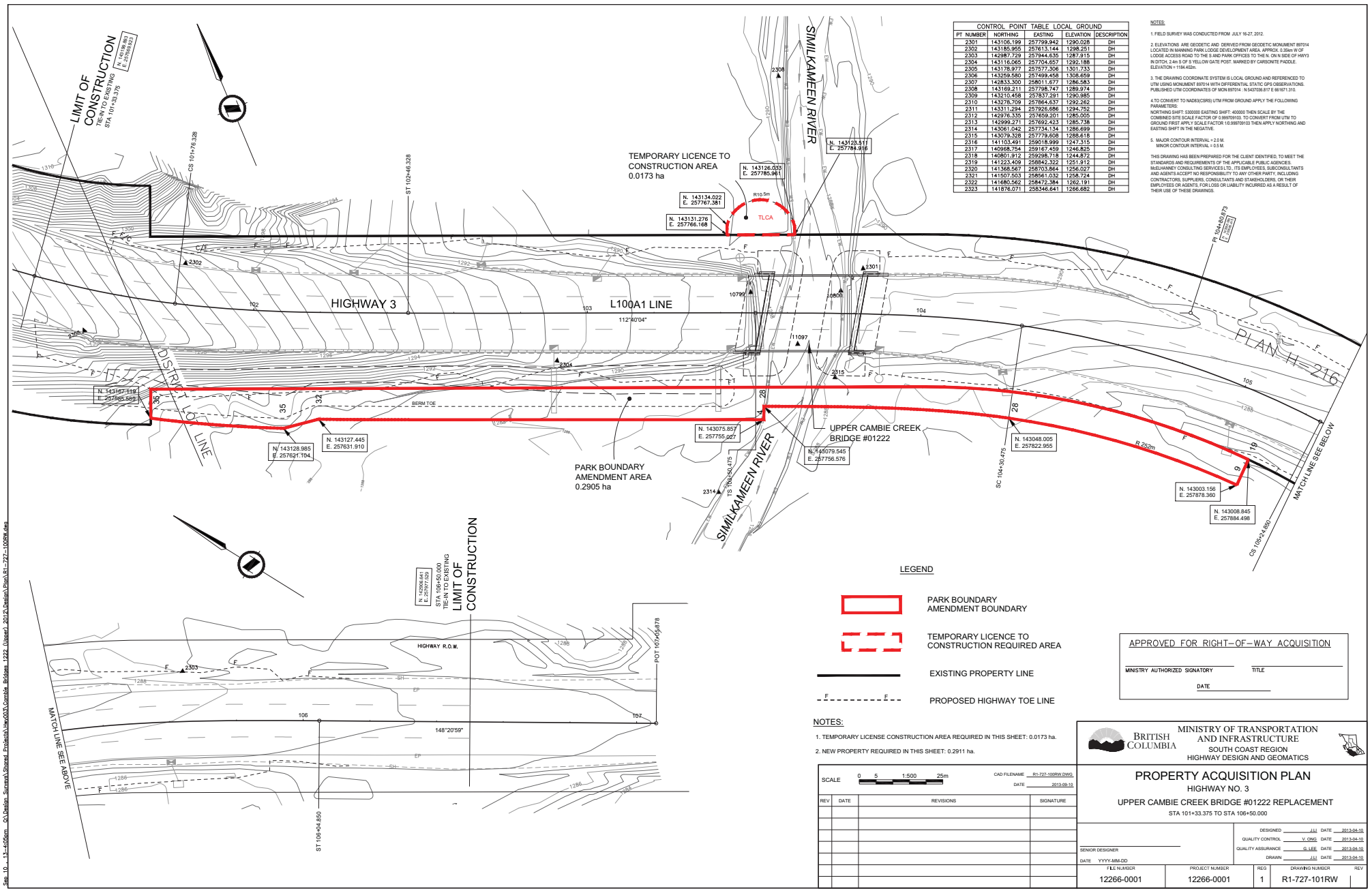


Proposed Replacement Land Area (3.2 hectares- approx.)

0 30 60 120 180 240 Meters

BRITISH COLUMBIA BC Parks

MOE-2014-00235
Okanagan



CONTROL POINT TABLE LOCAL GROUND				
PT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
2301	143106.199	257799.942	1290.028	DH
2302	143185.955	257613.144	1298.251	DH
2303	142987.729	257944.635	1287.915	DH
2304	143116.065	257704.657	1292.188	DH
2305	143178.977	257577.306	1301.733	DH
2306	143259.580	257499.458	1308.659	DH
2307	142833.300	258011.677	1286.583	DH
2308	143169.211	257798.747	1289.974	DH
2309	143210.458	257837.291	1290.985	DH
2310	143278.709	257864.637	1292.262	DH
2311	143311.294	257926.686	1294.752	DH
2312	142976.335	257659.201	1285.005	DH
2313	142999.271	257692.423	1285.738	DH
2314	143061.042	257734.134	1286.699	DH
2315	143079.328	257779.608	1288.618	DH
2316	141103.491	259018.999	1247.315	DH
2317	140968.754	259167.459	1246.825	DH
2318	140801.912	259296.718	1244.872	DH
2319	141223.409	258842.322	1251.912	DH
2320	141368.567	258703.864	1256.027	DH
2321	141507.503	258561.032	1258.724	DH
2322	141680.562	258472.384	1262.191	DH
2323	141876.071	258346.641	1266.682	DH

NOTES:

1. FIELD SURVEY WAS CONDUCTED FROM JULY 16-27, 2012.

2. ELEVATIONS ARE GEODETIC AND DERIVED FROM GEODETIC MONUMENT 897014 LOCATED IN MANNING PARK LODGE DEVELOPMENT AREA. APPROX. 0.35km W OF LODGE ACCESS ROAD TO THE S AND PARK OFFICES TO THE N. ON N SIDE OF HWY3 IN DITCH. 2.4m S OF 3 YELLOW GATE POST. MARKED BY CARSONITE PADDLE. ELEVATION = 1184.402m.

3. THE DRAWING COORDINATE SYSTEM IS LOCAL GROUND AND REFERENCED TO UTM USING MONUMENT 897014 WITH DIFFERENTIAL STATIC GPS OBSERVATIONS. PUBLISHED UTM COORDINATES OF MON 897014 : N 5437036.817 E 661671.310.

4.TO CONVERT TO NAD83(CSRS) UTM FROM GROUND APPLY THE FOLLOWING PARAMETERS:
NORTHING SHIFT: 5300000 EASTING SHIFT: 400000 THEN SCALE BY THE COMBINED SITE SCALE FACTOR OF 0.9997091/03. TO CONVERT FROM UTM TO GROUND FIRST APPLY SCALE FACTOR 1/0.9997091/03 THEN APPLY NORTHING AND EASTING SHIFT IN THE NEGATIVE.

5. MAJOR CONTOUR INTERVAL = 2.0 M.
MINOR CONTOUR INTERVAL = 0.5 M.

THIS DRAWING HAS BEEN PREPARED FOR THE CLIENT IDENTIFIED, TO MEET THE STANDARDS AND REQUIREMENTS OF THE APPLICABLE PUBLIC AGENCIES. McELHANNEY CONSULTING SERVICES LTD., ITS EMPLOYEES, SUBCONSULTANTS AND AGENTS ACCEPT NO RESPONSIBILITY TO ANY OTHER PARTY, INCLUDING CONTRACTORS, SUPPLIERS, CONSULTANTS AND STAKEHOLDERS, OR THEIR EMPLOYEES OR AGENTS, FOR LOSS OR LIABILITY INCURRED AS A RESULT OF THEIR USE OF THESE DRAWINGS.

LEGEND

- PARK BOUNDARY AMENDMENT BOUNDARY
- TEMPORARY LICENCE TO CONSTRUCTION REQUIRED AREA
- EXISTING PROPERTY LINE
- PROPOSED HIGHWAY TOE LINE

NOTES:

1. TEMPORARY LICENSE CONSTRUCTION AREA REQUIRED IN THIS SHEET: 0.0173 ha.

2. NEW PROPERTY REQUIRED IN THIS SHEET: 0.2911 ha.

APPROVED FOR RIGHT-OF-WAY ACQUISITION

MINISTRY AUTHORIZED SIGNATORY _____ TITLE _____

DATE _____

BRITISH COLUMBIA

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
SOUTH COAST REGION
HIGHWAY DESIGN AND GEOMATICS

SCALE 0 5 1:500 25m

CAD FILENAME R1-727-100RW.DWG

DATE 2013-09-10

REV	DATE	REVISIONS	SIGNATURE

PROPERTY ACQUISITION PLAN

HIGHWAY NO. 3

UPPER CAMBIE CREEK BRIDGE #01222 REPLACEMENT

STA 101+33.375 TO STA 106+50.000

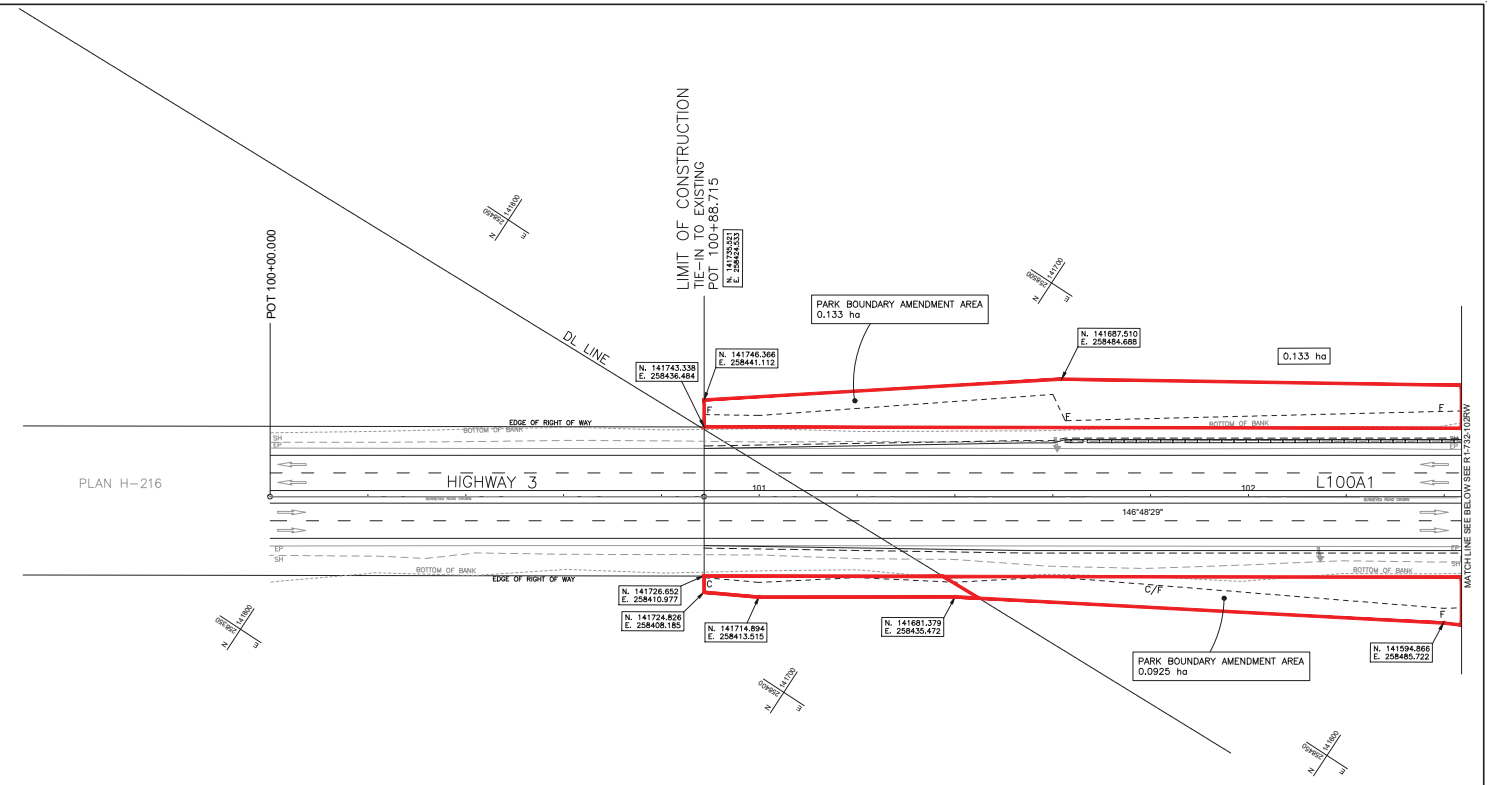
SENIOR DESIGNER

DATE YYYY-MM-DD

DESIGNED J.LI DATE 2013-04-10
QUALITY CONTROL V. ONG DATE 2013-04-10
QUALITY ASSURANCE G. LEE DATE 2013-04-10
DRAWN J.LI DATE 2013-04-10

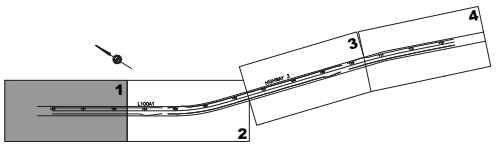
FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
12266-0001	12266-0001	1	R1-727-101RW	

Sep 10, 13 - 4:05pm G:\Design_Survey\Shared_Projects\Hwy003\Cambie_Bridges_1222_(Upper)_2012\Design\Plan\R1-727-100RW.dwg



CONTROL POINT TABLE				
PT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
2316	141103.491	259018.999	1247.315	DH
2317	140968.754	259167.459	1246.825	DH
2318	140801.912	259298.718	1244.872	DH
2319	141223.409	258842.322	1251.912	DH
2320	141368.567	258703.864	1256.027	DH
2321	141507.503	258561.032	1258.724	DH
2322	141680.562	258472.384	1262.191	DH
2323	141876.071	258346.641	1266.682	DH
2400	141558.041	258524.184	1259.842	DH_SPK
2401	141598.699	258498.811	1260.656	DH_SPK
2402	141623.226	258483.006	1261.263	DH_SPK
2403	141498.522	258468.085	1258.328	DH_SPK
2404	141576.041	258420.215	1258.947	DH_SPK
2405	141499.291	258590.284	1258.757	DH_CC
2406	141491.683	258557.789	1255.764	DH_SPK
2407	141490.192	258597.291	1258.274	DH_SPK
2408	141609.672	258350.564	1260.075	DH_CC
2409	141547.899	258658.420	1262.437	DH_SPK
2410	141422.405	258685.234	1253.185	DH_SPK
2411	141500.603	258684.798	1254.483	DH_SPK
2412	141410.924	258630.667	1258.317	DH_SPK
2413	141450.182	258598.560	1258.709	DH_SPK
2414	141465.240	258616.439	1257.660	DH_CN
2415	140981.353	259153.246	1246.992	DH_SPK
2416	140964.087	259132.580	1244.368	DH_SPK
2417	141030.831	259062.816	1246.452	DH_SPK
2418	140994.788	258978.504	1244.428	DH_CC
2419	140973.887	258997.755	1243.702	DH_SPK
2420	140915.868	259078.314	1242.384	DH
2501	141131.044	258987.004	1248.367	DH
2502	141272.335	258969.625	1248.807	DH
2503	141161.337	258949.416	1249.183	DH
2504	141311.623	258952.220	1249.229	DH
2505	141354.918	258936.636	1248.627	DH
2506	141112.387	259039.562	1246.082	DH
2507	141226.995	258872.119	1251.617	DH
849430	138618.937	261863.849	1184.402	LM

