

Appendix H: Conditions and Impacts Report



CONDITIONS AND IMPACT REPORT FOR 3542 OTTER POINT ROAD

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SOLUTION ORIENTED. PROTECTION OF THE ENVIRONMENT. ABSOLUTE INTEGRITY. OPEN COMMUNICATION. RESPECT.

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CAVEAT

This Conditions and Impacts (C&I) Report has been prepared with the best information available at the time of writing, including the Otter Point Official Community Plan, communications with the client and regulators, site visits, review of historical imagery, site plans and design drawings and other documentation relevant to the project. This C&I has been developed to assist the project in remaining in compliance with relevant environmental regulations, acts and laws pertaining to the project and to identify and mitigate the expected impacts of the project and reclamation activities directly related to the project.



1 INTRODUCTION

Corvidae Environmental Consulting Inc. (Corvidae) is pleased to provide this Conditions and Impacts (C&I) Report for the proposed rezoning and subdivision of 3542 Otter Point Road (the property), property ID 009499369, zoning Rural A.

This document addresses the requirements in Section 5.3.1 of Capital Regional District (CRD) Bylaw No. 3819 and provides an assessment on the current environmental conditions on the property, recent environmental impacts, potential impacts of the rezoning and subdivision, and replanting plans for areas that have been disturbed within the 30 m riparian area.

1.1 PROJECT BACKGROUND

The landowner () are subdividing the property at 3542 Otter Point Road, which is approximately 37 acres (15 ha). Currently, an access road and a residence are located near the mid-point of the northwestern property line (see Figure 1). Further along the access road, the property owner operates a sawmill and logging operation (Photo 1). With the exception of the trees immediately adjacent to the watercourse and wetland, the property has been logged (Photo 2).

The property owner intends to subdivide the property into seven lots – 6 residential and one Light Industrial – Sawmill (see Figure 1). The size and dimensions of the property are provided in Figure 1.

1.2 CURRENT CONDITIONS AND EXISTING DISTURBANCE

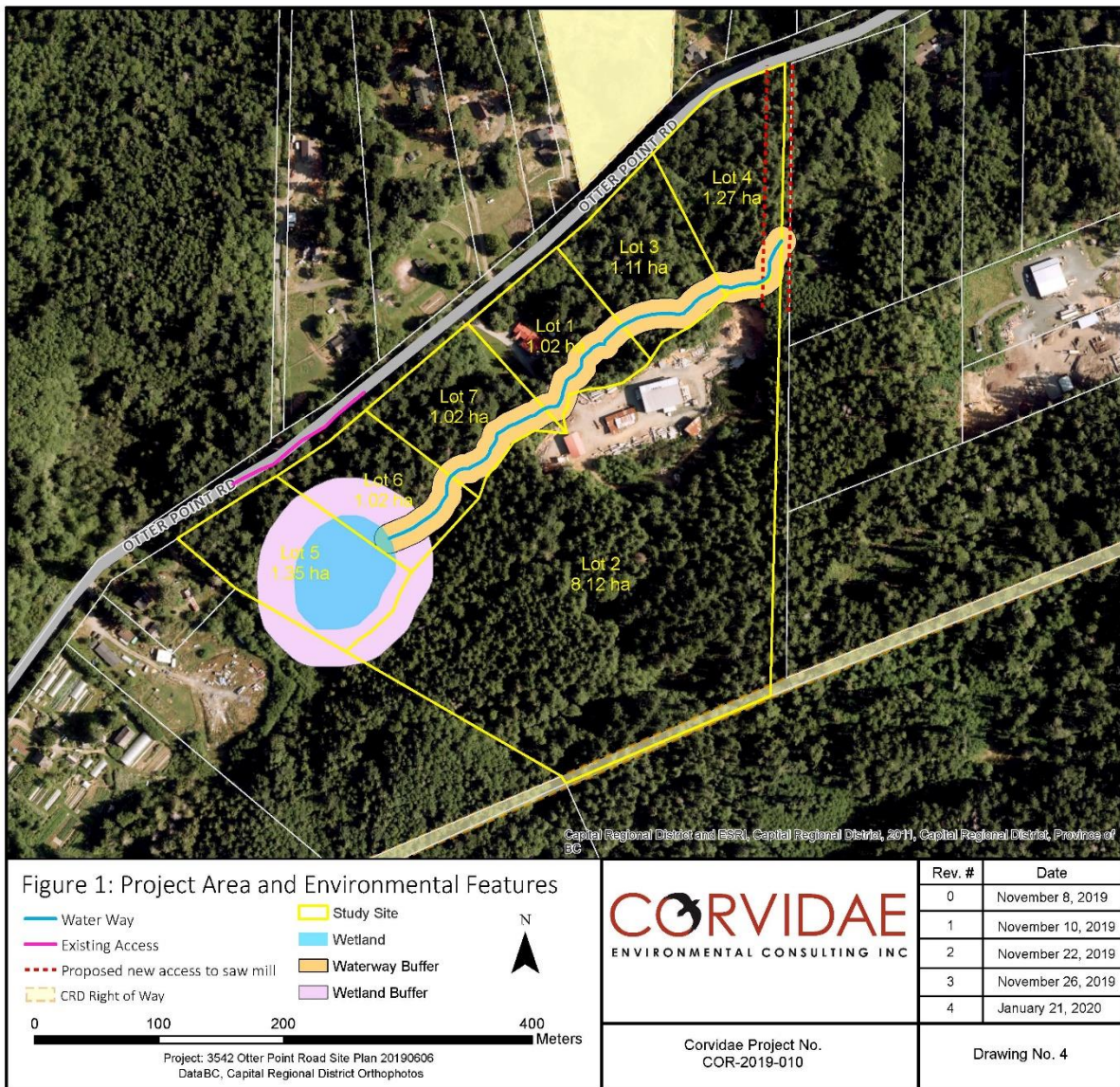
The property was purchased in 2007 by the current owners. A detailed Stage I Preliminary Site Investigation has been completed, with a historical review of the property. A sawmill is located on the eastern side of the property and has been there since the 1970's. Operations continue under the current owners as a custom woodworking sawmill.

