



AQUAPARIAN

Environmental Consulting Ltd.



ENVIRONMENTAL ASSESSMENT REZONING PHASE 950 & 1260 PHOENIX WAY NANAIMO BC



Completed for:
Nanaimo Forest Products
C/O Toby Seward
Seward Developments Inc.
Nanaimo BC

December 1, 2023

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950 & 1260 (West) Phoenix Way, City of Nanaimo, BC
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- Figure 1: Site Location Map
- Figure 2: Environmentally Sensitive Areas Map (Turner & Associates)
- Figure 3: WITS Map
- Figure 4: SEI Map
- Figure 5: Tree Management Plan

- Appendix A: Site Photographs
- Appendix B: Site Plan - Preliminary Layout (Turner & Associates)
- Appendix C: BC Conservation Data Centre Search Results



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1.0 INTRODUCTION

Aquaparian Environmental Consulting Ltd (Aquaparian) was retained to complete an Environmental Assessment (EA) to support a rezoning application required by the City of Nanaimo for industrial use of two adjacent parcels, 950 Phoenix Way and the west portion of 1260 Phoenix way, a hooked property which straddles the Cable Bay Trail Right-of-Way (ROW). The subject parcels are located in the community of Cedar, BC within the City of Nanaimo (CoN) and are legally identified as follows:

- 950 Phoenix Way: LOT 4, SECTIONS 21, 22, AND 23 RANGE 2 AND SECTION 21, RANGE 3, CEDAR DISTRICT, PLAN VIP65621, EXCEPT PLAN EPP23851 (PID 023-922-907); and,
- 1260 Phoenix Way: SECTION 20, RANGE 3, CEDAR DISTRICT, EXCEPT THAT PART IN PLAN VIP59192 (PID 008-747-741).

The subject properties (the parcel) are currently zoned AR1 – Rural Resource. The parcel is owned by Nanaimo Forest Products (NFP) and is located southeast of the NFP Harmac Pacific Pulp Mill. In 2009, the parcel and several surrounding parcels were proposed to be developed by the previous owners as a golf resort community called Oceanview Golf Resort and Spa (Oceanview). The Oceanview project was not approved to proceed. As understood, NFP recently purchased the parcel from Oceanview with a plan to rezone it for industrial use. Aquaparian completed a preliminary EA for the eastern portion of 1260 Phoenix Way in association with NFP’s plans to subdivide it into a stand-alone parcel and transfer it back to Oceanview.

This EA is intended to support a rezoning application for 950 Phoenix Way and the west portion of 1260 Phoenix Way from AR1 to Industrial (I4). The parcel is proposed to be developed for industrial forestry related companies to lease areas as needed for operation of their businesses. An agreement has been reached between the CoN and NFP to provide a buffer averaging 100m in width on the west side of the Cable Bay Trail. Options for the long-term protection of the buffer will be determined by future discussions with the CoN and may include park dedication, land transfer, covenant etc.

The parcel is subject to Development Permit Area (DPA) 1 - Environmentally Sensitive Areas (ESAs) which include Watercourse, Terrestrial and Marine Foreshore ESAs. In 2009, Madrone Environmental Services Ltd. (Madrone) produced a comprehensive EA for all of the Oceanview Resort project parcels. The report identified all ESAs subject to DPA1, all the Significant Trees (as defined at that time) and the general forest ecosystem composition. Madrone’s report



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served as a baseline for this study. In preparation for this report, Aquaparian has reviewed the City of Nanaimo's Official Community Plan (OCP), Madrone's 2009 report and relevant provincial government databases to collect background information for the site and completed site visits of the parcel on November 28, 2022 & December 13, 2022. Two additional surveys were completed May 13, 2023 and July 3, 2023 to confirm the presence of potential wildflowers. The intent of this EA is to provide an up-to-date environmental characterization of the study area to be compared to the Madrone baseline observations and to determine whether environmental features of the site have changed in the past 13 years. A focus of the study was to identify the location and size of the ESAs present within the study area to compare them to ESAs documented in 2009.

Site location maps of the study area have been included in this report as Figure 1a & 1b. A selection of site photographs taken during the site surveys have been included as Appendix A. A preliminary site plan by Turner & Associates Land Surveying Ltd is included as Appendix B.