* NOT ALL CONTROL SHOWN ON PLAN



LEGEND

PARK BOUNDARY AMENDMENT AREA

NEW PROPERTY REQUIRED IN THIS SHEET: 0.225 ha

APPROVED FOR RIGHT–OF–WAY ACQUISITION

MINISTRY AUTHORIZED SIGNATORY _____ TITLE _____

DATE _____

BRITISH COLUMBIA

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
SOUTH COAST REGION
HIGHWAY DESIGN AND GEOMATICS

SCALE 0 5 1:500 25m

CAD FILENAME R1-732-100RW.DWG

DATE 2013-09-10

REV	DATE	REVISIONS	SIGNATURE

PROPERTY ACQUISITION PLAN

HIGHWAY NO. 3

MIDDLE & LOWER CAMBIE CREEK BRIDGES
(#01223 & #01224) REPLACEMENT

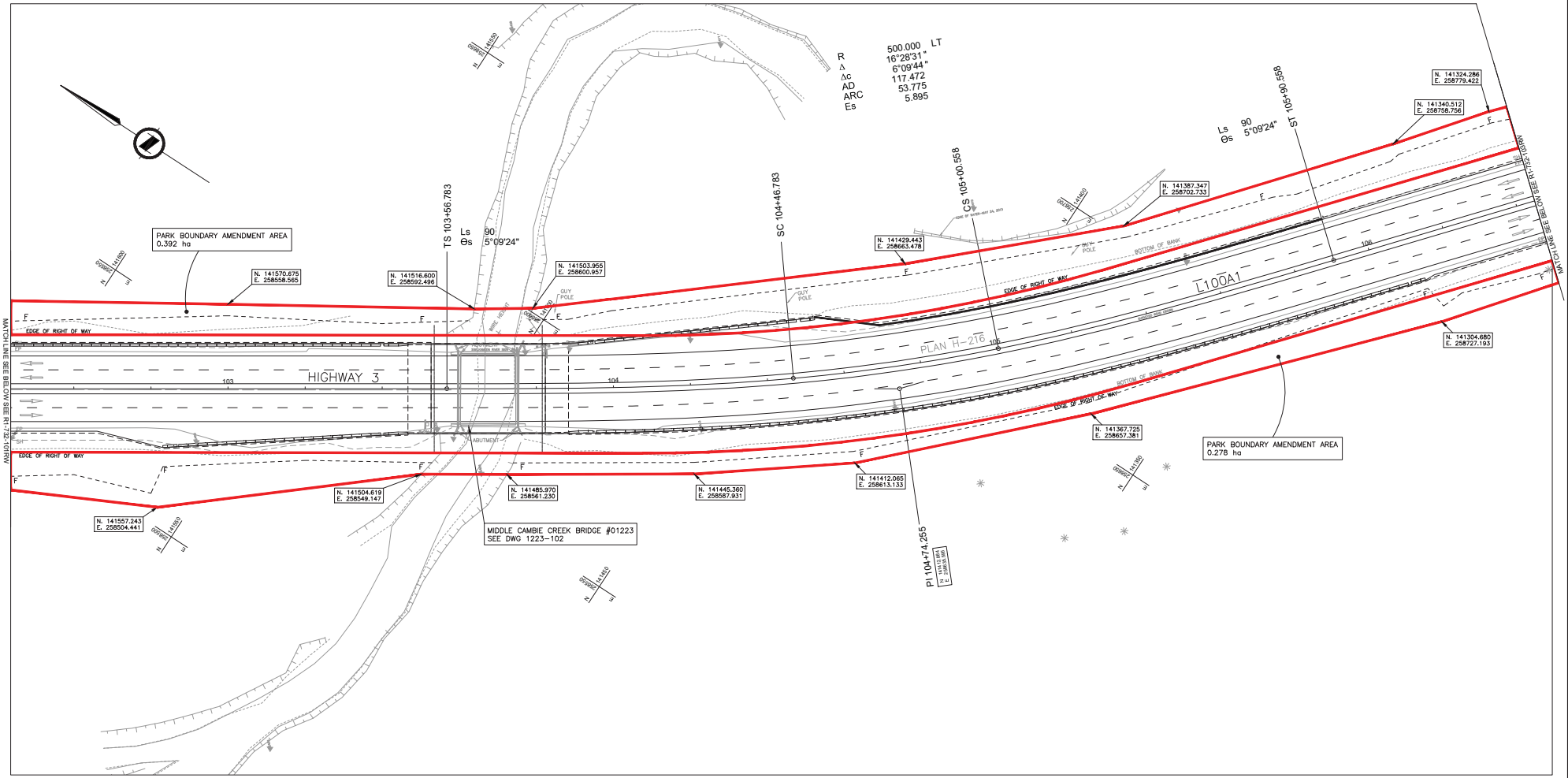
SENIOR DESIGNER _____

DATE YYYY-MM-DD

DESIGNED I. GARAND DATE 2013-07-24
QUALITY CONTROL J.LI DATE 2013-04-15
QUALITY ASSURANCE G.LEE DATE 2013-04-15
DRAWN V.ONG DATE 2013-07-24

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
12266	12266-0002	1	R1-732-101RW	

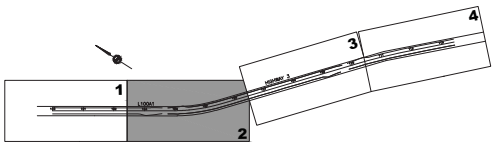
Sep 10 , 13 - 2:38pm G:\Design_Survey\Shared_Projects\Hwy003\Cambie_Bridges_(1223_&_1224)_2012\Design\Plan\R1-732-100RW.dwg



APPROVED FOR RIGHT-OF-WAY ACQUISITION

MINISTRY AUTHORIZED SIGNATORY _____ TITLE _____

DATE _____



LEGEND

PARK BOUNDARY AMENDMENT AREA

NEW PROPERTY REQUIRED IN THIS SHEET: 0.670 ha

BRITISH COLUMBIA

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
SOUTH COAST REGION
HIGHWAY DESIGN AND GEOMATICS

SCALE 0 5 1:500 25m

CAD FILENAME R1-732-100RW.DWG

DATE 2013-09-10

REV	DATE	REVISIONS	SIGNATURE

PROPERTY ACQUISITION PLAN

HIGHWAY NO. 3

MIDDLE & LOWER CAMBIE CREEK BRIDGES
(#01223 & #01224) REPLACEMENT

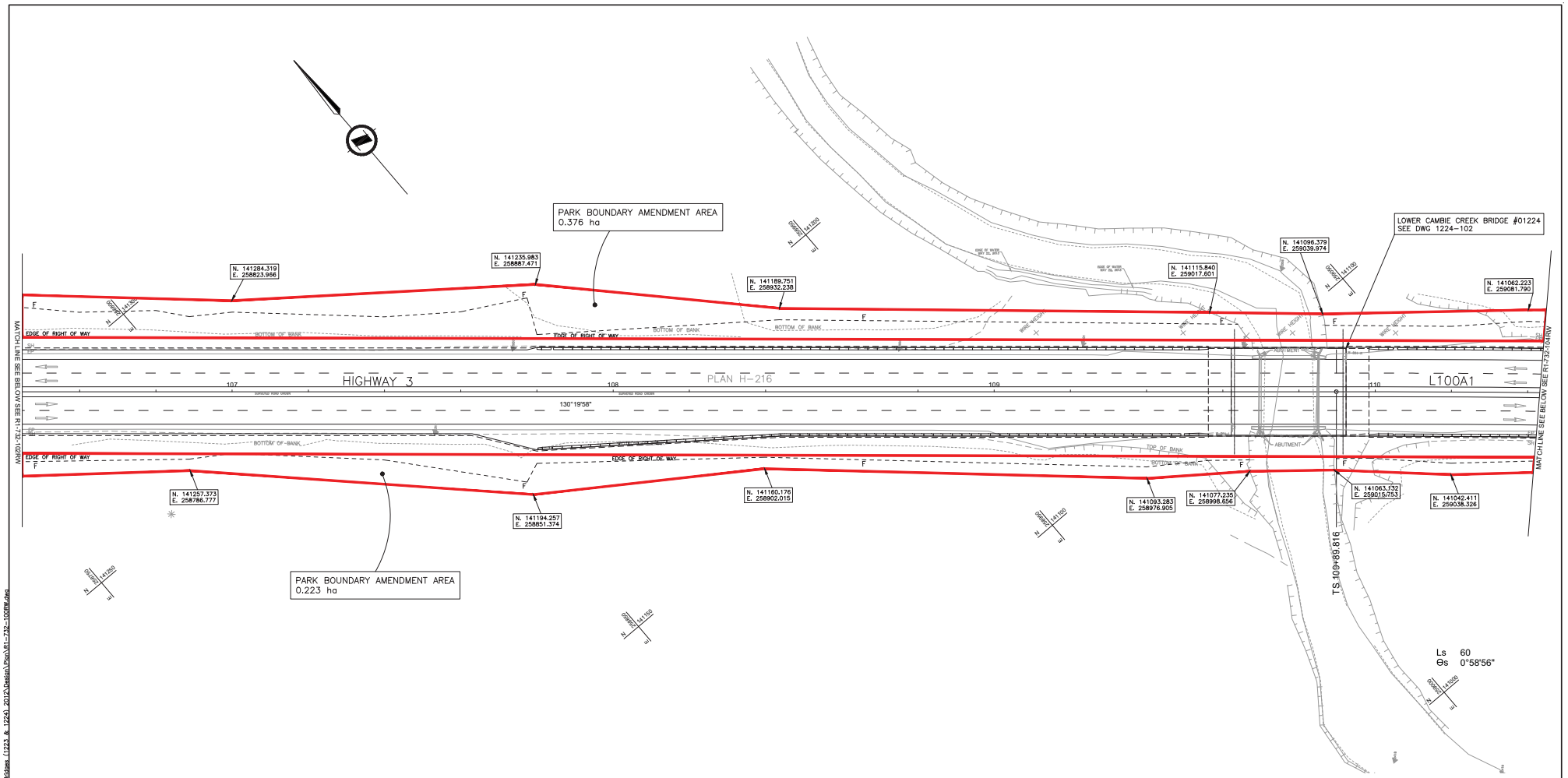
SENIOR DESIGNER _____

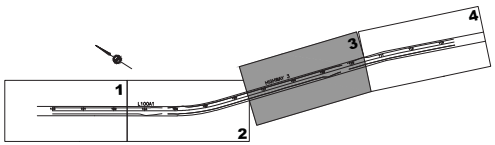
DATE YYYY-MM-DD

DESIGNED	I. GARAND	DATE	2013-07-24
QUALITY CONTROL	J.LI	DATE	2013-04-15
QUALITY ASSURANCE	G.LEE	DATE	2013-04-15
DRAWN	V.ONG	DATE	2013-07-24

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
12266	12266-0002	1	R1-732-102RW	

Sep 10, 13 - 2:38pm G:\Design Survey\Shared Projects\Hwy03\Cambie Bridges (1223 & 1224) 2012\Design\Plan\R1-732-100RW.dwg





LEGEND

PARK BOUNDARY AMENDMENT AREA

NEW PROPERTY REQUIRED IN THIS SHEET: 0.599 ha

APPROVED FOR RIGHT-OF-WAY ACQUISITION

MINISTRY AUTHORIZED SIGNATORY _____ TITLE _____

DATE _____

BRITISH COLUMBIA

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
SOUTH COAST REGION
HIGHWAY DESIGN AND GEOMATICS

SCALE 0 5 1:500 25m

CAD FILENAME R1-732-100RW.DWG

DATE 2013-09-10

REV	DATE	REVISIONS	SIGNATURE

PROPERTY ACQUISITION PLAN

HIGHWAY NO. 3

MIDDLE & LOWER CAMBIE CREEK BRIDGES
(#01223 & #01224) REPLACEMENT

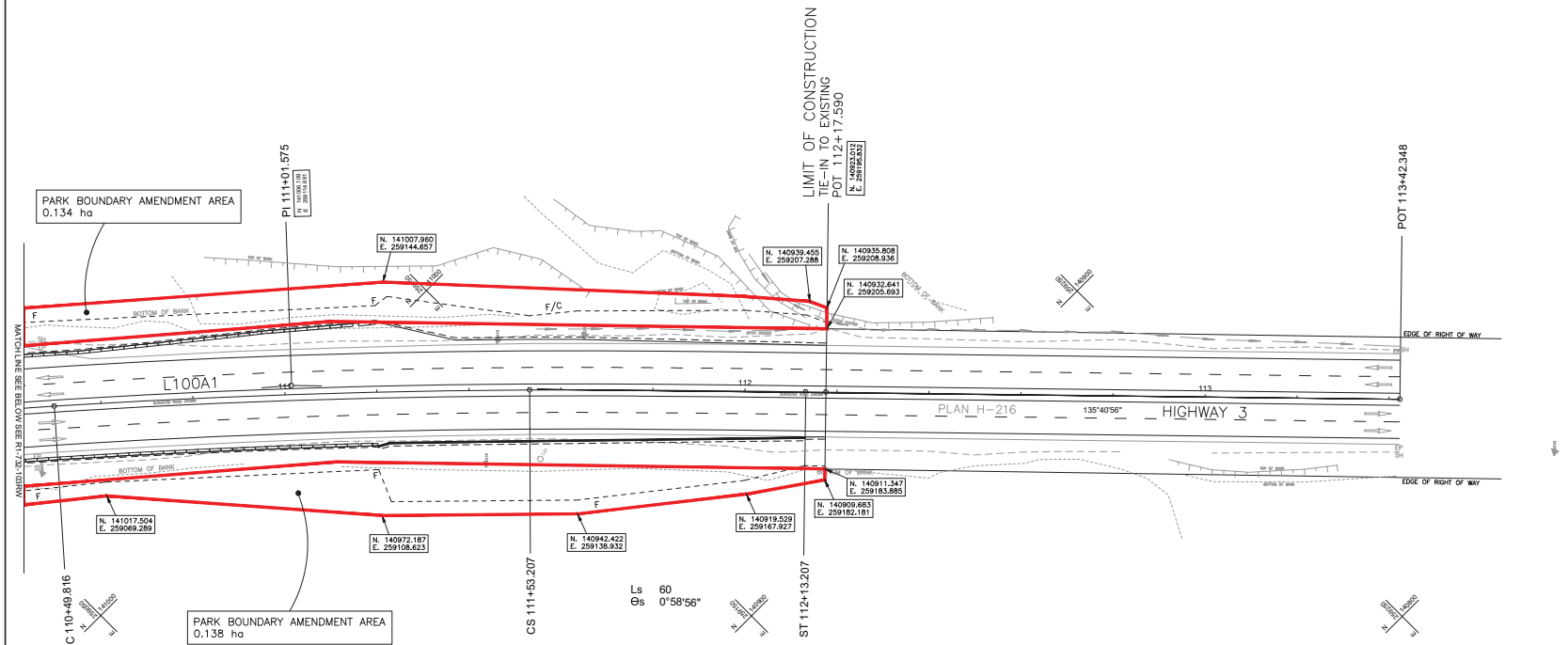
SENIOR DESIGNER

DATE YYYY-MM-DD

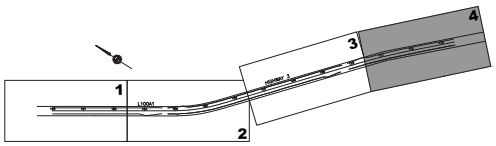
DESIGNED	I. GARAND	DATE	2013-07-24
QUALITY CONTROL	J.LI	DATE	2013-04-15
QUALITY ASSURANCE	G.LEE	DATE	2013-04-15
DRAWN	V.ONG	DATE	2013-07-24

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
12266	12266-0002	1	R1-732-103RW	

Sep 10, 13 - 2:38pm G:\Design Surveys\Shared Projects\Hwy003\Cambie Bridges (1223 & 1224) 2012\Design\Plan\R1-732-100RW.dwg