In 2019 the entire property was logged, with the exception of the area around the wetland and along the water drainage.

1.3 CURRENT AND FUTURE DISTURBANCE

The owner is currently operating the sawmill and continuing business as previously done. For all residential planning and future development, if any disturbance is proposed within the 30 m Riparian Area a Riparian Area Report and provincial application will be required.





1.4 REGULATORY FRAMEWORK

This environmental assessment is designed to comply with the provisions set out in the Otter Point Official Community Plan (OCP) for development permit areas and for compliance with the provisions for environmental protection contained in the following relevant legislation:

Municipal

- Capital Regional District Otter Point OCP, Bylaw No. 3819

Development Permit Area No. 3: Watercourses and Wetland Areas. Defined as the area within 30 metres (100 feet) of the natural boundary of watercourses, wetlands and lakes as outlined on Map 5c. Designated as a Development Permit Area, the "Watercourses DPA", under Section 919.1(1)(a) of the Local Government Act, for protection of the natural environment, its ecosystems and biological diversity.

The "Watercourses DPA" applies to all streams subject to the provincial Riparian Areas Regulation as well as mapped lakes, wetlands, ponds and other watercourses which are not subject to the Riparian Areas Regulation. For a stream subject to the Riparian Areas Regulation the assessment area is defined by the Regulation.

The guiding principle for the use of Development Permits is found within the Local Government Act. Development Permit Areas can be designated for purposes such as, but not limited to the following:

- Protects, enhances and restores the biodiversity and ecological values and functions of environmentally sensitive areas.
 - Fosters compatibility between development, existing land uses and environmentally sensitive areas.
 - Maintains connectivity between sensitive ecosystems; and
 - Protects water quality and quantity.
- The property is zoned as Rural A. Bylaw No. 3819 states:
Building strata development on Rural A zoned lands is not supported. However, for Rural A parcels created prior to adoption of this Plan, a rezoning could be considered to permit a subdivision which would permit a density of 1 parcel per ha up to 4 ha and 1 parcel per 2 ha for each additional 2 ha portion of the property; (page 21, Section 3.1.1.d.).
The plan for the property is subdivision, and re-zoning of the 1 hectare and 3.5 hectare lots only, Lot 1 is planned to remain the same (no change in land-use, >4 ha) with no re-zoning.