2.0 REGULATORY FRAMEWORK

The following is a list of federal, provincial and municipal environmental Acts and Regulations, current at the date of preparing this report, that *may* apply to development of the subject parcel:

Federal Migratory Birds Convention Act, 1994. Most species of birds in Canada are protected under this act. "Migratory birds" are defined by Article I of the Convention which names the families and sub-families of birds protected and provides some clarification of the species included. In general, birds not falling under federal jurisdiction within Canada include grouse, quail, pheasants, ptarmigan, hawks, owls, eagles, falcons, cormorants, pelicans, crows, jays, kingfishers, and some species of blackbirds.

Section 34 of the Provincial Wildlife Act, states that a person commits an offence if the person, except as provided by regulation, possesses, takes, injures, molests or destroys:

- (a) a bird or its egg,
- (b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or
- (c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg.

During the nesting season, clearing vegetation in proximity of an active nest may 'molest' the nesting birds, and could result in an offence. Provincial guidelines indicate the songbird nesting season in this area for forest habitat is from March 1st to August 15th of a given year. Bald eagle nesting season generally starts in January and extends until August 15th of a given year. Great blue heron nesting seasons occurs between April and May with chicks fledging the nest mid –



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August. Bird nesting assessment requirements are based on time of year for clearing and construction.

Heritage Conservation Act. All archaeological sites, recorded or not, are protected under the *Heritage Conservation Act* and must not be altered or damaged without a site alteration permit from the Archaeology Branch. As understood, municipalities have access to provincial records that show recorded sites and sites with high potential for archaeological resources. If a known site is located on the parcel, an archaeological consultant will need to be retained to provide advice. If the site has a high potential, it is recommended to retain an archaeological consultant to provide recommendations.

Provincial Water Sustainability Act. Works in and about a stream under Section 11 of the *Water Sustainability Act* requires that a person may only make “changes in and about a stream” under a “Change Approval” or “Notice of Authorized Change”. “Changes in and about a stream” means: *any modification to the nature of the stream including the land, vegetation, natural environment or flow of water within the stream, or any activity or construction within the stream channel that has or may have an impact on a stream.* The WSA definition of “stream” includes wetlands. A Notice of Authorized Change is used for specified low risk changes in and about a stream that have minimal impact on the environment or third parties (e.g. road crossing culvert installation). A Change Approval is written authorization to make complex changes in and about a stream (e.g. permanent change to a stream or wetland).

City of Nanaimo – Environmentally Sensitive Areas (ESAs) DPA 1: DPA 1 protects the following ESAs:

- a) Watercourse ESA
 - i. The width of the Watercourse ESA leave strip shall be determined as specified on Schedule 6 of the *City Plan*.
 - ii. The width of the watercourse leave strip is measured horizontally from, and at right angles to, the top of bank or wetland boundary of the watercourse.
- b) Terrestrial ESA
 - i. Properties impacted by known Terrestrial ESAs are shown on Schedule 6 DPA1: Environmentally Sensitive Areas of the *City Plan*, and the width of the terrestrial ESA leave strip shall be determined by a Qualified Registered Professional through a detailed biophysical assessment and approved by the Director of Development Approvals.
- c) Marine Foreshore ESA
 - i. Marine Foreshore ESAs are shown on Schedule 6 of the *City Plan*.

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No Environmentally Sensitive Areas DPAs are shown within the subject property on Schedule 6 of the OCP. As understood, unmapped ESAs are also subject to the DPA when discovered.

City of Nanaimo Tree Management and Protection Bylaw 2013 No. 7126

Tree Protection Bylaw 2013 No. 7126 requires Subdivision and Development applications are to provide a Tree Management Plan (TMP) to be submitted for review and approval and that a Tree Removal Permit be obtained prior to tree cutting, major pruning, or undertaking activities that may damage any tree. A TMP including Significant trees previously mapped by Madrone has been provided in this report for planning and future permitting requirements.