R	1750.000 RT
Δ	5°20'58"
Δc	3°23'06"
AD	111.759
ARC	103.391
Es	1.994



LEGEND

PARK BOUNDARY AMENDMENT AREA

NEW PROPERTY REQUIRED IN THIS SHEET: 0.272 ha

APPROVED FOR RIGHT-OF-WAY ACQUISITION

MINISTRY AUTHORIZED SIGNATORY _____ TITLE _____

DATE _____

SCALE 0 5 1:500 25m

CAD FILENAME R1-732-100RW.DWG

DATE 2013-09-10

REV	DATE	REVISIONS	SIGNATURE

BRITISH COLUMBIA

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
SOUTH COAST REGION
HIGHWAY DESIGN AND GEOMATICS

PROPERTY ACQUISITION PLAN

HIGHWAY NO. 3

MIDDLE & LOWER CAMBIE CREEK BRIDGES
(#01223 & #01224) REPLACEMENT

SENIOR DESIGNER _____

DATE YYYY-MM-DD

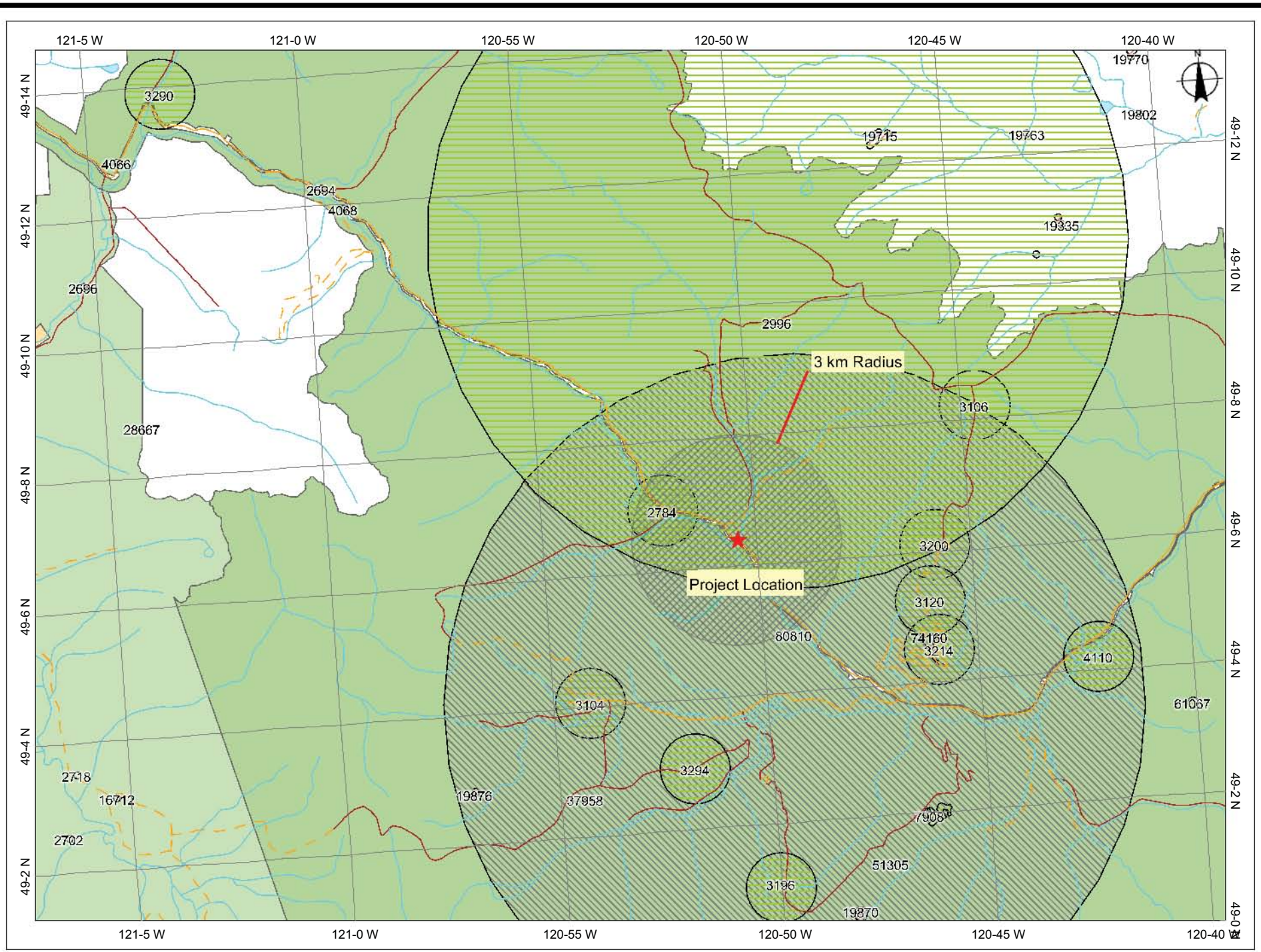
DESIGNED	I. GARAND	DATE	2013-07-24
QUALITY CONTROL	J.LI	DATE	2013-04-15
QUALITY ASSURANCE	G.LEE	DATE	2013-04-15
DRAWN	V.ONG	DATE	2013-07-24

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
12266	12266-0002	1	R1-732-104RW	

Sep 10, 13 - 2:38pm G:\Design Surveys\Shared Projects\Hwy003\Cambie Bridges (1223 & 1224) 2012\Design\Plan\R1-732-100RW.dwg

Appendix A3

CDC Rare Element Occurrence Map


121-5 W
121-0 W
120-55 W
120-50 W
120-45 W
120-40 W
49-14 N
49-12 N
49-10 N
49-8 N
49-6 N
49-4 N
49-2 N
3 km Radius
Project Location
3290
4066
2694
4068
2696
28667
2996
19770
19802
19715
19763
19335
3106
2784
3200
3120
80810
74160
3214
4110
61067
3104
3294
2718
16712
2702
19876
37958
79084
51305
3196
19870

BC Conservation Data Centre: Occurrence Report (80810)

May 9, 2013

Polites sonora
Sonora Skipper

Field definition document available at **http://www.env.gov.bc.ca/atrisk/ims.htm**

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	10957	**Status:**	
Shape ID:	80810	Global:	G4
Type:	Invertebrate Animal	Provinicial:	S1S2
		COSEWIC:	SC (APR 2006)
Taxonomic Class:	insects	BC List:	Red
		SARA Schedule:	1
Data Sensitive:	N		

Locators

Survey Site: TWENTY MINUTE LAKE, MANNING PARK

Directions: The one accurate source point (Amphitheatre) is <1 km west of Manning Park town and east of Twenty Minute Lake. The Hope Mtn. point is plotted closer to the lake but they are estimates of the locations based on descriptions of "Manning Park" and "Hope Mountains".

Survey Information

First Obs. Date: 1906-07-16 **Last Obs. Date:** 2009-07-16

Occurrence Data: 2009: One Sonora Skipper was collected (Marks et al. 2009; Werden and Hobbs 2013).
1906, 1932, 1989: One Sonora Skipper was collected in each year as well as 2 near Twenty Minute Lake in 1945 (COSEWIC 2006f)

Occurrence Rank and Occurrence Rank Factors

Rank: E Verified extant (viability not assessed) **Rank Date:** 2009-07-16

Rank Comments:

Condition of Occurrence Amphitheatre-Manning: This site is found in a disturbed open meadow near the Pacific Crest Trail parking lot off the highway through Manning Park (Marks et al. 2009).

Size of Occurrence: 5 Sonora Skippers were collected from the Manning Park area between 1906 and 1989. The most recent collection was one in 2009 (Werden and Hobbs 2013).

Landscape Context:

Description

General Description: Amphitheatre-Manning: The habitat in this location was a disturbed, open meadow with dense grasses (including timothy), shrubs, yarrow, Canada thistle and oxeye daisy. There was also open water present about 50m

from the sighting. The mesic part of meadow was approximately one hectare (Marks et al. 2009).

Vegetation Zone:

Habitat: TERRESTRIAL: Grassland/Herbaceous

Documentation

References:

COSEWIC 2006f. COSEWIC assessment and status report on the Sonora Skipper Polites sonora in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 20 pp.
Marks, D., V. Young and O. Dyer. 2009. Sonora Skipper and Hoffman's Checkerspot inventory in the Similkameen drainage of southern British Columbia, 2009. Report prepared for B.C. Ministry of Environment. Penticton, B.C. 38pp.
Werden, L. and J. Hobbs, J. 2013. Sonora Skipper conservation and management in British Columbia: 2012 survey. Prepared for the Ministry of Forests, Lands, and Natural Resource Operations, Victoria, BC. 15pp. + appendices.

Version

Version Date: 22-FEB-13

Mapping Information

Estimated Representation Accuracy: Very Low

Confidence Extent: N

BC Conservation Data Centre: Occurrence Report (2784)

May 9, 2013

Lomatium brandegeei
Brandegee's lomatium

Field definition document available at **http://www.env.gov.bc.ca/atrisk/ims.htm**

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	2082	**Status:**	
Shape ID:	2784	Global:	G3?
Type:	Vascular Plant	Provinicial:	S2S3
		COSEWIC:	
Taxonomic Class:	dicots	BC List:	Blue
		SARA Schedule:	
Data Sensitive:	N		

Locators

Survey Site: ALLISON PASS

Directions:

Survey Information

First Obs. Date: 1945-07-29 **Last Obs. Date:** 1973-07-05

Occurrence Data: None.

Occurrence Rank and Occurrence Rank Factors

Rank: E Verified extant (viability not assessed) **Rank Date:** 1973-07-05

Rank Comments: There is insufficient data to assign a viability rank.

Condition of Occurrence

Size of Occurrence:

Landscape Context:

Description

General Description:

Vegetation Zone: Montane

Habitat: TERRESTRIAL

Documentation

References: Royal British Columbia Museum. 675 Belleville Street, Victoria, BC. V8V 1X4.

Version

Version Date: 11-NOV-93

Mapping Information

Estimated Representation Accuracy:

Confidence Extent:

BC Conservation Data Centre: Occurrence Report (2996)

May 9, 2013

Callitriche heterophylla var. *heterophylla*
two-edged water-starwort

Field definition document available at **http://www.env.gov.bc.ca/atrisk/ims.htm**

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	369	**Status:**	
Shape ID:	2996	Global:	G5T5
Type:	Vascular Plant	Provinicial:	S2S3
		COSEWIC:	
Taxonomic Class:	dicots	BC List:	Blue
		SARA Schedule:	
Data Sensitive:	N		

Locators

Survey Site:	FOURTH BROTHER MOUNTAIN, SOUTHWEST OF
Directions:	

Survey Information

First Obs. Date:	1973-08-16	**Last Obs. Date:**	1973-08-16
Occurrence Data:	None.		

Occurrence Rank and Occurrence Rank Factors

Rank:	E Verified extant (viability not assessed)	**Rank Date:**	1973-08-16
Rank Comments:	There is insufficient data to assign a viability rank.		
Condition of Occurrence			
Size of Occurrence:			
Landscape Context:			

Description

General Description:	
Vegetation Zone:	Subalpine
Habitat:	TERRESTRIAL; SUBALPINE

Documentation

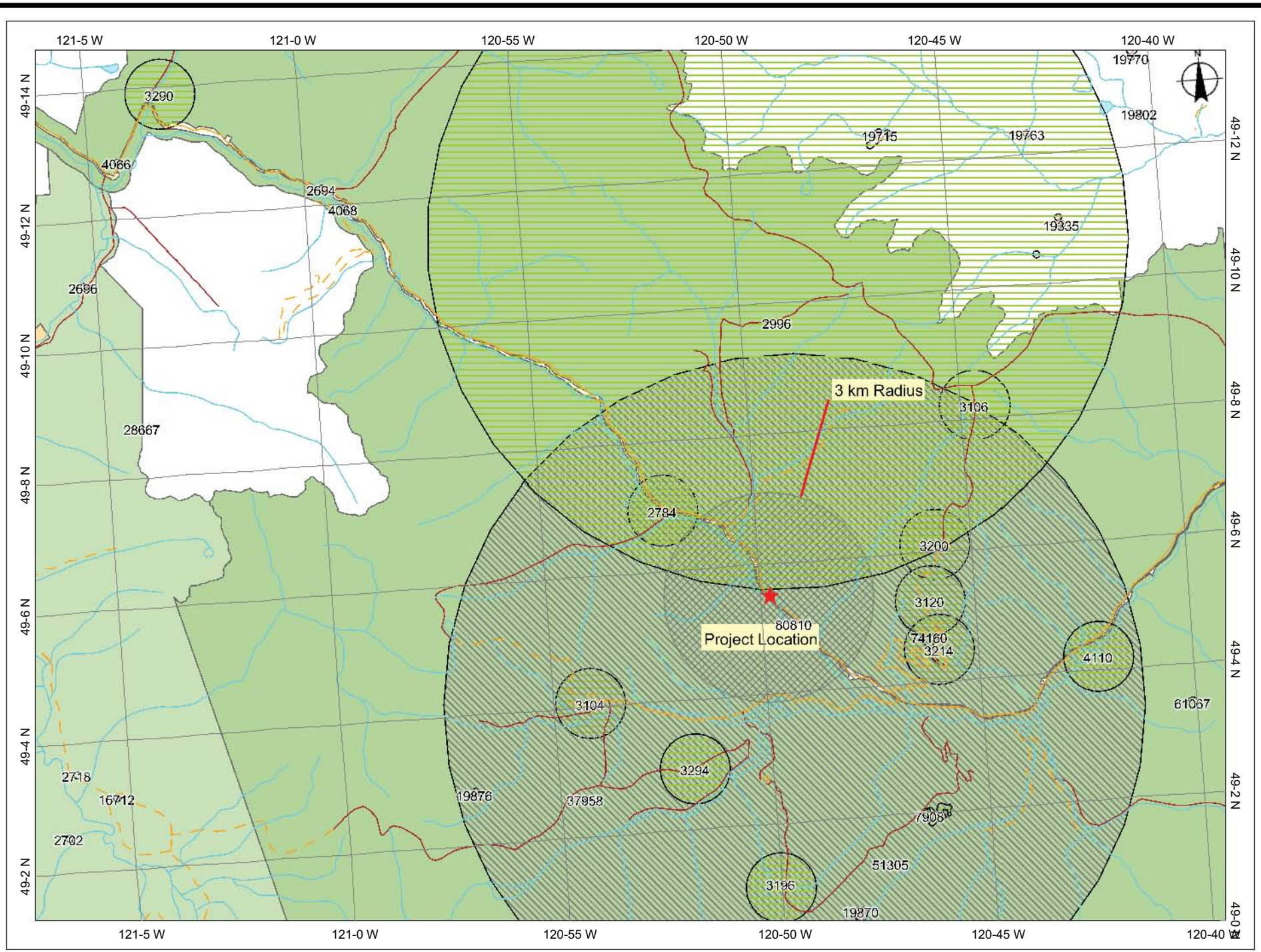
References:	Royal British Columbia Museum. 675 Belleville Street, Victoria, BC. V8V 1X4.

Version

Version Date:	06-DEC-93

Mapping Information

Estimated Representation Accuracy:
Confidence Extent:
May 9, 2013


121-5 W
121-0 W
120-55 W
120-50 W
120-45 W
120-40 W
49-14 N
49-12 N
49-10 N
49-8 N
49-6 N
49-4 N
49-2 N
3 km Radius
Project Location
80810
3290
4066
2694
4068
2696
28667
2996
19715
19763
19770
19802
19335
3106
2784
3200
3120
74160
3214
4110
61067
3104
3294
19876
37958
2718
16712
2702
7908
51305
3196
19870

BC Conservation Data Centre: Occurrence Report (80810)

May 9, 2013

Polites sonora
Sonora Skipper

Field definition document available at **http://www.env.gov.bc.ca/atrisk/ims.htm**

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	10957	**Status:**	
Shape ID:	80810	Global:	G4
Type:	Invertebrate Animal	Provinicial:	S1S2
		COSEWIC:	SC (APR 2006)
Taxonomic Class:	insects	BC List:	Red
		SARA Schedule:	1
Data Sensitive:	N		

Locators

Survey Site: TWENTY MINUTE LAKE, MANNING PARK

Directions: The one accurate source point (Amphitheatre) is <1 km west of Manning Park town and east of Twenty Minute Lake. The Hope Mtn. point is plotted closer to the lake but they are estimates of the locations based on descriptions of "Manning Park" and "Hope Mountains".

Survey Information

First Obs. Date: 1906-07-16 **Last Obs. Date:** 2009-07-16

Occurrence Data: 2009: One Sonora Skipper was collected (Marks et al. 2009; Werden and Hobbs 2013).
1906, 1932, 1989: One Sonora Skipper was collected in each year as well as 2 near Twenty Minute Lake in 1945 (COSEWIC 2006f)

Occurrence Rank and Occurrence Rank Factors

Rank: E Verified extant (viability not assessed) **Rank Date:** 2009-07-16

Rank Comments:

Condition of Occurrence Amphitheatre-Manning: This site is found in a disturbed open meadow near the Pacific Crest Trail parking lot off the highway through Manning Park (Marks et al. 2009).

Size of Occurrence: 5 Sonora Skippers were collected from the Manning Park area between 1906 and 1989. The most recent collection was one in 2009 (Werden and Hobbs 2013).