Provincial

British Columbia Wildlife Act (1996)
Invasive Species Council of British Columbia
BC Weed Control Act (1996, current as of October 2016)

Federal

Migratory Birds Act (1994)



2 CONDITIONS AND IMPACT ASSESSMENT

Corvidae completed a site visit in February, March, June and July of 2019, and again in January 2020, as part of the subdivision application and subsequent re-zoning application for the property. A qualified professional biologist (QEP) assessed the property subject and examined any Environmentally Sensitive Areas, specifically the wetland and watercourses on the property, and recent logging. Appendix A shows photos of the property taken during the field visit.

2.1 LANDSCAPE AND SOILS

Soils in the Biogeoclimatic zone are typically moderately deep Orthic Humo-Ferric Podzols with Hemimor humus forms (Pojar et al. 1991). The soils on the site were a sandy clay loam.

The topography of the property is varied. The property generally slopes from the back (southern side) north towards the watercourse and wetland area, and from Otter Point Road south to the wet areas. Throughout the upland areas on the property there are small undulations, both natural and those created by logging access and equipment.

2.2 VEGETATION

The project is located within the Coastal Western Hemlock (CWH) biogeoclimatic zone, and specifically in the western variant of the Very Dry Maritime subzone (classified as CWHxm2). Drier subzones of the CWH are typically dominated by components of western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*) and western red cedar (*Thuja plicata*) (Pojar et al. 1991). Salal (*Gaultheria shallon*), dull Oregon- grape (*Mahonia nervosa*), and red huckleberry (*Vaccinium parvifolium*) typify the poorly to moderately developed shrub layer. Oregon beaked moss (*Kindbergia oregana*), step moss (*Hylacomium splendens*), lanky moss (*Rhytidiadelphus loreus*), and flat moss (*Plagiothecium undulatum*) dominate the well-developed moss layer (Pojar et al. 1991).

The property was once entirely forested, but currently only the portion closest to the road and surrounding the wetland contain mature coniferous forest. In addition to the clear cut on the rear two-thirds of the property, a small area in the western portion of the property near the road has been cleared (Photo 3). The wetland is dominated with shrubs and sedges (Photos 4 and 5), and mature alder trees (Photo 6) along the western property line. During the site assessment the species in Table 1 were found on the site.

Table 1. Plant Species observed on site during field visit.

Common Name	Scientific Name	BC Provincial Status ¹	SARA Schedule 1 Status ²
Western redcedar	<i>Thuja plicata</i>	Yellow	--
Western hemlock	<i>Tsuga heterophylla</i>	Yellow	--
Douglas-fir	<i>Pseudotsuga menziesii</i>	Yellow	--
Big leaf maple	<i>Acer macrophyllum</i>	Yellow	--
Red alder	<i>Alnus rubra</i>	Yellow	--
Salal	<i>Gaultheria shallon</i>	Yellow	--
Sword fern	<i>Polystichum munitum</i>	Yellow	--
Deer fern	<i>Blechnum spicant</i>	Yellow	--
Evergreen huckleberry	<i>Vaccinium ovatum</i>	Yellow	--
Common rush	<i>Juncus laccatus</i>	Yellow	--



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Common Name	Scientific Name	BC Provincial Status ¹	SARA Schedule 1 Status ²
Grass sp.	--	--	--
Sedge sp.	--	--	--
Salmonberry	<i>Rubus spectabilis</i>	Yellow	--
Hardhack	<i>Spiraea douglasii</i>	Yellow	--
Himalayan blackberry	<i>Rubus armeniacus</i>	Invasive	--
English holly	<i>Ilex aquifolium</i>	Invasive	--

¹ BC Conservation Data Centre (CDC) 2019

² Government of Canada 2019

2.3 WILDLIFE

The forested habitat is found in the Coastal Western Hemlock biogeoclimatic zone is home to many wildlife species. Black-tailed deer, black bear, marten and gray wolf are the most common large mammals in this zone on Vancouver Island. For bird species in this zone, the following typically occur: great horned owl, barred owl, ruffed grouse, band-tailed pigeon, northern flicker, hairy woodpecker, common raven, Steller's jay, chestnut-backed chickadee, red-breasted nuthatch, varied thrush, red-tailed hawk, Townsend's warbler. For amphibians, the following can occur: western toad, Pacific treefrog, western redbacked salamander. (Pojar et al. 1991)

Wildlife habitat present on the property includes mature forest, riparian habitat and wetland habitat. No wildlife species of concern were observed in the project area during the site visit. No dens, nests or burrows were found. No bird nests or amphibians were observed during the assessment, however, the timing of the field visit, and the weather conditions were not suitable for breeding bird or amphibian surveys.