3.0 SITE DESCRIPTION

The parcel is bound by the Cable Bay Trail ROW to the east, privately owned industrial parcels to the north and west, and the City of Nanaimo boundary to the south. Further to the north of the parcel is the Northumberland Channel and further east of the parcel is Joan Point Park fronting Dodds Narrows. The parcel is undeveloped with dirt logging roads and trails constructed throughout. The parcel is dominated by a dry Douglas-fir (*Pseudotsuga menziesii*) forest that has been logged in the past with some large diameter Douglas-fir retained as seed trees. Throughout the parcel and surrounding area are pockets of meadow which are classified as Terrestrial Herbaceous Ecosystems by the Sensitive Ecosystem Inventory of the East Coast of Vancouver Island and the Gulf Islands. These ecosystems are classified as Environmentally Sensitive Areas by the City of Nanaimo which are forest openings formed by thin soils over bedrock sometimes with exposed bedrock outcrops. These ecosystems are rare and often support threatened and/or endangered species. Aquaparian located and flagged the boundary of three of these ecosystem polygons as well as three small wetlands. These features were surveyed by Turner & Associated Land Surveying Ltd and included in Figure 2 which is an overlay showing the environmental features of the site mapped onto an aerial image with associated DPA setbacks.

4.0 ENVIRONMENTAL SETTING

4.1 Physical Resources

The following section provides a general overview of biophysical attributes and land use of the site documented by government databases, crown publications and from Aquaparian's reconnaissance of the property.



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4.1.1 Topography

The terrain within the study area is relatively flat with a gentle overall slope to the northeast ranging in elevation from 25-95m above sea level. The gradient increases along a section of the northeast boundary with some steep to near vertical slopes observed, while most of the west side of the parcel is flat to gently undulating. A portion of the northwest area of the property slopes down relatively steeply toward the ocean.

4.1.2 Climate

The property is located within the Moist Maritime Coastal Douglas-fir Subzone (CDFmm). The CDFmm is restricted to low elevations along southeast Vancouver Island from Bowser to Victoria, the Gulf Islands south of Cortes Island, and a narrow strip along the Sunshine Coast near Halfmoon Bay. Elevational limits typically range from sea level to approximately 150m.

The CDFmm lies in the rain shadow of the Vancouver Island and Olympic Mountains resulting in warm, dry summers and mild, wet winters. Growing seasons are very long, and feature pronounced water deficits on zonal and drier sites. The CDFmm represents the mildest climate in Canada. (*Green and Klinka*).

4.1.3 Land/Soil

The Soils of Southern Vancouver Island (1985) identified the site is comprised predominantly of the Tzuhalem soil association with some Rocky Outcrop classification. Tzuhalem soils occur in the coastal Grand Fir – Western Red Cedar Forest Zone within the Nanaimo Lowland physiographic subdivision. They have developed in sandy, gravelly colluvial or morainal deposits overlying sedimentary (sandstone or conglomerate) bedrock. Slopes vary between 5 and 100% with a moderate to strongly rolling slope class and elevations range from sea level to about 300m. Soils are rapidly drained with gravelly loamy sand or very gravelly loamy sand being the usual texture in the upper horizons and with very gravelly loamy sand in the subsoil layers. The usual soil classification is Orthic Dystric Brunisol (shallow lithic phase).

The terrestrial herbaceous ecosystems (meadows) were observed to have thin, rapidly draining soils over bedrock, particularly in the southeast region. Exposed bedrock was observed on the steep slopes to the northeast of the site. Deeper soils are found throughout the remainder of parcel.

4.1.4 Surface Water

No flowing watercourses were observed within the study area. There are roadside ditches that have been excavated alongside some of the dirt roads throughout the parcel for the purpose of



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collecting stormwater runoff, but they were not observed to flow into any natural watercourses or wetlands. The only natural sources of surface water identified are three small, isolated wetlands, two of which were identified in Madrone’s 2009 survey and confirmed by Aquaparian’s site reconnaissance in 2022. The size and location of these wetlands were observed to remain consistent with the mapping completed by Madrone in 2009. Towards the central east of the property there is a small linear wetland that was not identified in Madrone’s report. It appears to have resulted from compaction of a low topographic section of an old logging road that is in the process of naturalizing into a wetland. Standing water was observed during the site visit, but wetland vegetation is limited to reed canary grass (*Phalaris arundinacea*) and common rush (*Juncus effusus*). Evidence of deer use as a freshwater resource was observed by an abundance of deer droppings and deer trails concentrated around this feature and it is expected to provide springtime amphibian breeding habitat. The wetlands offer wildlife value but none of them support fish populations.