Landscape Context:

Description

General Description: Amphitheatre-Manning: The habitat in this location was a disturbed, open meadow with dense grasses (including timothy), shrubs, yarrow, Canada thistle and oxeye daisy. There was also open water present about 50m

from the sighting. The mesic part of meadow was approximately one hectare (Marks et al. 2009).

Vegetation Zone:

Habitat: TERRESTRIAL: Grassland/Herbaceous

Documentation

References:

COSEWIC 2006f. COSEWIC assessment and status report on the Sonora Skipper Polites sonora in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 20 pp.
Marks, D., V. Young and O. Dyer. 2009. Sonora Skipper and Hoffman's Checkerspot inventory in the Similkameen drainage of southern British Columbia, 2009. Report prepared for B.C. Ministry of Environment. Penticton, B.C. 38pp.
Werden, L. and J. Hobbs, J. 2013. Sonora Skipper conservation and management in British Columbia: 2012 survey. Prepared for the Ministry of Forests, Lands, and Natural Resource Operations, Victoria, BC. 15pp. + appendices.

Version

Version Date: 22-FEB-13

Mapping Information

Estimated Representation Accuracy: Very Low

Confidence Extent: N

BC Conservation Data Centre: Occurrence Report (2784)

May 9, 2013

Lomatium brandegeei
Brandegee's lomatium

Field definition document available at **http://www.env.gov.bc.ca/atrisk/ims.htm**

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	2082	**Status:**	
Shape ID:	2784	Global:	G3?
Type:	Vascular Plant	Provinicial:	S2S3
		COSEWIC:	
Taxonomic Class:	dicots	BC List:	Blue
		SARA Schedule:	
Data Sensitive:	N		

Locators

Survey Site: ALLISON PASS

Directions:

Survey Information

First Obs. Date: 1945-07-29 **Last Obs. Date:** 1973-07-05

Occurrence Data: None.

Occurrence Rank and Occurrence Rank Factors

Rank: E Verified extant (viability not assessed) **Rank Date:** 1973-07-05

Rank Comments: There is insufficient data to assign a viability rank.

Condition of Occurrence

Size of Occurrence:

Landscape Context:

Description

General Description:

Vegetation Zone: Montane

Habitat: TERRESTRIAL

Documentation

References: Royal British Columbia Museum. 675 Belleville Street, Victoria, BC. V8V 1X4.

Version

Version Date: 11-NOV-93

Mapping Information

Estimated Representation Accuracy:

Confidence Extent:

BC Conservation Data Centre: Occurrence Report (2996)

May 9, 2013

Callitriche heterophylla var. *heterophylla*
two-edged water-starwort

Field definition document available at **http://www.env.gov.bc.ca/atrisk/ims.htm**

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	369	**Status:**	
Shape ID:	2996	Global:	G5T5
Type:	Vascular Plant	Provinicial:	S2S3
		COSEWIC:	
Taxonomic Class:	dicots	BC List:	Blue
		SARA Schedule:	
Data Sensitive:	N		

Locators

Survey Site:	FOURTH BROTHER MOUNTAIN, SOUTHWEST OF
Directions:	

Survey Information

First Obs. Date:	1973-08-16	**Last Obs. Date:**	1973-08-16
Occurrence Data:	None.		

Occurrence Rank and Occurrence Rank Factors

Rank:	E Verified extant (viability not assessed)	**Rank Date:**	1973-08-16
Rank Comments:	There is insufficient data to assign a viability rank.		
Condition of Occurrence			
Size of Occurrence:			
Landscape Context:			

Description

General Description:	
Vegetation Zone:	Subalpine
Habitat:	TERRESTRIAL; SUBALPINE

Documentation

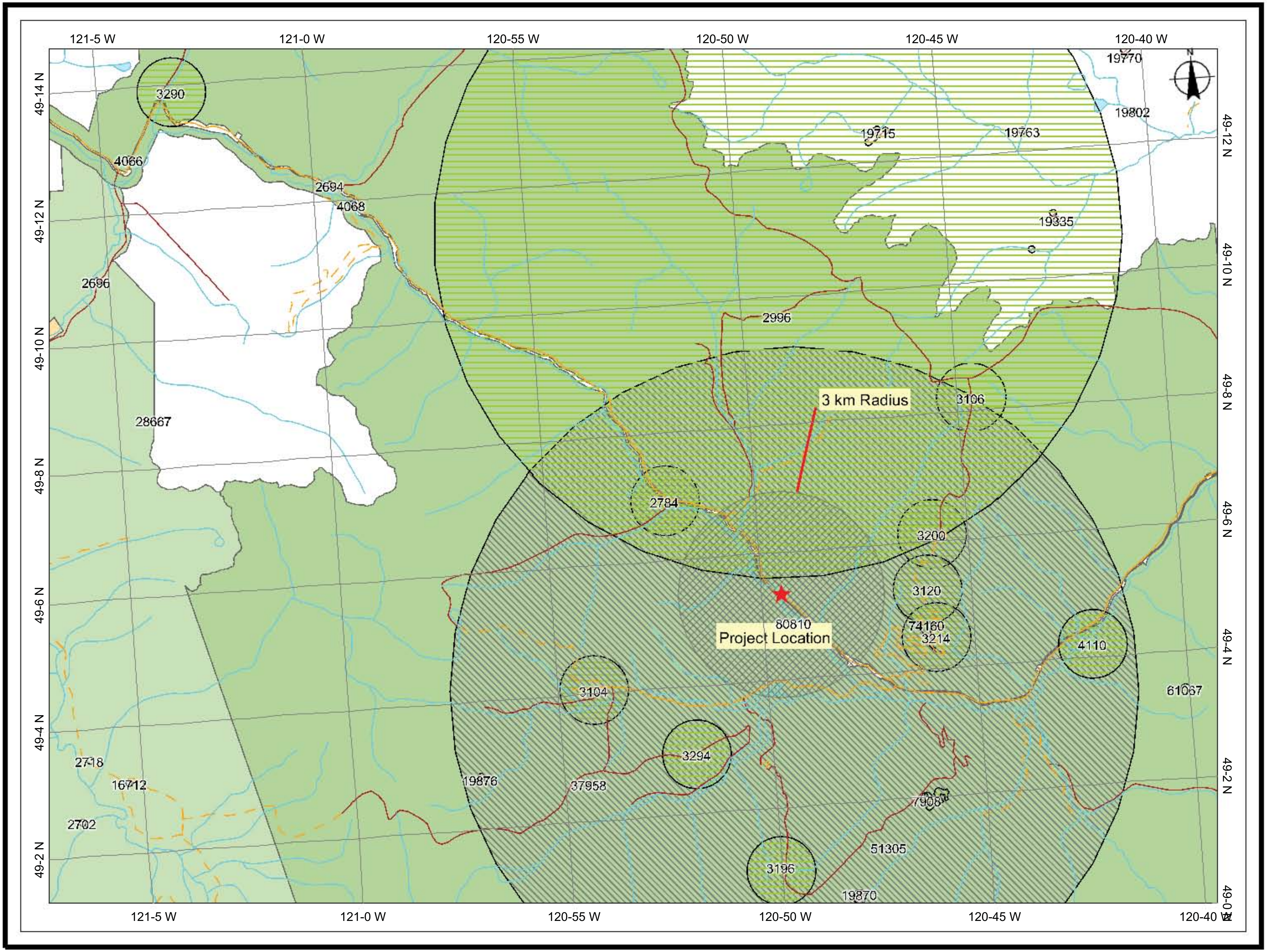
References:	Royal British Columbia Museum. 675 Belleville Street, Victoria, BC. V8V 1X4.

Version

Version Date:	06-DEC-93

Mapping Information

Estimated Representation Accuracy:
Confidence Extent:
May 9, 2013



MOE-2014-00235
Okanagan
Page 107

BC Conservation Data Centre: Occurrence Report (80810)

May 9, 2013

Polites sonora
Sonora Skipper

Field definition document available at **http://www.env.gov.bc.ca/atrisk/ims.htm**

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	10957	**Status:**	
Shape ID:	80810	Global:	G4
Type:	Invertebrate Animal	Provinicial:	S1S2
		COSEWIC:	SC (APR 2006)
Taxonomic Class:	insects	BC List:	Red
		SARA Schedule:	1
Data Sensitive:	N		

Locators

Survey Site: TWENTY MINUTE LAKE, MANNING PARK

Directions: The one accurate source point (Amphitheatre) is <1 km west of Manning Park town and east of Twenty Minute Lake. The Hope Mtn. point is plotted closer to the lake but they are estimates of the locations based on descriptions of "Manning Park" and "Hope Mountains".

Survey Information

First Obs. Date: 1906-07-16 **Last Obs. Date:** 2009-07-16

Occurrence Data: 2009: One Sonora Skipper was collected (Marks et al. 2009; Werden and Hobbs 2013).
1906, 1932, 1989: One Sonora Skipper was collected in each year as well as 2 near Twenty Minute Lake in 1945 (COSEWIC 2006f)

Occurrence Rank and Occurrence Rank Factors

Rank: E Verified extant (viability not assessed) **Rank Date:** 2009-07-16

Rank Comments:

Condition of Occurrence Amphitheatre-Manning: This site is found in a disturbed open meadow near the Pacific Crest Trail parking lot off the highway through Manning Park (Marks et al. 2009).

Size of Occurrence: 5 Sonora Skippers were collected from the Manning Park area between 1906 and 1989. The most recent collection was one in 2009 (Werden and Hobbs 2013).

Landscape Context:

Description

General Description: Amphitheatre-Manning: The habitat in this location was a disturbed, open meadow with dense grasses (including timothy), shrubs, yarrow, Canada thistle and oxeye daisy. There was also open water present about 50m

from the sighting. The mesic part of meadow was approximately one hectare (Marks et al. 2009).

Vegetation Zone:

Habitat: TERRESTRIAL: Grassland/Herbaceous

Documentation

References:

COSEWIC 2006f. COSEWIC assessment and status report on the Sonora Skipper Polites sonora in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 20 pp.
Marks, D., V. Young and O. Dyer. 2009. Sonora Skipper and Hoffman's Checkerspot inventory in the Similkameen drainage of southern British Columbia, 2009. Report prepared for B.C. Ministry of Environment. Penticton, B.C. 38pp.
Werden, L. and J. Hobbs, J. 2013. Sonora Skipper conservation and management in British Columbia: 2012 survey. Prepared for the Ministry of Forests, Lands, and Natural Resource Operations, Victoria, BC. 15pp. + appendices.

Version

Version Date: 22-FEB-13

Mapping Information

Estimated Representation Accuracy: Very Low

Confidence Extent: N

BC Conservation Data Centre: Occurrence Report (2996)

May 9, 2013

Callitriche heterophylla var. *heterophylla*
two-edged water-starwort

Field definition document available at **http://www.env.gov.bc.ca/atrisk/ims.htm**

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	369	**Status:**	
Shape ID:	2996	Global:	G5T5
Type:	Vascular Plant	Provinicial:	S2S3
		COSEWIC:	
Taxonomic Class:	dicots	BC List:	Blue
		SARA Schedule:	
Data Sensitive:	N		

Locators

Survey Site: FOURTH BROTHER MOUNTAIN, SOUTHWEST OF

Directions:

Survey Information

First Obs. Date:	1973-08-16	**Last Obs. Date:**	1973-08-16
Occurrence Data:	None.		

Occurrence Rank and Occurrence Rank Factors

Rank:	E Verified extant (viability not assessed)	**Rank Date:**	1973-08-16
Rank Comments:	There is insufficient data to assign a viability rank.		
Condition of Occurrence			
Size of Occurrence:			
Landscape Context:			

Description

General Description:	
Vegetation Zone:	Subalpine
Habitat:	TERRESTRIAL; SUBALPINE

Documentation

References:	Royal British Columbia Museum. 675 Belleville Street, Victoria, BC. V8V 1X4.

Version

Version Date:	06-DEC-93

Mapping Information

Estimated Representation Accuracy:
Confidence Extent:
May 9, 2013

MINISTRY OF ENVIRONMENT
DECISION NOTE

Date: November 21, 2013
File: 280-20
CLIFF/tracking #: 198794

PREPARED FOR: Honourable Mary Polak, Minister of Environment.

ISSUE: Boundary adjustment at Elk Falls Park to remove Brewster Lake Road (+/- 3.4 hectares) and approximately 6 additional hectares of land to enable the replacement of the City of Campbell River's water supply.

BACKGROUND:

Elk Falls Park is a Class A park, 1,065 hectares in size, located 2 kilometres west of Campbell River. In 1946, 101.9 hectares were deleted from the park for construction of the John Hart Dam and Generating Station by BC Hydro. Brewster Lake Road runs through Elk Falls Park.

BC Hydro intends to replace the existing facilities at the John Hart Generating Station. The project is intended to improve generating efficiency and seismic and worker safety, and reduce risks to fish habitat. The replacement of the facilities will require the use of Brewster Lake Road by construction traffic, and the closure of the road to the public for up to three years.

The City of Campbell River (The City) obtains its drinking water from the penstocks that supply water to the John Hart Generating Station. When BC Hydro removes the penstocks as part of their project, the City will need to construct an alternate water supply. The City has worked with BC Hydro to plan a new water supply system to be constructed in tandem with the replacement of the John Hart Generating Station.

In December 2012, the City informed BC Parks that their preferred design was the installation of a water main along a portion of Brewster Lake Road that runs between BC Hydro's property on District Lot 1124 and Highway 28 (see Attachment 1: Park Overview Map).

In the spring of 2013, the Legislature passed amendments to the *Protected Areas of British Columbia Act* to remove 5.6 hectares of land from Elk Falls Park to enable BC Hydro's works for the John Hart Replacement Project. These lands were subsequently established as a protected area under the *Environment and Land Use Act.* At the time the spring 2013 amendments were being prepared, BC Parks, BC Hydro and the City of Campbell River had concluded, based on the available records and prior legal advice, that Brewster Lake Road was a public highway and not legally part of Elk Falls Park. Therefore, these lands were not included in the amendments to the boundary of Elk Falls Park.

DISCUSSION:

In January, 2013, the City sought to gain administration over a portion of Brewster Lake Road by highway dedication under the *Land Title Act*. Ministry of Forests, Lands and Natural Resource Operations staff responsible for processing the request sought a legal opinion on the status of Brewster Lake Road in March, 2013. Legal advice was provided in May, 2013, concluding that the road is legally part of Elk Falls Park. BC Parks requested a review of that advice to confirm

its conclusions, as it was inconsistent with past legal advice on the status of roads elsewhere in the province. That review was completed in September, 2013, and confirmed that Brewster Lake Road is legally part of Elk Falls Park and subject to the provisions of the *Park Act*.

BC Parks has historically operated on the understanding that Brewster Lake Road is not part of the park. Brewster Lake Road serves residents and recreational users of lands beyond the park, and is within the municipal boundaries of the City of Campbell River. In BC Parks' view, the City is the most appropriate management agency for the road. Over the long term, BC Parks' objective is to exclude from Elk Falls Park the entire length of Brewster Lake Road where it intersects with the park and to transfer administration of the road to the City.

On October 22, 2013, the City of Campbell River advised that pursuant to further engineering work, they would like to also have the option of constructing the water main by a trenchless method. This option cannot be constructed on the Brewster Lake Road right of way. An additional 6 (+/-) hectares of land in Elk Falls Park would be required to accommodate this option. Because the City has not selected a final design, they have requested the use of sufficient land in Elk Falls Park to accommodate the construction of either option (see Attachment 2: Proposed Boundary Adjustment Map).

In order for the City's water main replacement project to proceed as planned, the lands required must be removed from Elk Falls Park. Lands may only be removed from a Class A park named and described in Schedule C of the *Protected Areas of British Columbia Act* by an Act of the Legislature.

Pursuant to the Cabinet-approved *Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines*, requests to amend protected area boundaries fall within one of three categories:

1. "Administrative housekeeping" adjustments undertaken where there have been errors in the initial legal description of the boundary or an area was captured that clearly was not intended to be captured at the designation stage;
2. Adjustments intended to alleviate a human health and safety concern; and
3. Adjustments where a proponent (private or public) is interested in a boundary adjustment to allow for a development or activity not allowed by authorization under protected areas legislation.