During the site assessments the species in Table 2 were found on the site.

Table 2. Wildlife Species observed on site during field visit on February 19 and March 19, 2019.

Common Name	Scientific Name	BC Provincial Status ¹	SARA Schedule 1 Status ²
Pacific wren	<i>Troglodytes pacificus</i>	Yellow	--
Oregon junco	<i>Junco hyemalis</i>	Yellow	--
Chestnut-backed chickadee	<i>Poecile rufescens</i>	Yellow	--
American robin	<i>Turdus migratorius</i>	Yellow	--
Douglas's squirrel (tracks)	<i>Tamiasciurus douglasii</i>	Yellow	--
Black-tailed deer (tracks and scat)	<i>Odocoileus hemionus columbianus</i>	Yellow	--

¹ BC CDC 2019

² Government of Canada 2019

2.4 SPECIES AT RISK

A query of the BC CDC iMap tool yielded occurrences of the following 2 species at risk within a two-kilometer radius of the property (BC CDC 2019). Species are listed in Table 3 and the location of occurrences in relation to the property is provided in Figure 2.



Table 3. Species at Risk that may occur in the vicinity of 3542 Otter Point Road

Common Name	Scientific Name	BC Provincial Status ¹	SARA Schedule 1 Status ²
Ermine, anguinae subspecies	<i>Mustela erminea anguinae</i>	Blue-listed	--
Painted Turtle - Pacific Coast Population	<i>Chrysemys picta pop. 1</i>	Red-listed	Endangered