4.1.5 Groundwater

The Regional District of Nanaimo map identifies the parcel lies within Aquifer #162-IA (16) which is a bedrock aquifer with a high vulnerability rating, low productivity and a moderate demand. There are no mapped wells within the parcel.

4.2 Biological Resources

4.2.1 Flora

Most of the site is dominated by a second growth dry Douglas-fir Forest (*Pseudotsuga menziesii*). Canopy species are dominated by Douglas-fir with arbutus (*Arbutus menziesii*) and an understory comprised of salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), dull Oregon-grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*), evergreen blackberry (*Rubus laciniatus*) and baldhip rose (*Rosa gymnocarpa*). Transitional zones surrounding the terrestrial herbaceous ecosystems include a higher proportion of arbutus amongst the Douglas fir stands and more spacing between trees with a more open understory including scattered oceanspray, minor tall Oregon grape (*Mahonia aquifolium*), low patchy salal and dull Oregon-grape and a groundcover of trailing snowberry (*Symphoricarpos mollis*), hairy honeysuckle (*Lonicera hispidula*) and rattlesnake plantain (*Goodyera oblongifolia*) over a continuous carpet of mixed moss species.

The terrestrial herbaceous ecosystems (meadows) were identified to have less than 10% canopy cover including Garry oak (*Quercus garryana*) with thin soils over bedrock and exposed rocky outcrops. Grasses and mosses dominate the ground cover, and some invasive Scotch broom (*Cytisus scoparius*) has established within these areas. Aquaparian surveyed the two central meadows on May 13, 2023 and again on July 3, 2023 to determine what spring and



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summer flowering species were present that may not have been visible during the initial survey. The surveys identified the following flowering species within the meadow habitat: few-flowered shooting star (*Dodecatheon pulchellum*), small-leaved montia (*Montia parvifolia*), small-flowered blue-eyed Mary (*Collinsia parviflora*), small hop-clover (*Trifolium dubium*), common vetch (*Vicia sativa*), common camas (*Camassia quamash*), sweet-scented bedstraw (*Gallium triflorum*), sweet vernal grass (*Anthoxanthum odoratum*), western buttercup (*Ranunculus occidentalis*), large-leaved avens (*Geum macrophyllum*), broad-leaved starflower (*Lysimachia latifolia*), royal rein-orchid (*Platanthera transversa*), rattlesnake plantain, Pacific sanicle (*Sanicula crassicaulis*) and yarrow (*Achillea millefolium*). There were large, dense patches (10-15% cover) of shooting star observed within the east meadow. No rare plant species were observed.

In lower topographic areas the canopy is comprised of western redcedar (*Thuja plicata*), bigleaf maple (*Acer macrophyllum*), and red alder (*Alnus rubra*) with the occasional grand fir (*Abies grandis*), Pacific yew (*Taxus brevifolia*) and bitter cherry (*Prunus emarginata*) identified throughout these areas. Sloping terrain to the east leads down into a small stream ravine east of the Cable Bay Trail; this area was observed to have more deciduous representation in the canopy including a sizeable stand of bigleaf maple with a luxuriant sword fern understory. Wetland margins were observed to include red alder, western redcedar and some willow species (*Salix* spp.) including a large, old Sitka willow (*Salix sitchensis*) approximately 75cm diameter-at-breast-height (dbh) within the wetland to the south. The south wetland is vegetated predominantly by hardhack (*Spiraea douglasii*) with grasses, common rush, buttercup (*Ranunculus* sp.), evergreen blackberry (*Rubus laciniatus*), invasive Himalayan blackberry (*Rubus armeniacus*), with an abundance of large woody debris observed. The two small wetlands in the north half of the parcel were dominated by grass species including reed canary grass and common rush in one and patchy sedges in the other. A detailed survey of all plant species was not completed as part of this assessment.