BC Parks considers this to be a category 2 amendment in respect of the City's water main project, and a category 1 amendment in respect of Brewster Lake Road, as it was only through incomplete administrative procedures in the past that Brewster Lake Road was not formally dedicated as a public highway and thereby excluded from the park.

The City of Campbell River and BC Hydro both hope to begin work in the spring of 2014. In order to meet that schedule and to provide the City and BC Hydro certainty regarding the availability of those lands for these projects, it is critical that the boundary adjustment be given priority at the next legislative session.

In order to accommodate the City's construction requirements and to ensure continued use by industrial and commercial traffic along Brewster Lake Road, BC Parks will seek a recommendation from the Environment and Land Use Committee to establish the road right of way and additional lands as a protected area under the *Environment and Land Use Act* until the projects are complete. Following project completion, a comprehensive boundary rationalization process is planned to determine the most appropriate owners/managers of the lands affected by the projects.

Affected First Nations were consulted by BC Parks and BC Hydro on the spring, 2013 boundary adjustments, and were supportive. Those consultations did not deal with Brewster Lake Road or the additional lands requested by the City of Campbell River. Consultation on removing those lands from the park will have to occur prior to the introduction of legislation.

No public consultations on the removal of these lands are planned. The proposed boundary changes are not expected to be controversial.

OPTIONS

s.12

RECOMMENDATION:

s.12

Approved | Mary Polak — 12.09.13

DECISION & SIGNATURE — **DATE SIGNED**

Honourable Mary Polak
Minister of Environment

Attachment 1: Park Overview Map
Attachment 2: Proposed Boundary Adjustment Map

Contact:	**Alternate Contact:**	**Prepared by:**
Lori Halls, ADM BC Parks and Conservation Officer Service 250-387-9997	Ken Morrison, Manager Planning and Land Administration Section 250-356-5298	Brett Hudson, Senior Planner Planning and Land Administration Section 250-387-4593

Reviewed by	Initials	Date
DM		Nov 29
DMO		Nov 21
ADM	LH	Nov. 21, 2013
Exec. Dir. PPM	BB	Nov. 21, 2013
Mgr., PLA	KM	Nov. 6, 2013
Reg. Dir.	DC	Nov 6, 2013
Author	BH	Nov. 5, 2013

MINISTRY OF ENVIRONMENT
MEETING INFORMATION NOTE

October 29, 2013
File: 280-20
CLIFF/tracking #: 199097

PREPARED FOR: Lori Halls, Assistant Deputy Minister, BC Parks and Conservation Officer Service Division, Ministry of Environment.

DATE AND TIME OF MEETING: October 30, 2013, 2pm.

ATTENDEES: Eric Foster, MLA (Vernon-Monashee)
Lori Halls, Assistant Deputy Minister, BC Parks and Conservation Officer Service Division

ISSUE: Cosens Bay Road in Kalamalka Lake Park.

BACKGROUND:

Cosens Bay Road within Kalamalka Lake Park is a single lane dirt road that passes through a significant grassland ecosystem and terminates at approximately 90 private cabins, some now year round homes, along the lake. Prior to park establishment in 1975, the cabin owners, whose lots were originally designated as water access only, were permitted by the previous owner (Coldstream Ranch Ltd.) to use the road to reach their cabins. The road length within the park is approximately 5.1 kilometres.

When the Coldstream Ranch Ltd. lands were acquired by the Province in the mid-1970s for park purposes, the land use advisory committee set up to guide management for the new park indicated that vehicular use of Cosens Bay Road would be phased out over time. BC Parks continued to permit vehicular access to the cabin residents until 1992. In 1992, the BC Parks District Manager closed the road because of environmental and management concerns. In 1994, the cabin owners sued the Crown and the District of Coldstream over the closure of the road. In 1996, the court subsequently ruled that Cosens Bay Road was a public road passable by 'one vehicle at a time'. In 1997, following an appeal by the Province, the BC Supreme Court confirmed its previous decision.

Currently, the main portion of the road (4.6 km) is **not** excluded from the park. A short portion of the road (0.5 km) that travels through the former Kalamalka Lake Protected Area (these lands were added to the park in 2008) is excluded from the park. The Ministry of Transportation and Infrastructure (MoTI) maintains operational jurisdiction and responsibility on the travelled portion of the road (defined as shoulder to shoulder) and makes decisions, in coordination with BC Parks, regarding the level of maintenance of the road.

Due to property subdivision and year round use by a few of the property owners, use of Cosens Bay Road has steadily increased along with pressure from some property owners to improve the road and its maintenance. BC Parks and MoTI, responding to concerns

from property owners, have in recent years enhanced the regular maintenance on Cosens Bay Road and improved the overall road safety by creating a few pullouts, improving sight lines and installing signage. However, upgrading the road beyond the existing travelled surface to allow for two lane traffic would not be allowable under the *Park Act*.

In 2011, some of the cabin owners interested in getting hydro service to their properties inquired with BC Parks if a hydro electrical line could be buried alongside the road surface through the park. Any installation of electric utility services for residential purposes would not meet the requirements set out in the *Park Act* [e.g. section 8 (1) and (2)] – an interest in land must not be granted unless to do so is necessary to preserve or maintain the recreational values of the park] and therefore would be inconsistent with the Act. A park boundary adjustment to remove land for a hydro line right-of-way would be required and the cabin owners were informed of the park boundary adjustment process.

Local citizens, concerned with protection of park values including the sensitive grassland ecosystem, have in the past expressed concern over the court decision regarding the Cosens Bay Road and continued vehicle use through the park, citing inconsistencies with the original intention at the time of park establishment to phase out the use of the road by vehicles.

Some cabin owners have recently contacted MLA Eric Foster and Minister Mary Polak for assistance with regards to finding solutions to allow for road improvements and supply of hydro electric power line through the park.

MoTI has recently indicated they will be submitting a Stage 1 application in the near future for a park boundary adjustment to remove from the park a right of way that centres on Cosens Bay Road and that if approved could permit installation of a hydro line and future road upgrades if desired.

DISCUSSION:

The desire to improve the road or supply hydro electric power to the cabin community may not be shared by all property owners, as these upgrades may lead to increased property taxes (from increased property value) and an increase in the amount of vehicular access to the community. In the past, property owners have not shared the same vision or spoken from a common voice on the issue of road improvement.

s.12

SUGGESTED RESPONSE:

BC Parks staff will continue to provide information to MoTI, if requested, on information and processes required for a Stage 1 boundary adjustment application.

BC Parks staff will also continue to work with MoTI to address any immediate road maintenance issues to ensure public safety and protection of park values.

Attachment 1: Park Map

Contact:
Lori Halls, ADM
BC Parks and
Conservation Officer
Service
(250) 387-9997

Alternate Contact:
Ken Morrison, Manager
Planning & Land Admin.
Parks Planning & Mgmt Br.
(250) 356-5298

Prepared by:
John Trewhitt, A/Regional Dir,
Kootenay Okanagan Region
(250) 490-8249

Reviewed by	Initials	Date
DM		
DMO		
ADM		
Exec Dir Regional Ops	TB	Oct 29, 2013
Exec Dir PPM	BB	Oct 29, 2013
Manager PLA	KM	Oct 29, 2013
Author and Regional Manager	JT	Oct. 25, 2013

MINISTRY OF ENVIRONMENT
DECISION NOTE

Date: October 23, 2013
File: 98000-90 Mt Richardson Park
CLIFF/tracking #: 188892
X Reference: CLIFF #198649 and 153069

PREPARED FOR: Honourable Mary Polak, Minister of Environment.

ISSUE: Aquaculture tenure caretaker's residence and storage facilities in Mount Richardson Park.

BACKGROUND:

Mount Richardson Park (the 'park') is a 1,001 hectare park which was established on the Sunshine Coast in 1999 as an outcome of the Lower Mainland Protected Areas Strategy. At the time of establishment, the park was named and described in Schedule F of the *Park Act*. The park is presently named and described in Schedule C of the *Protected Areas of British Columbia Act*.

Part of an aquaculture tenure originally issued in 1992 was included in the park at the time of establishment. There are two components to this tenure: a foreshore aquaculture licence for an oyster farm and a 0.75-hectare upland licence associated with a caretaker's residence. Only the upland portion is situated within the park.

Land statusing at the time of park establishment failed to identify this tenure. If the tenure had been identified at the time of park establishment, either the tenured area would have been excluded from the park or the existing use could have been grandfathered. This did not occur, and in 2000, Mount Richardson Park was one of several parks moved to Schedule C of the *Protected Areas of British Columbia Act*. Section 30 of the *Park Act*, which enables existing uses to be grandfathered if desired, is not applicable to those parks named and described in Schedule C, and thus a park use permit cannot be issued. Section 30 of the *Park Act* only applies to those Class A parks named and described in Schedule D of the *Protected Areas of British Columbia Act*.

In 2004, the Aquaculture Operations Branch purportedly renewed the aquaculture tenure, including the upland licence, for a ten-year term, with an expiry date of March 1, 2014. Land statusing again failed to identify that the upland portion of the tenure is in Mount Richardson Park. Then, in December, 2010, the Aquaculture Operations Branch assigned the aquaculture tenure to a new licensee, Peter Harvey of Comfort Cove Shellfish Ltd. BC Parks did not receive referrals on these tenure transactions as it was not recognized that the upland licence was in the park. Mr. Harvey paid a "premium" price (approximately $300,000) for this shellfish tenure because he wanted a tenure with an upland component. Shellfish operations in other locations consisting solely of Crown foreshore could have been purchased at the time for a reduced price.

In May, 2011, BC Parks staff conducted a site visit to Mount Richardson Park and noticed that there was tree-clearing and construction activity within the licence area. It was through follow up investigations that it came to light that the upland licence is within Mount Richardson Park. CLIFF 153069 (December 8, 2011) describes the matter in more detail, including the fact the licensee was in non-compliance with his tenure in many ways, including offering unauthorized

overnight accommodation. BC Parks worked with Compliance and Enforcement staff from the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) to develop a compliance plan. The licensee has taken significant steps to come into compliance. However, follow up to some of the *Park Act* infractions (unauthorized use and removal of vegetation) are pending resolution of the land tenure status.

On June 22, 2012, the Sunshine Coast Conservation Association wrote Minister Thomson and Minister Lake respecting the "unpermitted" commercial use in Mount Richardson Park. In their letter, the Association asserts that the *Land Act* Licence of Occupation assigned to Mr. Harvey in 2010 is invalid and that Mr. Harvey is in contravention of the *Park Act* as he does not have a valid park use permit authorizing his activities in the park. The Association has requested that FLNRO and BC Parks direct Mr. Harvey to remove his buildings from the park and to vacate the park.

DISCUSSION:

s.13, s.14

BC Parks is not able to issue a park use permit at this time for the continuation of the uses as the uses of the land are not necessary to preserve and maintain the recreational values of the park [section 8(1) and (2) of the *Park Act*] and the issuance of a permit would not be consistent with section 9(5) of the *Park Act* which states that a natural resource in a Class A park having an area of 2,023 hectares or less must not be granted, sold, removed, destroyed, damaged, disturbed or exploited.

The original purpose of the License of Occupation was for "*a caretakers residence and storage of equipment in conjunction with adjacent shellfish tenure purposes.*"

s.13

s.13

s.13, s.14, s.16

A general response was provided to the Sunshine Coast Conservation Association informing them that BC Parks is making efforts to find a solution. The unauthorized uses and other compliance issues that were raised by the Association have been addressed, and the Association has not questioned the validity of the tenure again. It will, however, be watching to see what the final outcome is, and would likely object to BC Parks issuing a park use permit to the licensee, or to removing the land from the park.

s.13, s.14

OPTIONS:

Staff from BC Parks and the FLNRO have worked collaboratively to implement a compliance plan, and to identify potential solutions to this tenure issue. FLNRO accepts the options as presented; both Ministries will be involved in implementation of the chosen option.

s.13, s.14, s.12

s.12

RECOMMENDATION:

s.12

Option 3 As per Minister's verbal direction

DECISION & SIGNATURE
Honourable Mary Polak
Minister
W. Shaemal

Nov. 8/13

DATE SIGNED

MINISTRY OF ENVIRONMENT
DECISION NOTE

Date: October 1, 2013
File: 280-20
CLIFF/tracking #:

PREPARED FOR: The Honourable Mary Polak, Minister of Environment

ISSUE: Boundary adjustment at Elk Falls Park to remove a portion of Brewster Lake Road to enable the replacement of the City of Campbell River's water supply and BC Hydro's John Hart Generating Station.

BACKGROUND:

Elk Falls Provincial Park is a Class A park, 1,087 hectares in size and located 2 km west of Campbell River. In 1946, 101.9 hectares were deleted from the park for construction of the John Hart Dam and Generating Station by BC Hydro. Since 1946, several minor land deletions and additions have been made to the park, bringing its present size to 1,087 hectares.

BC Hydro is proposing to replace the existing facilities at the John Hart Generating Station. The project is intended to improve generating efficiency and seismic and worker safety, and reduce risks to fish habitat. The replacement of the facilities will require the use of Brewster Lake Road by construction traffic, and the closure of the road to the public for up to three years.

The City of Campbell River (The City) obtains its drinking water from the penstocks that supply water to the John Hart Generating Station. When BC Hydro removes the penstocks as part of the project, the City of Campbell River will need to construct an alternative water supply. The City has worked with BC Hydro to design a new water supply system that will be constructed in tandem with the replacement of the John Hart Generating Station.

In December, 2012, the City informed BC Parks that their preferred design required the installation of a water main along a portion of Brewster Lake Road that runs between BC Hydro's property on District Lot 1124 and Highway 28 (see Attachment 1: map).

In the Spring of 2013, the Legislature passed amendments to the *Protected Areas of British Columbia Act* to remove 5.6 hectares of land from Elk Falls Park to enable BC Hydro's works for the John Hart Replacement Project. At that time these amendments were being prepared, BC Parks, BC Hydro and the City of Campbell River had concluded, based on the available records and prior legal advice, that the portion of Brewster Lake Road between DL 1124 and Highway 28 was a public highway and not legally part of Elk Falls Park. Therefore, these lands were not included in the amendments to the boundary of Elk Falls Park.

DISCUSSION:

s.14

s.14

In light of this advice, it is not likely that the City of Campbell River's water main construction project or BC Hydro's use of the road for construction of the John Hart Dam Replacement Project could be authorized under section 9(2) of the *Park Act*. Therefore, in order for these works to proceed, the portion of Brewster Lake Road that is needed for the projects must be removed from the park. Lands may only be removed from a Class A park named and described in Schedule C of the *Protected Areas of British Columbia Act* by an Act of the Legislature.

Pursuant to the Cabinet-approved *Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines*, requests to amend protected area boundaries fall within one of three categories:

1. "Administrative housekeeping" adjustments undertaken where there have been errors in the initial legal description of the boundary or an area was captured that clearly was not intended to be captured at the designation stage;
2. Adjustments intended to alleviate a human health and safety concern; and
3. Adjustments where a proponent (private or public) is interested in a boundary adjustment to allow for a development or activity not allowed by authorization under protected areas legislation.

BC Parks considers this to be a category 1 amendment, as BC Parks has historically operated on the understanding that Brewster Lake Road is not part of the park, and it is only through incomplete administrative procedures in the past that Brewster Lake Road was not formally dedicated as a public highway. Brewster Lake Road serves residents and recreational users of lands beyond the park, and is within the municipal boundaries of the City of Campbell River. In BC Parks' view, the City of Campbell River is the most appropriate management agency for the road.

Over the long term, BC Parks' objective is to exclude from Elk Falls Park the entire length of Brewster Lake Road where it intersects with the park and to transfer administration of the road to the City of Campbell River or other appropriate authority. Due to the short timeframe remaining prior to finalizing legislation for the Spring 2013 legislative session and the beginning of construction of these projects, it may not be possible to accomplish this in the short term. In that case, BC Parks will seek the permission of the Environment and Land Use Committee to establish the portion of the road needed by the City and BC Hydro as a protected area under the *Environment and Land Use Act* as an interim measure.