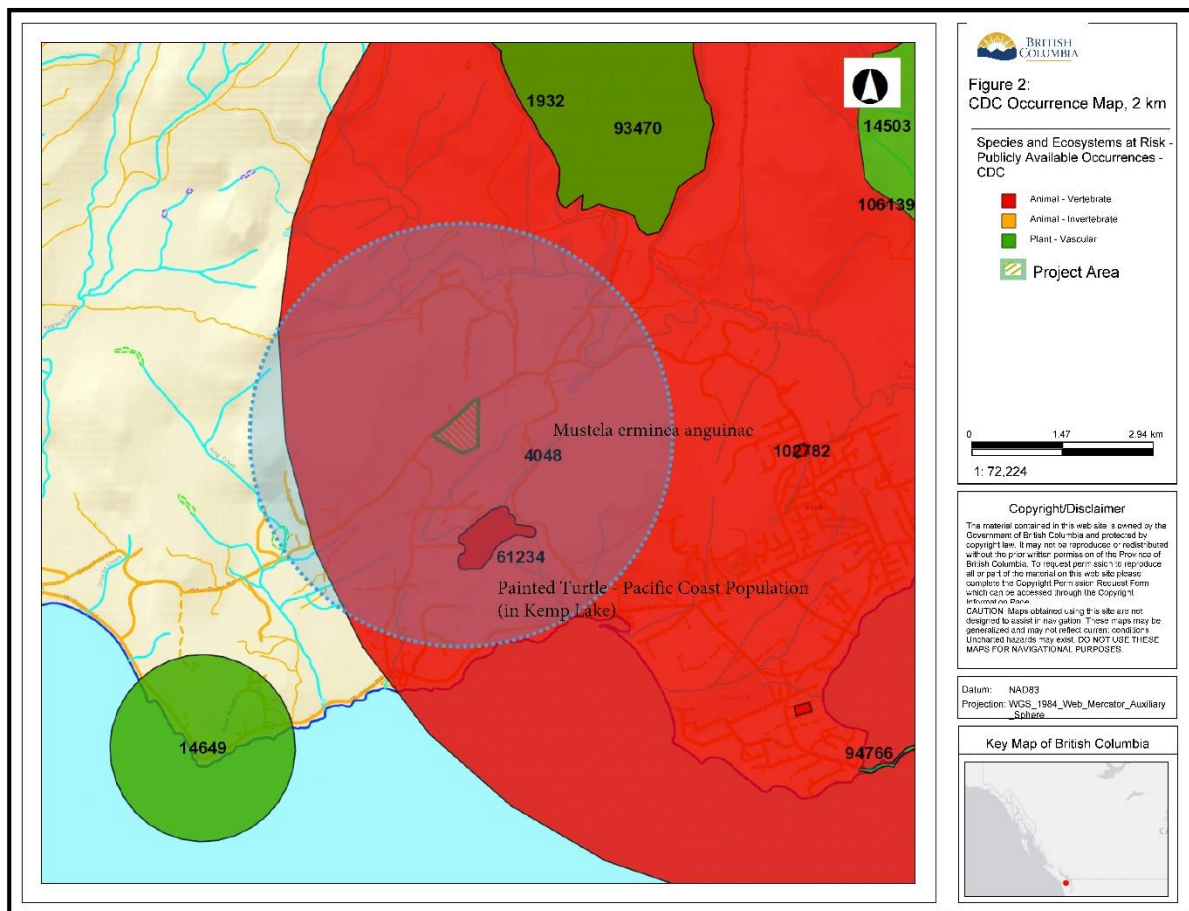
¹ BC CDC 2019

² Government of Canada 2019

The ermine (*Mustela erminea anguinae*) is widespread throughout BC in a variety of habitats (e.g. forests, meadows, wetlands, agricultural and cultivated fields) and over a wide elevation range. Foraging habitat for this species is present on the forested portions of the property.

The Keen's Myotis (*Myotis keenii*), a cave-roosting bat species, occurs at elevations of 0 to 1100 m above sea level. Foraging occurs over a wide variety of habitat including intertidal areas, estuaries, upland forests, wetlands, and riparian areas. Suitable rock crevices or caves do not occur on the property, however, suitable foraging habitat is present.





2.5 RIPARIAN AREAS AND AQUATIC ECOSYSTEMS

A watercourse running east to west and a wetland is present on the property in the southwest portion, included in the area mapped as a Riparian/Wetland Sensitive Ecosystem by CRD. During the site visit on February 19, 2019, the boundaries of the wetland were mapped (Figure 1).

The wetland is fed by an unmapped watercourse (drainage/creek) running from the northeastern most corner of the property, between the existing residential and sawmill areas. The watercourse passes under the sawmill access road through a culvert. On the downstream side of the culvert, the watercourse opens into a marshy wetland area. This continues through the riparian forest (Photo 7) to the large wetland in the property's southwest. A small portion of the watercourse is channelized (Photo 8), however, the majority is wide and marshy (Photo 5).

The site visit was done in late winter, during the wettest season, and therefore likely measured the wetland at its most saturated. In the summer, the wetland area will be much drier than during the field visit, as evident by the type of vegetation.

Along the property's southwestern boundary, the wetland and riparian areas are constrained by historical addition of fill to the neighbouring property (Photo 9). Approximately 500 m downstream, the drainage is dammed and used as a water supply for agriculture (ALM Farm).

There are no fish occurrence records on the property, and the watercourse and wetland do not provide suitable fish habitat due to the shallow, seasonal nature of the wetland and creek flow, and because the dam downstream would serve as a barrier to fish passage.

Adjacent to the watercourse and wetland is riparian habitat. The wet areas are in a depression on the property, and the terrain slopes upwards on both sides. Therefore, the vegetation transitions from riparian vegetation to upland forest within 5 to 20 m of the watercourse and wetland periphery. A preliminary 30 m SPEA has been applied to the mapped wetland boundary in Figure 1. This 30 m setback is in accordance with the CRD Bylaw No. 3819, as stated in Section 1.2 of this report.

For the watercourse that drains into the wetland, the SPEA calculation is 12 m on both sides. This is following the Riparian Area Regulations and calculating from the high-water mark, the depth and the vegetation characteristics every 5 m for the waterway. Prior to any future development, a detailed Riparian Area Report will be completed, showing methodology, and submitted to the provincial and local government. This report is for the current conditions only, and prescriptions for revegetating disturbed areas within the SPEA.



3 CURRENT ENVIRONMENTAL EFFECTS

The current impacts on the environment from recent activities on the property are:

- Infringement on sensitive ecosystem areas, such as riparian habitat,
- Loss of existing vegetation,
- Potential spread of invasive plant species,
- Change in wildlife habitat availability and wildlife mortality risk.

RIPARIAN HABITAT

The removal of trees in the riparian area results in the loss of features, functions and conditions that are vital for maintaining watercourse health and productivity, including sources of large organic debris, such as fallen trees and tree roots; vegetative cover and shade to help moderate water temperature; provision of food, nutrients and organic matter to the stream; stream bank stabilization; and buffers for streams from excessive silt and surface run-off pollution.