4.2.2 Fauna

The mature forest habitat within the subject parcel is expected to be utilized by a variety of large and small mammals including black bear (*Ursus americanus*), cougar (*Puma concolor*), black-tailed deer (*Odocoileus hemionus*), racoon (*Procyon lotor*), eastern cottontail rabbits (*Sylvaginus floridanus*), red-squirrel (*Tamiasciurus hudsonicus*) and several species of rodent. Large snags are available to provide roosting habitat for bats. Several piles of deer and rabbit droppings were observed, and deer and their tracks were noted during the assessment. The small wetlands showed signs of regular use by deer.

The terrestrial herbaceous ecosystems within the site have rocky outcrops and sunny forest openings providing good habitat for reptiles including northern alligator lizards (*Elgaria coerulea*) and garter snakes (*Thamnophis elegans*). Amphibians are expected to find habitat where



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wetland features are located. A Pacific tree frog (*Pseudacris regilla*) was heard near a roadside ditch and the forested areas provide a shaded environment for terrestrial amphibians including abundant coarse woody debris on the forest floor.

A detailed survey to confirm wildlife species presence was not completed as part of this assessment.

4.2.4 Birds

A variety of resident and migratory bird species are likely to inhabit and utilize the study area. The forest stand within the property is continuous with surrounding forests to the south and east and is near the ocean. The site offers excellent forage (acorns, berries, seeds insects etc.) and a layered canopy for nesting. Forest-meadow interfaces provide suitable habitat for songbirds. Dead standing (wildlife) trees and snags provide insect forage and cavity nesting opportunity for birds and small mammals. Woodpeckers were heard excavating deadwood during the survey.

A review of the provincial Wildlife Tree Stewardship (WiTS) did not indicate the presence of any bald eagle (*Haliaeetus leucocephalus*) nests within or immediately adjacent to the subject property, but Madrone recorded a nest tree in the northeast portion of the parcel during their survey. Aquaparian confirmed that this nest tree is now dead, and no nest is present. The closest mapped eagle nests are located over 250m north or northeast of the parcel. No eagle nests were identified during site reconnaissance of the property, but large trees capable of supporting a bald eagle nest are present throughout the site. The WiTS eagle nest map is included as Figure 3a with a map showing the nests relative to the parcel boundaries as 3b.

A review of the Great Blue Heron Atlas identified that there are no mapped great blue heron (*Ardea Herodias fannini*) nest trees located within or nearby the study area. No heron nests were identified within or nearby the subject parcel during the site assessment.

No raptor nests, white-wash against trees, owl pellets, feathers, prey remains or plucking stations were detected during the site assessment. Observations of forest habitat within the site identify that the site has suitable nesting habitat for several smaller raptors including hawks and owls. Several standing dead trees may provide nesting habitat for secondary cavity nesting owls. Madrone’s report confirmed the presence of barred owls (*Strix varia*) through a nocturnal raptor survey and found indirect presence of smaller owl species through identification of owl pellets.

A detailed bird survey was not conducted as part of this assessment. Species presence will change seasonally throughout the year.

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4.2.5 Fisheries

A review of the Provincial database Habitat Wizard identifies one mapped stream (Watershed Code 920-370700) that is located to the east of the Cable Bay Trail ROW. This stream is identified with a CoN 15m DPA measured from the top of bank that is outside of the eastern property boundary.

No fish habitat is located within the subject parcel. Surface water is limited to three small, isolated wetlands that are incapable of supporting fish and roadside ditches that do not connect to fish-bearing waters.

The site is relatively dry with areas of thin, rapidly draining soils over bedrock observed in the terrestrial herbaceous ecosystem polygons. There appears to be some small seepage areas within the terrestrial herbaceous ecosystems that would support spring wildflower populations. These areas were observed to dry up during the summer months. Soils within the majority of the parcel were dry and appear to be rapidly draining as indicated by the plant communities that have established. Observations of perched water or saturated soils were confined to the three small wetlands. Regular soil saturation in the two previously documented wetlands was indicated by established semi-aquatic plant communities.

4.2.6 Sensitive Ecosystems Inventory Mapping

The Sensitive Ecosystem Inventory of southeast Vancouver Island and the Gulf Islands (SEI) 1993-1997 systematically identified and mapped specific rare and fragile ecosystems. The purpose of the SEI project was to identify remnants of rare and fragile terrestrial ecosystems and to encourage land-use decisions that will ensure the continued integrity of these ecosystems.