The City of Campbell River and BC Hydro both hope to begin working on the Brewster Lake Road in the Spring of 2014. In order to meet that schedule and to provide the City of Campbell River and BC Hydro certainty regarding the availability of those lands for the projects, it is critical that the boundary adjustment approval be given priority at the next Legislative session.

Affected First Nations were consulted by BC Parks and BC Hydro on the Spring 2013 boundary adjustments and were supportive of those adjustments. Those consultations did not deal with Brewster Lake Road. Consultation on removing Brewster Lake Road from the park will have to occur prior to the introduction of legislation.

No public consultations on the removal of the road are planned. Removal of the road from the park is not expected to be controversial among area residents.

OPTIONS

s.12

RECOMMENDATION:

s.12

_____/_____ _____

DECISION & SIGNATURE **DATE SIGNED**

Honourable Terry Lake
Minister of Environment

Attachment 1: Site Map

Contact:	**Alternate Contact:**	**Prepared by:**
Lori Halls, ADM	Ken Morrison, Manager	Brett Hudson, Senior Planner
BC Parks and Conservation Officer Service	Planning and Land Administration Section	Planning and Land Administration Section
250-387-9997	250-356-5298	250-387-4593

Reviewed by	Initials	Date
DM		
DMO		
ADM		
Dir. PPM		
Mgr., PLA		
Author	BH	Oct. 2/13

Bawtinheimer, Brian ENV:EX

From: Bawtinheimer, Brian ENV:EX
Sent: Monday, September 9, 2013 3:34 PM
To: Hudson, Brett R ENV:EX; Holley, Mona ENV:EX; Riccius, Eva ENV:EX; Beveridge, Megan ENV:EX; Furney, John ENV:EX
Cc: Austad, Bob ENV:EX; Bell, Tom G ENV:EX; Morrison, Ken ENV:EX
Subject: Homework for Wednesday workshop

Further to the workshop on Wednesday, please find a short paper that outlines the issue and challenge for discussion. Have a read ahead if at all possible as it should help get your ideas/thoughts together for addressing the issue.

Thanks

Workshop.docx

Brian Bawtinheimer Executive Director
Parks Planning and Management Branch, BC Parks

Workshop: Research Activities and the *Park Act*

Background:
Earlier this year, Regional Directors met to discuss challenges related to research activities in parks and protected areas. At this meeting, "research" was divided into two main areas – research to advance science knowledge (academic) and research to support proposed future uses for activities inconsistent with legislation (i.e. boundary adjustment requests).

BC Parks has long supported appropriate scientific research in protected areas providing the activity is appropriate, but definition of "appropriate" is not always clear.

Research in a park, conservancy or recreation area must be authorized under S32 of the *Park, Conservancy and Recreation Area Regulation*. Research activities that involve impacting natural resources also require park use permits as follows:

- Class A/C Parks: A natural resource other than fish and wildlife taken, hunted or killed in accordance with the Wildlife Act and fish, game or wildlife stalked or pursued for observation or for photographic or study purposes, in a Class A or Class C park must not be granted, sold, removed, destroyed, damaged, disturbed or exploited except as authorized by a valid and subsisting park use permit.

- *Test for permitting*: A park use permit must not be issued unless, in the opinion of the minister, it is necessary for the preservation or maintenance of the recreational values of the park involved.

- Conservancy: A natural resource, other than fish and wildlife taken, hunted or killed in accordance with the Wildlife Act and fish, game or wildlife stalked or pursued for observation or for photographic or study purposes, in a conservancy must not be granted, sold, removed, destroyed, disturbed, damaged, exploited, developed, improved or utilized except as authorized by a valid and subsisting park use permit.

- *Test for permitting*: A natural resource in a conservancy must not be granted, sold, removed, destroyed, disturbed, damaged or exploited unless, in the opinion of the minister, the development, improvement and use of the conservancy in accordance with section 5 (3.1) will not be hindered by it.

- S16 states commercial activities need park use permits, so any research with a commercial aspect (such as chartered air access) requires the commercial operator to have a permit.

Discussion:

s.12

s.12

MINISTRY OF ENVIRONMENT
DECISION NOTE

Date: August 23, 2013
File: 280-20
CLIFF # 195685

PREPARED FOR: Honourable Mary Polak, Minister of Environment.

ISSUE: Stage 1 boundary adjustment proposal to modify the boundary of Sasquatch Park to remove park roads to access adjacent lands for forestry purposes.

BACKGROUND:

Sasquatch Park is 1,217 hectares and was established as a Class A provincial park in 1968. It is located seven kilometres north of the Village of Harrison Hot Springs in the Fraser Valley Regional District. The park contains three large campgrounds and warm-water lakes that make it a popular regional destination for camping, swimming and fishing with over 260,000 visitors on average per year.

The Seabird Island First Nation ("Seabird Island") is in a revenue-sharing partnership with a local forestry operator, Dorman Timber. Seabird Island is seeking access through the park to the Moss Lake area, situated southeast of the park, for timber harvesting. The roads in the park are designated as part of the park and industrial use such as trucking of logs is not permissible under the *Park Act*. Therefore Seabird Island is requesting an amendment to the boundary of Sasquatch Park to remove existing roads, and lands for proposed roads, from the park.

Seabird Island has indicated that harvesting activities would take place over a period of six years, but they have not indicated when this would start. Securing access is a first step before proceeding with harvest planning; their timelines will be influenced by the outcomes of the boundary adjustment application.

DISCUSSION:

Sasquatch Park is named and described in Schedule C of the *Protected Areas of British Columbia Act*. Lands can only be removed from a park named and described in a schedule to the act by an Act of the legislature.

Proposals to remove lands from provincial protected areas are reviewed pursuant to the Cabinet-approved *Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines* (the Policy). Requests to amend protected area boundaries fall within one of three categories:

1. "Administrative housekeeping" adjustments undertaken where there have been errors in the initial legal description of the boundary or an area was captured that clearly was not intended to be captured at the designation stage;
2. Adjustments intended to alleviate a human health and safety concern; and
3. Adjustments where a proponent (private or public) is interested in a boundary adjustment to allow for a development or activity not allowed by authorization under protected areas legislation.

Normally, only proposals that fit within Category 3 are subject to the Policy. The proposed boundary amendment to Sasquatch Park is considered to be Category 3. As per the Policy, the proponent submits an initial project proposal (Stage 1) to the Minister. The Minister then determines whether there is sufficient public interest in the proposal to warrant a more detailed (Stage 2) boundary adjustment application.

Seabird Island submitted their Stage 1 proposal requesting removal of roads from the park on May 10, 2013 (Attachment #2). Seabird Island is proposing two boundary amendment alternatives, both of which involve removal of roads from the park. Option #1 involves the removal of 5.7 kilometres of road (5.7 hectares assuming a 10 metre road allowance) and option #2 involves the removal of 3.6 kilometres of park road (3.6 hectares assuming a 10 metre road allowance). See Attachment #1 for a map of the affected roads.

In past discussions, Seabird Island has asserted that they have access rights through the park for forestry purposes. First Nations have the ability to access provincial park lands for the purpose of exercising their traditional rights. Seabird Island's proposal for access through the park for forestry purposes is not associated with a traditional right of access, as commercial forestry activities are not ancillary to a traditional practice or use.

The Ministry of Forests, Lands and Natural Resource Operations (FLNRO) has indicated that they are supportive of providing access to the Moss Lake area, and the issue has been raised by Minister Steve Thomson in the past. In discussions with BC Parks, the Chilliwack Forest District has suggested that the primary access road was intended to be excluded from the park; BC Parks has confirmed this is not the case and has received legal advice confirming that the road is legally part of the park.

Currently, BC Hydro is using park roads to access their transmission line corridor as part of their works associated with the Interior-to-Lower Mainland Transmission Line (ILM) upgrade. This includes hauling logs and other materials to and from their right-of-way, which travels through the Moss Lake area. BC Hydro's use of the park roads is occurring under the auspices of the *Hydro and Power Authority Act,* which provides BC Hydro with broad powers of access to their transmission lines. The roads being used by BC Hydro are the same roads proposed for use by Seabird Island under option #1. BC Hydro has improved the road to the Moss Lake area to a condition suitable for timber hauling.

Option #2 (north of Deer Lake), as identified by Seabird Island, would minimize the log haul and recreational vehicle conflict. This option is less preferable from a cost perspective, as it would cost approximately $250,000 for a new bridge and road upgrades. This option is also currently not developed as a road. It is currently a narrow, single track hiking and cycling trail, and would require significant vegetation clearing and grading to make it functional as a forestry road.

The current volume of traffic associated with BC Hydro's operations is approximately 8 trucks per day, although this is anticipated to increase after Labour Day to 10 trucks per day. Seabird Island's proposed logging operation would involve a traffic volume of approximately 4 to 6 trucks per day when in operation – the number of operating days per year and season of operation will vary and is not known at this time. BC Hydro's use of the roads in the park will be short term, ending when work on the ILM is complete. If the roads are removed from the park to access forest harvest areas, forestry-related activity will extend over at least the 6 year period indicated by Seabird Island. FLNRO

Recreation Sites and Trails is also interested in permanent access for a proposed recreation site at Moss Lake. FLNRO has further indicated that the area of Moss Lake would be viable for a second pass of timber harvest from the currently proposed leave strips in 10 to 15 years, and would therefore prefer that permanent access be retained

The prospect of using Sasquatch Park roads for logging creates a number of concerns, including: risks to safety of park visitors resulting from logging trucks on park roads; impacts from the industrial use of roads on camping and day-use visitor experience; and potential loss of trail and hiking opportunities if new roads are established.

Seabird Island's Stage 1 boundary adjustment proposal does not identify alternatives that avoid Sasquatch Park; both proposed options involve the use of park roads. Regional staff identified a potentially feasible alternative that would wholly avoid the park. BC Parks staff conducted a preliminary assessment of this alternative with staff of BC Timber Sales. Preliminary review suggests that this alternative may be feasible to construct. However, the alternative route would traverse very steep terrain and would be more costly to build. Preliminary estimates suggest that the alternative route could cost between $500, 000 and $750,000 to construct. These costs would be borne by the Crown through a reduced price on the sale of the timber rights in the Moss Lake area. Increased road building costs may also reduce the stumpage revenue the Crown would receive from the planned timber harvest. Construction of a new road through steep terrain may also have additional environmental, safety and aesthetic impacts.

Sasquatch Park is within the traditional territory of ten First Nations, including the Sto:lo Tribal Council, of which Seabird Island is a member. Seabird Island has indicated that discussions with other First Nations are ongoing and that they will be seeking letters of support. The proponent has not provided documentation in its Stage 1 proposal on the results of stakeholder, local government, or First Nations consultation; it is believed that consultation to date has been limited.

A staff summary of the Stage 1 boundary modification proposal is found in Attachment 3.

OPTIONS:

s.12

s.12

RECOMMENDATION:

s.12

approved | Mary Polak — September 5, 2013

DECISION & SIGNATURE — **DATE SIGNED**

Mary Polak
Minister of Environment

Attachments:

Attachment 1: Map showing two options for boundary amendment proposed by Seabird Island.
Attachment #2: Seabird Island First Nation's Stage 1 Boundary Adjustment Proposal.

s.12

Contact:	Alternate Contact:	Prepared by:
Lori Halls, ADM BC Parks and Conservation Officer Service 250 387-9997	Brian Bawtinheimer Executive Director Parks Planning and Management Branch 250 387-4355	Jennie Aikman A/Regional Director South Coast Region 604 824-2316

Reviewed by	Initials	Date
DM	WS	Sept 3, 2013
DMO	VJ	Aug 26, 2013
ADM	LH	Aug 23, 2013
Ex Dir Regions	TB	Aug 21, 2013
A/Ex Dir PPM Ex Dir PPM	KM BB	Aug 23, 2013 July 23, 2013
Mgr. PLA	KEM	July 19, 2013
Reg Dir.	A/VH BS	June 26, 2013 June 7, 2013
Author	JA	June 7, 2013

Pages 24 through 27 redacted for the following reasons:
- -
s.12

MINISTRY OF ENVIRONMENT
INFORMATION NOTE

August 19, 2013
File:280-30
CLIFF/tracking #: 197092

PREPARED FOR: Honourable Mary Polak, Minister of Environment.

ISSUE: Cosens Bay Road in Kalamalka Lake Park.

Background:

Cosens Bay Road within Kalamalka Lake Park is a single lane dirt road that passes through a significant grassland ecosystem and terminates at approximately 90 private cabins, some now year round homes, along the lake. Prior to park establishment in 1975, the cabin owners, whose lots were originally designated as water access only, were permitted by the previous owner (Coldstream Ranch Ltd.) to use the road to reach their cabins. The road length within the park is approximately 5.1 kilometres.

When the Coldstream Ranch Ltd. lands were acquired by the Province in the mid-1970s for park purposes, the land use advisory committee set up to guide management for the new park indicated that vehicular use of Cosens Bay Road would be phased out over time. BC Parks continued to permit vehicular access to the cabin residents until 1992. In 1992, the BC Parks District Manager closed the road because of environmental and management concerns. In 1994, the cabin owners sued the Crown and the District of Coldstream over the closure of the road. In 1996, the court subsequently ruled that Cosens Bay Road was a public road passable by 'one vehicle at a time'. In 1997, following an appeal by the Province, the BC Supreme Court confirmed its previous decision.

Currently, the main portion of the road (4.6 km) is **not** excluded from the park. A short portion of the road (0.5 km) that travels through the former Kalamalka Lake Protected Area (these lands were added to the park in 2008) is excluded from the park. The Ministry of Transportation and Infrastructure (MoTI) maintains operational jurisdiction and responsibility on the travelled portion of the road (defined as shoulder to shoulder) and makes decisions, in coordination with BC Parks, regarding the level of maintenance of the road.

Due to property subdivision and year round use by a few of the property owners, use of Cosens Bay Road has steadily increased along with pressure from some property owners to improve the road and its maintenance. BC Parks and MoTI, responding to concerns from property owners, have in recent years enhanced the regular maintenance on Cosens Bay Road and improved the overall road safety by creating a few pullouts, improving sight lines and installing signage. However, upgrading the road beyond the existing travelled surface to allow for two lane traffic would not be allowable under the *Park Act*.

In 2011, some of the cabin owners interested in getting hydro service to their properties inquired with BC Parks if a hydro electrical line could be buried alongside the road surface through the park. Any installation of electric utility services for residential

purposes would not meet the requirements set out in the *Park Act* [e.g. section 9(1) and (2) – an interest in land must not be granted unless to do so is necessary to preserve or maintain the recreational values of the park] and therefore would be inconsistent with the Act. A park boundary adjustment to remove land for a hydro line right-of-way would be required and the cabin owners were informed of the park boundary adjustment process.

Local citizens, concerned with protection of park values including the sensitive grassland ecosystem, have in the past expressed concern over the court decision regarding the Cosens Bay Road and continued vehicle use through the park, citing inconsistencies with the original intention at the time of park establishment to phase out the use of the road by vehicles.

Some cabin owners have recently contacted MLA Eric Foster for assistance with regards to obtaining a permit to proceed to install the electric power line under the road.

Discussion:

The desire to improve the road or supply hydro electric power to the cabin community may not be a priority or even desirable to all property owners, as these upgrades may lead to increased property taxes (from increased property value) and an increase in the amount of vehicular access to the community. In the past, property owners have not shared the same vision or spoken from a common voice on the issue of road improvement.

s.12

NEXT STEPS:

s.12

Attachment 1: Park Map

Contact:
Lori Halls, ADM
BC Parks and
Conservation Officer
Service
(250) 387-9997

Alternate Contact:
Ken Morrison, Manager
Planning & Land Admin.
Parks Planning & Mgmt Br.
(250) 356-5298

Prepared by:
John Trewhitt, A/ Regional Dir,
Kootenay Okanagan Region
(250) 490-8249

Reviewed by	Initials	Date
DM	WS	Aug 21, 2013
DMO	VJ	Aug 19, 2013
ADM	LH	Aug 19, 2013
Exec Dir Regions	TB	Aug 19, 2013
Exec Dir PPM	ER	Aug 12, 2013
Manager PLA	KM	Aug 12, 2013
Author and Regional Manager	JT	July 31, 2013

MINISTRY OF ENVIRONMENT
DECISION NOTE

August 5, 2013
File: 280-20
98000-25/CS 0563
CLIFF/tracking #: 196934

PREPARED FOR: Honourable Mary Polak, Minister of Environment.