VEGETATION

The effects of tree removal may include loss of biodiversity of plant species and increased susceptibility to invasive plants not only in the cleared area but also in adjacent plant communities. Vegetation in the riparian area immediately adjacent to cleared areas may experience in changes to the canopy structure and understory plant species due windthrow and increased light and moisture penetration.

Invasive plants are particularly adept at colonizing degraded plant communities and disturbed soils in high traffic areas, such as the margins of roads and parking areas. Invasive plants establish readily in disturbed areas as they have a wide ecological tolerance and grow and propagate quickly. The effects of invasive plant establishment may be the reduction or displacement native species by capturing resources and occupying habitats.

WILDLIFE AND WILDLIFE HABITAT

Habitat loss and alteration from tree clearing can cause displacement of wildlife, use of less suitable habitat, reduced foraging ability, increased energy expenditure and lower reproductive success. Reduced habitat effectiveness can occur as a result from the creation of habitat edges, habitat fragmentation, or reduction in habitat connectivity that may create barriers to wildlife movement. Many wildlife species avoid crossing openings or move more slowly in open areas. Removal of riparian habitat will result in the direct loss of habitat for wildlife species that specifically require riparian vegetation and proximity to water.

EROSION AND SEDIMENT MOBILIZATION

Removal of trees has exposed slopes and soils to erosion and can result in the movement of sediment on the property. Damage or degradation of soil surfaces during tree removal can include loss of soil structure, increased erosion, and soil compaction, which can negatively affect post-construction reclamation efforts.

WETLAND MODIFICATION AND SEDIMENT CONTROL

The unmapped watercourse has been modified historically for the installation of the sawmill access road and culvert. Existing extensive modification and addition of fill has also occurred on the adjacent property to the west. Implementation of mitigation measures will serve to restore and maintain the drainage of water to the southwest.



RESIDUAL ENVIRONMENTAL EFFECTS

The rezoning and subdivision of the property will not have any environmental impacts.

The residual environmental impacts of the activities on the property will be reduced by the implementation of the mitigation measures recommended in Section 4 of this report. The environmental disturbance in this rural community will be long-term due to the permanence of the road and buildings; and is considered a moderate impact because of the removal of the vegetation (invasive and otherwise). The moderate impact is due to the logging having already occurred on most of the property prior to the site assessment.

4 RECOMMENDED ENVIRONMENTAL PROTECTION MEASURES

The mitigation measures provided in this report are designed to protect sensitive ecosystems and were developed in accordance with:

- CRD Bylaw No. 3819,
- Procedures for Mitigating Impacts on Environmental Values (Environmental Mitigation Procedures) (BC Ministry of Environment [MOE] 2014a),
- Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (BC MOE 2014), and
- Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (BC Ministry of Water, Land and Air Protection 2004).

PROTECTION OF THE RIPARIAN AREA

No further clearing or modification should occur within the SPEA (Figure 1). The SPEA should be clearly marked to ensure no disturbance occurs within this sensitive riparian and wetland ecosystem.

REVEGETATION

Revegetation of disturbed area within the SPEA (12 m on both sides of the waterway and 30 m around the wetland) should be undertaken in the spring. As any trees planted will take a long time to mature, Corvidae suggests planting a mixture of shrubs and tree species in order to prevent invasive species, increase erosion control and slope stability, and provide wildlife habitat. Table 4 provides the species that Corvidae recommends be planted.

In addition to the planting of the SPEA, a treed buffer is required around the perimeter of the sawmill lot. Planting this with cedar and fur trees is recommended, at the same time as the planting of the riparian areas (spring 2020). Spacing should be 5 m apart in a buffer around the entire lot, following tree planting standards with local tree species.

There has also been a lot of natural revegetation in the area, which off-sets the need for planting. This includes sword ferns, alder, salmon berry, Nootka Rose, willow and cedar saplings. During tree planting, the trees will be spaced off existing native vegetation and spaced to allow sunlight through as they grow; i.e. approximately 5 m spacing between trees, and 2 m spacing off of shrubs, 1 m spacing off of small plants such as ferns. A total of 200 trees are recommended for the riparian areas and approximately 300 for the buffer of the sawmill lot.