Seven sensitive ecosystem types were described and mapped in the east coast of Vancouver Island study area as follows: Wetland, Woodland, Riparian, Older Forest (>100yrs), Terrestrial Herbaceous, Sparsely Vegetated and Coastal Bluff. Two other important ecosystems were mapped for their general biodiversity and wildlife habitat values: Older Second Growth Forest (60-100yrs) and Seasonally Flooded Agricultural Fields.

A review of the 2004 SEI map covering the study site (92G.011) identified that there are three mapped polygons within the study area identified as follows:

1. N0033-R4*/(SG:co/WD) (Second Growth: conifer-dominated/Woodland). There is a narrow strip of this polygon that extends into the southwest edge of the parcel, and disturbance of this ecosystem was mapped. Typically, disturbance includes logging,



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roads/trails, or residential, urban, agricultural or industrial use. Madrone’s report identifies the polygon area as ESA #633 (Second Growth Forest – conifer dominated) and indicates it extends only marginally into the southwest side of the parcel. Aerial imagery shows that the majority of that polygon has been logged. Aquaparian’s site reconnaissance did not identify woodland characteristics within this area; it is more representative of second growth conifer forest.

2. N0031-R1*/(SG:co/OF:co) (Second Growth: conifer-dominated/Older Forest:conifer-dominated) located along the north side of the parcel. SEI mapping indicates most of this polygon has been disturbed. Aerial imagery and site reconnaissance confirms that logging has impacted this ecosystem in the past. The Madrone report maps this polygon as ESA #603 (Second Growth Forest – conifer dominated). Aquaparian’s site reconnaissance determined that the Old Forest ecosystem polygon has been subject to selective logging and is now better represented by a mixed mature and young ecosystem.
3. N0028*/HT:ro (Terrestrial Herbaceous: bedrock outcrops). The Madrone report maps this polygon as ESA #657 (Terrestrial Herbaceous ESA) in the southeast corner of the parcel. The shape and location of it was confirmed during Aquaparian’s site assessment.

Aquaparian’s study identified two additional terrestrial herbaceous ecosystem polygons as well as three small wetland habitats that were not mapped by the SEI, as the provincial mapping was limited to areas greater than 0.5ha due to air photo quality and scale. Smaller areas were not captured in the study. The SEI map is included with this report as Figure 4.

4.2.7 *Species-At-Risk*

The federal *Species-at-Risk Act* (SARA) is designed to prevent or reduce the likelihood of wildlife species becoming extinct or extirpated and to provide for the recovery and management of endangered, threatened and species of special concern as a result from harm by human activity. Provisions of SARA include prohibiting the taking or possession of listed species and the damaging or destruction of their residents and critical habitat. This *Act* applies to Schedule 1 listed species on Federal lands and projects with a federal interest (i.e. federally funded); aquatic species as defined by the federal *Fisheries Act*; birds protected by the federal *Migratory Bird Convention Act*; and other species on non-federal lands that are listed on Schedule 1 (extirpated, endangered or threatened species) when a specific order is made by the Governor in Council upon the recommendation of the Minister of Environment that the prohibitions in section 32 and 33 apply for a given species in a province or territory.



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The British Columbia Conservation Data Centre (BC CDC) assists in conservation of biodiversity in the province by collecting and sharing information about wildlife, plants and ecosystems in the province. Species and ecosystems are placed on a Red, Blue or Yellow list to rank them according to their conservation status. Provincially Red-Listed species includes any native species or ecological communities that have, or are candidates for, Extirpated, Endangered, or Threatened status in British Columbia. Extirpated species no longer exist in the wild in British Columbia but do occur elsewhere. Endangered species and ecological communities are facing imminent extirpation or extinction. Threatened species and ecological communities are likely to become endangered if limiting factors are not reversed. Blue-Listed species includes any native species or ecological community considered to be of Special Concern (formerly Vulnerable) in British Columbia. Species or ecological communities of Special Concern have characteristics that make them particularly sensitive or vulnerable to human activities or natural events. Yellow- Listed Species includes species or ecological communities that are apparently secure and not at risk of extinction. Yellow-listed species may have red- or blue-listed subspecies.