ISSUE: Modify the boundary of Kamdis Conservancy to correct administrative errors in the legal description.

BACKGROUND:

On December 12, 2007 the Province and the Council of the Haida Nation signed and announced the Haida Gwaii Strategic Land Use Agreement. The agreement identified approximately 254,000 hectares for protected areas reflecting ecological, cultural, spiritual and recreation purposes in Haida Gwaii. Kamdis Conservancy was one of the eleven conservancies established in 2008 as a result of this agreement. In 2012, a marine foreshore area was added to the conservancy consistent with the Haida Gwaii Land Use Agreement. Kamdis Conservancy is presently 2,722 hectares (1,896 hectares of upland and 826 hectares of marine foreshore) and is named and described in Schedule E of the *Protected Areas of British Columbia Act*.

Through a collaborative process with the Council of the Haida Nation, a management plan for Kamdis Conservancy was completed in 2012.

Three small areas within or adjacent to Kamdis Conservancy are encumbered with industrial uses (see Attachment 1):

- Licence of Occupation 635679, (*Land Act* File 6406761) authorizing the use of 0.06 hectare for the purpose of a parking lot and barge-unloading site;
- Licence of Occupation 635680, (*Land Act* File 6406695) authorizing the use of 0.05 hectare of foreshore area for a barge landing site; and
- Transportation Inclusion Roadway 634910, covering 0.236 hectare (*Land Act* File 6406072).

DISCUSSION:

Discussions during the management planning process for Kamdis Conservancy included determining where the foreshore boundary should be proposed and what 'areas' should and should not be included within the conservancy boundary. These discussions included the areas encumbered by the two *Land Act* licences of occupation and the Transportation Inclusion Roadway area.

The boundary of Kamdis Conservancy was modified in 2012, to add the marine foreshore area recommended by the collaborative marine planning initiative between the Council of the Haida Nation and the Province, and to remove 0.236 hectares of land encumbered by

the Transportation Inclusion Roadway that were inadvertently included in the conservancy when it was established in 2008.

These amendments in 2012 resulted in the following exceptions being included in the legal description:

> "(2) Industrial Licence of Occupation 635680, Kamdis Slough, containing approximately 0.05 hectares, on *Land Act* file 6406695 at the Ministry of Forests, Lands and Natural Resource Operations, Queen Charlotte; and (3) that part of District Lot 1825, Transportation Inclusion Roadway 634910, containing approximately 0.236 hectares, on *Land Act* file 6406072 at the Ministry of Forests, Lands and Natural Resource Operations, Queen Charlotte."

Two errors occurred when the boundary was modified in 2012. First, the foreshore area (0.05 hectares) encumbered by Licence of Occupation 635680 (File 6406695) was not to be excluded from the conservancy (exception statement 2). Secondly, the upland area covered by Licence of Occupation 635679 (*Land Act* File 6406761) authorizing the use of 0.06 hectare for the purpose of a parking lot and barge-unloading site was to be excluded from the conservancy.

To properly implement the recommendations made through the collaborative planning process between the Council of the Haida Nation and BC Parks, the 0.05 hectare foreshore area covered by Licence of Occupation 635680 (*Land Act* File 6406695) should be added to the conservancy. In addition, the area covered by Licence of Occupation 635679 (*Land Act* File 6406761) authorizing the use of 0.06 hectare for the purpose of a parking lot and barge-unloading site which is currently included within the conservancy should be removed from the conservancy.

Both the Council of the Haida Nation and the Ministry of Forests, Lands and Natural Resource Operations support the above two amendments.

The proposed changes are considered administrative in nature.

As Kamdis Conservancy is named and described in Schedule E of the *Protected Areas of British Columbia Act*, these changes can only occur through an Act of the Legislature.

OPTIONS:

s.12

s.12

RECOMMENDATION:

s.12

Approved | Mary Polak 08.30.13

DECISION & SIGNATURE **DATE SIGNED**

Honourable Mary Polak
Minister

Attachment 1: Map of Kamdis Conservancy showing proposed area to be added and proposed area to be deleted

Contact:
Lori Halls,
Assistant Deputy Minister
BC Parks and Conservation Officer Service Division

250-387-6177

Alternate Contact:
Ken Morrison, Manager

Planning and Land Administration,
Parks Planning & Mgmt
(250) 356-5298

Prepared by:
Mona Holley, Senior Parks and Protected Areas Planner
Planning and Land Administration,
Parks Planning & Mgmt
(250) 387-4599

Reviewed by	Initials	Date
DM	WS	8/20/13
DMO	VJ	8/8/13
ADM	LH	8/8/13
Exec. Dir. PPM	BB	8/8/13
Mgr. PLA	KM	8/8/13
Author	MH	18/07/13

Wheeler, Glenda J ENV:EX

From: Stevens, Tory ENV:EX
Sent: Tuesday, August 13, 2013 4:18 PM
To: Beveridge, Megan ENV:EX
Subject: RE: policy discussion paper- draft

Some more thoughts and comments...

Policy Discussion Paper_draft ...

From: Beveridge, Megan ENV:EX
Sent: Wednesday, July 31, 2013 4:53 PM
To: Austad, Bob ENV:EX; Bawtinheimer, Brian ENV:EX
Cc: Furney, John ENV:EX; Riccius, Eva ENV:EX; Hudson, Brett R ENV:EX; Stevens, Tory ENV:EX; Biffard, Doug ENV:EX
Subject: policy discussion paper- draft

<< File: Policy Discussion Paper_draft 1.docx >>
Please find attached a (very drafty) first cut at reviewing the policy for filming and research permits (research encompassing both academic and investigative). Will be scheduling a meeting to discuss further s.22

s.22

In the meantime feel free to comment/edit/expand.

Megan Beveridge
Land Management Permit Policy Analyst
Ministry of Environment
tel: 250-387-4356
email: megan.beveridge@gov.bc.ca

BRITISH COLUMBIA The Best Place on Earth

100 Years 2011 BCParks

"To those devoid of imagination, a blank space on the map is a useless waste; to others, the most valuable part." ~ Aldo Leopold

Pages 9 through 15 redacted for the following reasons:
- -
s.12

MINISTRY OF ENVIRONMENT
DECISION NOTE

Date: ~~July 17~~August 8, 2013
File: 280-20
CLIFF # 195685

PREPARED FOR: Honourable Mary Polak, Minister of Environment.

ISSUE: Stage 1 boundary adjustment proposal to modify the boundary of Sasquatch Park to remove park roads to access adjacent lands for forestry purposes.

BACKGROUND:

Sasquatch Park is 1,217 hectares and was established as a Class A provincial park in 1968. It is located seven kilometres north of the Village of Harrison Hot Springs in the Fraser Valley Regional District. The park contains three large campgrounds and warm-water lakes that make it a popular regional destination for camping, swimming and fishing with over 260,000 visitors on average per year.

The Seabird Island First Nation ("Seabird Island") is in a revenue-sharing partnership with a local forestry operator, Dorman Timber. Seabird Island is seeking access through the park to the Moss Lake area, situated southeast of the park, for timber harvesting. The roads in the park are designated as part of the park and industrial use such as trucking of logs is not permissible under the *Park Act*. Therefore Seabird Island is requesting an amendment to the boundary of Sasquatch Park to remove existing roads, and lands for proposed roads, from the park.

Seabird Island has indicated that harvesting activities would take place over a period of six years, but they have not indicated when this would start. Securing access is a first step before proceeding with harvest planning; their timelines will be influenced by the outcomes of the boundary adjustment application.

DISCUSSION:

Sasquatch Park is named and described in Schedule C of the *Protected Areas of British Columbia Act*. Lands can only be removed from a park named and described in a schedule to the act by an Act of the legislature.

Proposals to remove lands from provincial protected areas are reviewed pursuant to the Cabinet-approved *Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines* (the Policy). Requests to amend protected area boundaries fall within one of three categories:

1. "Administrative housekeeping" adjustments undertaken where there have been errors in the initial legal description of the boundary or an area was captured that clearly was not intended to be captured at the designation stage;
2. Adjustments intended to alleviate a human health and safety concern; and
3. Adjustments where a proponent (private or public) is interested in a boundary adjustment to allow for a development or activity not allowed by authorization under protected areas legislation.

Normally, only proposals that fit within Category 3 are subject to the Policy. The proposed boundary amendment to Sasquatch Park is considered to be Category 3. As per the Policy, the proponent submits an initial project proposal (Stage 1) to the Minister. The Minister then determines whether there is sufficient public interest in the proposal to warrant a more detailed (Stage 2) boundary adjustment application.

s.12

s.12

s.12

RECOMMENDATION:

s.12

_____/_____ _____

DECISION & SIGNATURE **DATE SIGNED**

Mary Polak
Minister of Environment

Attachments:

1. Map showing two options for boundary amendment proposed by Seabird Island.
2. Seabird Island First Nation's Stage 1 Boundary Adjustment Proposal.

s.12

3-4. Response letter to Seabird Island.

PPMB Action Plan

Business Area: LNG
Objective: Coordinated response and management of LNG projects
Updated: July 29, 2013

	Action Steps	Accountability		Resources	Schedule		Performance Indicators
		Primary	Other		Start	Finish	
1	Formalize team – both region and Victoria. Include scope of LNG projects	BB	KM/LB	none	04/03	04/10	Team members named **Needs updating and confirmation – see 10**
2	Information pkg. Needed for region and Vic staff, proponents, ADM committee etc.	BB	KM	Staff time	04/04	04/19	Q/A initial package ready **Completed**
3	Draft note from Lori to leadership team on process and team members	BB	LH	BB time	04/04	04/10	Draft note **Completed**
4	Acquire maps of projects slated for the next 6 months.	BH	SB/PR	none	04/04	04/12	Routes of urgent projects known **Completed**
5	Review situation with investigative use permits – provide consistent direction	MB	BH	none	04/04	04/19	Direction sent to staff Alternate approach – see 6 through 9.
6	Workshop on permitting and approach	TB	BB/MB/KM	travel	07/09	07/09	Meeting occurs **Completed**
7	Minutes of above meeting	BB	TB	none	07/09	07/29	Minutes/record drafted
8	Public information document	BB	KM/LH/GCPE	none	07/22	08/09	Approved by ADM and GCPE and posted publically
9	Decision making framework/flowchart on investigative use permits	BB	MB/TB/KM	none	07/09	07/26	Flowchart and direction **Draft Completed – need review by SDMs**
10	Technical committee members named for LNG technical groups	BB/TB	LH	none	07/09	08/02	FN and pipeline technical leads named

BB: Brian Bawtinheimer; KM: Ken Morrison; BH: Brett Hudson; MB: Megan Beveridge; LH: Lori Halls; TB: Tom Bell; SB: Scott Bailey; PR: Patrick Russell

11	BN and Powerpoint presentation developed for NRS Board – date and template to be confirmed	BB/BH	LH/KM/TB	none	07/29	TBD	BN and PowerPoint completed

BB: Brian Bawtinheimer; KM: Ken Morrison; BH: Brett Hudson; MB: Megan Beveridge; LH: Lori Halls; TB: Tom Bell; SB: Scott Bailey; PR: Patrick Russell

MINISTRY OF ENVIRONMENT
DECISION NOTE

Date: July 17, 2013
File: File: 280-20
CLIFF/tracking #: 196818

PREPARED FOR: The Honourable Mary Polak, Minister of Environment.

ISSUE: Stage 1 boundary adjustment proposal to enable construction of an oil pipeline by Kinder Morgan Canada Inc. (Kinder Morgan) through three provincial parks, one recreation area and a protected area.

BACKGROUND:

Kinder Morgan operates the Trans Mountain Pipeline, which transports oil products from Edmonton, Alberta to Burnaby, B.C. The pipeline began service in 1953. Kinder Morgan is proposing to triple the capacity of the pipeline system from 300,000 to 890,000 barrels per day, requiring the installation of 980 kilometres of new pipeline, approximately 640 kilometres of which will be in British Columbia.

The proposed Trans Mountain Expansion Project will require a certificate pursuant to section 52 of the *National Energy Board Act* to permit construction and operation of the expanded pipeline system. Kinder Morgan expects to file its application with the National Energy Board in late 2013. The company hopes to begin construction in 2016.

The existing pipeline right-of-way passes through a number of parks and protected areas, which were established after the pipeline was constructed (see Attachment 1). The existing pipeline is authorized by a number of provincial orders in council (OIC), which authorize the company to construct and operate one or more pipelines within a 60 foot right-of-way. Kinder Morgan would like to follow, as much as possible, their existing pipeline right-of-way for the Trans Mountain Expansion Project. However, they require additional land in the protected areas beyond the right-of-way granted by OIC for temporary work space or permanent new right-of-way. Kinder Morgan anticipates that 5 protected areas would be impacted: Finn Creek Park, North Thompson River Park, Bridal Veil Falls Park, Lac du Bois Grasslands Protected Area and Coquihalla Summit Recreation Area. See Attachment 2 for a summary of the values and roles of these areas.

Construction and operation of a pipeline cannot be permitted in a provincial park under the *Park Act*. Therefore, for the project to proceed as planned, the lands required for the pipeline expansion must be removed from the affected parks by an Act of the legislature. The OIC under which Lac du Bois Grasslands Protected Area was established does not permit the construction and operation of a new pipeline. Therefore, in order for the Trans Mountain Pipeline expansion to proceed using lands in the protected area, the OIC must be amended to enable that use, or to remove those lands from the protected area. In Coquihalla Summit Recreation Area, the Minister of Environment could authorize the construction of a pipeline.

DISCUSSION:

BC Parks reviews requests to amend the boundaries of provincial protected areas through the procedures set out in the Cabinet-approved *Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines* (The Policy; see Attachment 3). Requests to amend protected area boundaries fall within one of three categories:

1. "Administrative housekeeping" adjustments undertaken where there have been errors in the initial legal description of the boundary or an area was captured that clearly was not intended to be captured at the designation stage;
2. Adjustments intended to alleviate a human health and safety concern; and
3. Adjustments where a proponent (private or public) is interested in a boundary adjustment to allow for a development or activity not allowed by authorization under protected areas legislation.

Normally, only proposals that fit within Category 3 are subject to the Policy. The proposed pipeline expansion is considered to be Category 3. The Policy provides that the project proponent should submit an initial project proposal (Stage 1) to the Minister of Environment. The Minister then determines whether there is sufficient public interest in the proposal to warrant a more detailed (Stage 2) boundary adjustment application. The Policy states that boundary adjustments are normally only approved where there are significant environmental, social or economic benefits to be realized from the project.

On March 28, 2013, BC Parks received a Stage 1 proposal from Kinder Morgan for construction of the Trans Mountain Expansion Project through Lac du Bois Grasslands Protected Area. Kinder Morgan submitted a Stage 1 boundary adjustment proposal for Finn Creek Park, North Thompson River Park, Coquihalla Summit Recreation Area and Bridal Veil Falls Park on June 13, 2013 (Attachment 4). The land use requests for the project at each protected area are summarized in the table below:

Protected Area	Lands Required for Project	Amendment Process
Finn Creek Park	0.6 km temporary workspace to support directional drilling	Legislative amendment
North Thompson River Park	0.5 km permanent right-of-way, plus unspecified temporary workspace	Legislative amendment
Lac du Bois Grasslands Protected Area	7.9 km permanent new right-of-way next to existing fibre optic line, plus 2.25 km permanent new right-of-way next to existing pipeline	OIC amendment
Coquihalla Summit Recreation Area	12.6 km permanent new right-of-way, plus unspecified temporary workspace	N/A: Minister may authorize use
Bridal Veil Falls Park	0.4 km temporary workspace	Legislative amendment

Kinder Morgan has not provided an estimate of the right-of-way width required for the pipeline expansion in their Stage 1 proposals. This information will be provided by Kinder

Morgan in a Stage 2 boundary adjustment application, if one is requested. See the appendices to the Stage 1 proposals in Attachment 4 for maps of the existing right-of-way and possible alternative alignments for the project.