Table 4. Recommended native vegetation to plant in disturbed riparian area that is currently not vegetated

Common Name	Species
Western redcedar	<i>Thuja plicata</i>
Douglas-fir	<i>Pseudotsuga menziesii</i>

WILDLIFE AND WILDLIFE HABITAT

The following measures should be taken to minimize impacts on wildlife and wildlife habitat:

- Further disturbance should be completed outside of the migratory bird window (prior to March 15th or after August 15th; Government of Canada 2019).
- Where suitable, retain habitat that provides shelter for wildlife, such as downed logs and standing dead trees.
- Avoid additional removal of established trees or shrubs, where possible.

ACCESS ROAD INSTALLATION

All construction for the access road to the sawmill along the eastern boundary of the site should occur in the dry season, when the water levels in the watercourse and wetland are lowest (or completely dry). Only the area required for the access road (20 m) should be cleared: the boundaries for vegetation clearing should be clearly marked before construction commences.

POLLUTION CONTROL, FUELING AND SPILL RESPONSE

All equipment accessing the property should be in good working order. Any leaks should be repaired prior to commencing work. Any fueling of equipment will be done with drip-trays underneath on site, on the road or set staging area. There will be no fueling of equipment within 30 m of the watercourse and wetland.

All fuel containers and other potentially deleterious substance containers will be secured so that they may not be emptied or upset by vandals when left overnight in the area.

A large, labeled mobile spill kit capable of mitigating spills of 100 litres of fuel is recommended to be kept on site adjacent. The kit should contain the following materials or equivalent:

- absorbent pads (hydrocarbons and antifreeze)
- absorbent socks (oil, gas & diesel)
- a jar of plug n dike (leak stop compound)
- 1 spill instruction sheet

INVASIVE SPECIES

Two invasive species were observed on site: Himalayan blackberry and English holly.

Invasive weed control is difficult for established populations. Immediate eradication of new and small infestations should be a high priority. Hand-pulling and cutting are effective on young plants. All plant material must be disposed of by burning or landfill. Invasive species removal should occur in spring, before the plants flower and seed.



EROSION AND SEDIMENT CONTROL MEASURES

The primary focus of erosion and sediment control planning is erosion control; if there is no erosion then there is no sediment. Erosion control is far more cost effective to implement and manage than sediment control.

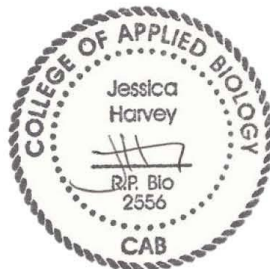
Natural regeneration and planting of native species, which naturally have deep roots, will aid in soil stabilization and erosion prevention.

Site specific controls have been developed based on a site visit and experience from past projects. Erosion controls, listed in Table 4, are recommended to be maintained for the duration of building any dwellings and removed completely following landscaping.

Table 5. Erosion and Sediment Control Mitigation Measures

Activity	Potential Impacts	Mitigation Measures
Clearing of existing vegetation	Exposure of underlying soils to erosion	Install silt fencing to prevent sediment laden runoff from entering the watercourse or wetland. Minimize amount of time soils are exposed, plant native vegetation and landscaping materials within the growing season following removal of non-native vegetation and landscaping.
General construction	Sediment laden runoff	Store soils in dry, flat areas, outside of the SPEA.
Restoration and native vegetation	--	Planting of native species of grasses, shrubs and trees in the green space areas, which naturally have deep roots to aid in soil stabilization, compete against weeds and do not require irrigation.

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APPENDIX A – SITE PHOTOGRAPHS

Photo 1. Clearcut area and existing sawmill.



Photo 2. Lot 2 area



Photo 3. Cleared area in western portion of the property near Otter Point Road.



Photo 4. Open wetland area at 3542 Otter Point Road. Uncleared, with treed buffer area.



Photo 5. Sedge dominated wetland area with mature forest adjacent. Uncleared.



Photo 6. Mature alder with shrubby understory at the westernmost margin of the wetland. Uncleared.



Photo 7. Mature forest habitat adjacent to the watercourse and wetland. Protected riparian area.



Photo 8. Channelized portion of the unmapped watercourse on the property. Uncleared, protected riparian area.



Photo 9. Filled area on adjacent property to the west of 3542 Otter Point Road (view north).