The Trans Mountain Pipeline Expansion is a major capital infrastructure project, which Kinder Morgan predicts will generate economic benefits that include 60,800 person years of employment and $600 million in revenues to the Government of B.C. over a 30 year period. The project is also highly controversial, and changes to the boundaries of, and allowable uses in, protected areas may serve as a focal point for opposition to the project as a whole.

A more detailed summary of the two boundary amendment proposals may be found in Attachment 5.

OPTIONS

s.12

RECOMMENDATION:

s.12

Attachment 1: Overview Route Map
Attachment 2: Summary of Protected Areas Affected by the Project
Attachment 3: *Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines*
Attachment 4a: Kinder Morgan Proposal 4 parks
Attachment 4b: Kinder Morgan Proposal Lac du Bois

s.12

Contact:	**Alternate Contact:**	**Prepared by:**
Lori Halls, Assistant Deputy Minister	Ken Morrison, Manager	Brett Hudson, Senior Planner
BC Parks and Conservation Officer Service	Planning and Land Administration Section	Planning and Land Administration Section
250-387-9997	250-356-5298	250-387-4593

Reviewed by	Initials	Date
DM		
DMO		
ADM	LH	July 19/2013
Dir. PPM	BB	July 18/2013
Mgr., PLA	KEM	July 17/2013
Author	BH	July 16/2013

Meeting Minutes/Outcomes: LNG and PUPs Richmond, BC

July 9,2013

Attending: Megan Beveridge, Ken Morrison, Brian Bawtinheimer, Tom Bell, Jeff Leahy, Larry Boudreau, Vick Haberl, Don Cadden, and John Trewhitt.

Background: Workshop discussion on how to approach investigative use permit applications and decisions – both in short term and longer term. Issue is Statutory Decision Makers (SDM) consideration of investigative use permits to meet broader government or cabinet direction (LNG project initiative, cabinet policy on boundary adjustments) as well as *Park Act* and policy implications. These decisions are primarily focused on a research type permit applications to allow an applicant to conduct some level of investigation to determine if an LNG route is feasible, if a boundary amendment may be asked for, and the information is available to inform a boundary amendment decision.

Outcomes: Discussions identified two streams to manage IUP's.

s.12

- Stage 1 application has been made
- Stage 1 decision has been reached
- Impact on other regions/other parks
- Level of First Nation or public interest
- Values within parks that would be affected
- Pre existing vs. new uses
- Activity under investigative uses occurring on adjacent Crown lands

s.12

Workshop: Research Activities and the *Park Act*

Background:
Earlier this year, Regional Directors met to discuss challenges related to research activities in parks and protected areas. At this meeting, "research" was divided into two main areas – research to advance science knowledge (academic) and research to support proposed future uses for activities inconsistent with legislation (i.e. boundary adjustment requests).

BC Parks has long supported appropriate scientific research in protected areas providing the activity is appropriate, but definition of "appropriate" is not always clear.

Research in a park, conservancy or recreation area must be authorized under S32 of the *Park, Conservancy and Recreation Area Regulation*. Research activities that involve impacting natural resources also require park use permits as follows:

- Class A/C Parks: A natural resource other than fish and wildlife taken, hunted or killed in accordance with the Wildlife Act and fish, game or wildlife stalked or pursued for observation or for photographic or study purposes, in a Class A or Class C park must not be granted, sold, removed, destroyed, damaged, disturbed or exploited except as authorized by a valid and subsisting park use permit.

- *Test for permitting*: A park use permit must not be issued unless, in the opinion of the minister, it is necessary for the preservation or maintenance of the recreational values of the park involved.

- Conservancy: A natural resource, other than fish and wildlife taken, hunted or killed in accordance with the Wildlife Act and fish, game or wildlife stalked or pursued for observation or for photographic or study purposes, in a conservancy must not be granted, sold, removed, destroyed, disturbed, damaged, exploited, developed, improved or utilized except as authorized by a valid and subsisting park use permit.

- *Test for permitting*: A natural resource in a conservancy must not be granted, sold, removed, destroyed, disturbed, damaged or exploited unless, in the opinion of the minister, the development, improvement and use of the conservancy in accordance with section 5 (3.1) will not be hindered by it.

- S16 states commercial activities need park use permits, so any research with a commercial aspect (such as chartered air access) requires the commercial operator to have a permit.

Discussion:

s.12

s.12

s.12

s.12

Further Reference Materials:

From the draft conservation policies...

Scientific Collection and Removal of Material

5.1.1. Scientific collection and removal of biotic or abiotic material will be allowed only when shown to be necessary for research, baseline inventory, monitoring or impact analysis. **Examples of biotic material include (but are not limited to) botanicals, fish and wildlife species. Examples of abiotic material include (but are not limited to) soils, geologic specimens, paleontological specimens or cultural features.**
Manipulative or destructive research, inventory or monitoring activities are generally inappropriate within a protected area and will be permitted only if it results in information that provides for increased protection of the feature or scientific knowledge not otherwise available and will not result in adverse impacts.
Collecting for the purpose of building up private collections of specimens will not be permitted.
Unless its existence is threatened by natural forces such as erosion, climate change-related processes, or public extraction, removal of any paleontological feature from protected areas will not be permitted.

5.1.2. Any voucher collections or specimens that are collected for scientific research will remain the property of the Province of British Columbia, regardless of where they are stored. **The final repository for voucher specimens necessary for identification and documentation of occurrences will normally be as directed in provincial standards (Resource Inventory Standards Committee).**
All specimens will be inventoried and BC Parks will be supplied with copies of the findings.

5.1.3. Permits to collect species of conservation concern or locally rare species will not normally be given in protected areas. Permits to collect species of conservation concern will only be issued where other means of identification and documentation are not possible.

Definitions

Adverse Impact is a condition determined through the BC Parks Impact Assessment process where human activity impacts ecosystem function (representation, connectivity, climate change resistance/resilience), special, unique, rare or endangered natural values resulting in compromised integrity of the natural environment.

Collection includes any activity that involves the capture, picking and/or removal of biotic or abiotic material, prehistoric or historic specimens.

Inventory is the process of acquiring, managing, and analyzing information on natural and cultural features, including but not limited to the presence, distribution, and condition of plants, animals, soils, water, air, biotic communities, natural processes, and cultural values.

Additional consideration is whether the research will benefit future park management.

Options:

s.12

Park Use Permits for Research Activities: Legislation and Policy Intent

The *Park Act* sets out authorities and requirements for issuing authorizations for research-oriented permits. These include:

- S 32 of the *Park, Conservancy and Recreation Area Regulation*
- S 9 of the *Park Act*

The regulations and act identify when authority from a park officer is required and what the "test" is for issuing permits in various types of protected areas.

Legislative and policy amendments are required due to:

- Ensure clarity in the *Park Act* for the authority to issue research oriented park use permits;
- Apply a reasonable constraint to this authority
- Clear policy and process for determining what research activities are appropriate

BC Parks is examining legislative and policy amendments to accomplish the following objectives:

1) Ensure there is clear authority for the Minister to issue park use permits for research activities
2) Ensure there are reasonable constraints to limiting the application of this authority respecting activities that exceed policy limits for acceptability
3) Ensure any "tests" by which permits are to be considered extend beyond just those necessary for the preservation or maintenance of the recreational values
4) Ensure tools and business processes to evaluate permit applications and proposed activities are consistent and consider the full scope of park values and management implications

s.12

Pages 33 through 35 redacted for the following reasons:
- -
s.12

Hewison, Dorothy J ENV:EX

From: Austad, Bob ENV:EX
Sent: Tuesday, July 16, 2013 7:28 AM
To: Hewison, Dorothy J ENV:EX
Subject: FW: revised Leg Proposal entries

Sensitivity: Confidential

Hi Dorothy, please can you print me out a copy.

Thannks

Robert C. Austad
A/Executive Director Visitor Services Branch
BC Ministry Environment
BC Parks
PO Box 9398 Stn. Prov. Govt.
Victoria, B.C. V8W 9M9
Telephone: (250) 356-9241
Fax: (250) 387-5757
Email: Bob.Austad@gov.bc.ca
BC Parks Website: www.gov.bc.ca/bcparks

From: Bawtinheimer, Brian ENV:EX
Sent: Monday, July 15, 2013 8:50 AM
To: Morrison, Ken ENV:EX; Halls, Lori D ENV:EX
Cc: Austad, Bob ENV:EX
Subject: RE: revised Leg Proposal entries
Sensitivity: Confidential

Here are a few comments from my perspective.

PARKS - revised Leg Proposals ...

From: Morrison, Ken ENV:EX
Sent: Monday, July 15, 2013 8:25 AM
To: Halls, Lori D ENV:EX
Cc: Bawtinheimer, Brian ENV:EX; Austad, Bob ENV:EX
Subject: FW: revised Leg Proposal entries
Importance: High
Sensitivity: Confidential

Due to network issues, I am unable to open the attachment in Alicen's email below. Given the urgency in getting our legislative proposals finalized, I am forwarding the document at this time even though I have not reviewed it. Assuming that you are not experiencing the same network problems I am, please review the document and forward any concerns or questions to me. I will coordinate the comments and get a "finalized" draft back to everybody for one final look before sending it back to Alicen.

From: Chow, Alicen V ENV:EX
Sent: Friday, July 12, 2013 4:52 PM
To: Morrison, Ken ENV:EX
Subject: Revised Leg Proposal entries

Hi Ken,

Attached are the draft additional and revised entries for 2014 Park Act

s.12

s.12

Please pass these on to Lori for her comments once you are done with them, as I'd like to start entering the information into the SharePoint as soon as possible in anticipation of briefing the Minister.

s.22 so I was not able to discuss next steps in terms of prioritization and approvals, but will let you know once we have something confirmed. In terms of timing, the sooner we can get the text approved and I can begin data entry, the better. FYI, re-ordering items in the SharePoint is quite easy.

<< File: PARKS - revised Leg Proposals (DRAFT - July 12th).docx >>

Thanks,
Alicen

Pages 38 through 39 redacted for the following reasons:
- -
s.12

MINISTRY OF ENVIRONMENT
DECISION NOTE

Date:– ~~April 24~~June 11, 2013
File:– 280-20
CLIFF/tracking #:– 194381

PREPARED FOR:– ~~Wes Shoemaker~~Honourable Mary Polak, ~~Deputy~~ Minister of Environment.

ISSUE:– Stage 1 boundary adjustment proposal at Lac Du Bois Grasslands Protected Area to enable construction of an oil pipeline by Kinder Morgan Canada Inc (Kinder Morgan).

BACKGROUND:

Lac du Bois Grasslands Protected Area was established by order in council under the *Environment and Land Use Act* in 1996, following the recommendations of the Kamloops Land and Resource Management Plan. The protected area protects undisturbed grassland ecosystems, which are rare in British Columbia, and associated critical wildlife habitat for bighorn sheep, mule deer and a variety of species at risk. It is also a locally important recreation destination. In April, 2013, additions totalling approximately 1384 ha were made to the protected area to improve connectivity for the grasslands ecosystem.

Kinder Morgan operates the Trans Mountain Pipeline, which transports oil products from Edmonton, Alberta~~B~~ to Burnaby, BC. The pipeline was originally constructed in 1952, and began service in 1953. Kinder Morgan is proposing to increase the capacity of the pipeline system from 300,000 to 890,000 barrels per day, requiring the installation of 980 km of new pipeline, approximately 640 km of which will be in British Columbia.

The proposed Trans Mountain Expansion Project will require a certificate pursuant to s~~S~~ection 52 of the *National Energy Board* (NEB) *Act* to permit construction and operation of the expanded pipeline system. Kinder Morgan expects to file its application with the NEB in late 2013. The company hopes to begin construction in 2016.

In the Kamloops area, the existing Trans Mountain Pipeline route is in an area that was agricultural land in the 1950s, but that has since become a heavily urbanized suburb, known as Westsyde. Construction of a new pipeline adjacent to the existing right of way would require significant disturbance to residences and municipal infrastructure in this community.

Residents and the City of Kamloops have requested that Kinder Morgan identify an alternative route that would avoid the urban areas of Westsyde. Kinder Morgan has identified an alternative route parallel to an existing Telus Fiber-Optic Transmission System in Lac Du Bois Grasslands Protected Area (see Attachment 1: route map). The existing pipeline, and the proposed route of the new pipeline, also transits one of the areas (Batchelor South) that was added to Lac Du Bois Grasslands Protected Area by order in council in April~~,~~ 2013 for 2.25 km.

DISCUSSION:

Proposals to remove lands from provincial protected areas are reviewed pursuant to the Cabinet-approved *Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines*. Requests to amend protected area boundaries fall within one of three categories:

1. "Administrative housekeeping" adjustments undertaken where there have been errors in the initial legal description of the boundary or an area was captured that clearly was not intended to be captured at the designation stage;
2. Adjustments intended to alleviate a human health and safety concern; and
3. Adjustments where a proponent (private or public) is interested in a boundary adjustment to allow for a development or activity not allowed by authorization under protected areas legislation.

The order in council under which Lac Du Bois Grasslands Protected Area was established does not permit the construction or operation of a pipeline or pipelines. Therefore, in order for the Trans Mountain Pipeline expansion to proceed using lands in the protected area, the oOrder in cCouncil must be amended to enable that use, or the boundary of the protected area must be amended to exclude the area in question. Requests to enable a new use in a protected area that were not allowed under the original order in council are reviewed through the procedures set out in the Cabinet-approved Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines (tThe Policy) and are considered a Category 3.

The Policy provides that the project proponent should submit an initial project proposal (Stage 1) to the Minister. The Minister then determines whether there is sufficient public interest in the proposal to warrant a more detailed (Stage 2) boundary adjustment application.

On March 28, 2013, BC Parks received a Stage 1 proposal (Attachment 2) from Kinder Morgan requesting consideration for construction of a pipeline through 7.9 km of Lac Du Bois Grasslands Protected Area. A summary of the proposal is provided in Attachment 3.

At the time the request was being prepared, the Batchelor South area was Crown land, and not part of the protected area. Therefore, Kinder Morgan's Stage 1 proposal does not include a request to use those lands for the construction of a pipeline. If the Minister decides to request the submission of a Stage 2 detailed proposal from Kinder Morgan, the company ~~may~~ will be instructed to include the Batchelor South area in its analysis and reporting.

The request for a boundary adjustment at Lac Du Bois Grasslands Protected Area is likely the first of several boundary adjustment requests that will be forthcoming as a consequence of the Trans Mountain Pipeline expansion project. The existing pipeline right of way transects 8 provincial protected areas, ~~most~~ several of which will require a legislative amendment to their boundaries if the project is to proceed. Kinder Morgan anticipates submitting Stage 1 proposals for boundary adjustments at those parks in the summer of 2013.

OPTIONS

s.12

RECOMMENDATION:

s.12

DECISION & SIGNATURE **DATE SIGNED**
Wes Shoemaker
Deputy Minister of Environment

Attachment 1: Route Map Map

s.12

Contact:	**Alternate Contact:**	**Prepared by:**
Lori Halls, Assistant Deputy Minister	Ken Morrison, Manager	Brett Hudson, Senior Planner
BC Parks and Conservation Officer Service	Planning and Land Administration Section	Planning and Land Administration Section
250-387-9997	250-356-5298	250-387-4593

Reviewed by	Initials	Date
DM		
DMO		
ADM		
Dir. PPM		
Mgr., PLA	KM	June 11/2013
Author	BH	Apr. 24/2013

Pages 44 through 45 redacted for the following reasons:
- -
s.12

OPTIONS

s.12

RECOMMENDATION:

s.12

_____/_____ _____

DECISION & SIGNATURE **DATE SIGNED**

Wes Shoemaker
Deputy Minister of Environment

Attachment 1: Route Map

s.12

Contact:	**Alternate Contact:**	**Prepared by:**
Lori Halls, Assistant Deputy Minister	*Ken Morrison, Manager*	*Brett Hudson, Senior Planner*
BC Parks and Conservation Officer Service	*Planning and Land Administration Section*	*Planning and Land Administration Section*
250-387-9997	*250-356-5298*	*250-387-4593*

Reviewed by	Initials	Date
DM		
DMO		
ADM		
Exec Dir. PPM		
Mgr., PLA	KM	June 11/2013
Author	BH	Apr. 24/2013

Pages 3 through 31 redacted for the following reasons:
- -
s.12