The BC CDC identifies ecological communities at risk based on species composition and habitat condition. A search of the BC CDC iMap identifies the southeastern portion of the subject parcels is mapped as Occurrence Record # 107885 Grand fir / Dull Oregon grape ecological communities which is Red-listed.

The BC CDC iMap also identifies the location of occurrence records of listed plant and animal species. A search of the study area resulted in a concentrated cluster of four occurrence records within and / or near the west boundary of the subject parcel. One Red-listed species (occurrence record 122596) is the Common wood-nymph *incana* subspecies (*Cercyonis pegala incana*) which is a butterfly associated with Garry oak meadow ecosystems. Blue-listed species include white-top aster (*Sericocarpus rigidus*) (occurrence record 11719), slimleaf onion (*Allium amplexans*) (occurrence record 91888) and banded cord-moss (*Entosthodon fascicularis*) (occurrence record 29430).

Madrone confirmed the presence of white-top aster identified in ESA #634 (in their report), and slim-leaf onion in ESA #655 adjacent to the subject parcel in terrestrial herbaceous meadows similar to the meadows that were identified within the subject parcel boundaries. At the time of Madrone’s study, white-top aster was Red-listed and has since been downgraded to Blue-listed. The meadows identified in Aquaparian’s study have habitat features that have the potential to support rare plant species including those mentioned above within seepage areas, dry open meadow areas and other topographic features that support niche-dependent rare species; however, none were identified during the 2023 spring and summer surveys during the flowering season.



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In addition to these known records, there are a number of “at-risk” species listed by the BC CDC Ecosystems Explorer search tool which are considered to have some potential to occur at the study site. The search parameters used include: animals or plants; BC Conservation status red or blue; municipality of Nanaimo; Habitat subtypes Conifer Forest – Dry, Garry Oak Woodland, Mixed Forest; BGC Zone, Subzone CDFmm; and wetland. A list of 30 Blue-listed species and 25 Red-listed species were generated. A copy of the BC CDC iMap and Ecosystem Explorer search results have been included as Appendix C. In consideration of the habitat characteristics observed in the site including intact second growth forest stands, small wetland pockets, a few terrestrial herbaceous meadows, the overall site has the potential to support several listed species. Species generated by the search results that have a *reasonable potential* to be found within the site are discussed briefly below:

Band-tailed pigeon (*Patagioenas fasciata*): Provincially Blue-listed

The Canadian breeding range of this large pigeon is restricted to southern British Columbia, mainly on southern Vancouver Island and along the mainland coast. The Band-tailed Pigeon uses a variety of habitats in coastal B.C. Winter habitat includes open woodland and edges with berries and acorns. Fall migrants use open coniferous habitat near farmland, shorelines with mineral sites, riparian habitat, railways, farmyards, and regenerating clear-cuts. The Band-tailed Pigeon eats mainly grain, fruit, acorns, pine nuts, and the flowers and new buds of shrubs and trees. (BC CDC). The subject parcel provides suitable habitat for band-tailed pigeons due to the forest edges located near open meadows, availability of berry-producing shrubs, bud-producing deciduous trees and Garry oaks providing acorns for forage. No nests of this species were spotted in trees; however, a thorough nest survey was not completed.

Northern pygmy owl, *swarthi* species (*Glaucidium gnoma swarthi*): Provincially Blue-listed

There are three species of the seven Northern pygmy owl species recognized in North America that breed in BC. The *swarthi* subspecies is endemic to Vancouver Island and adjacent islands. These owls are crepuscular (active at dawn and dusk), feeding on small mammals, reptiles, amphibians, a variety of bird species and invertebrates using a perch and pounce hunting method. They forage along roads through forested areas, openings within continuous forest, open stands, riparian corridors and open habitats along lakeshores and higher elevations. Forage sites include shrub, pole sapling, young, mature or old forest seral stages. This obligate secondary cavity nester is dependent on woodpecker or natural cavities in coniferous trees. Nesting sites include young forest with suitable wildlife trees, mature forest or old forest sites. (Cooper and Beauchesne, 2004). This species is uncommon or localized in the Nanaimo area year-round. The site offers dead standing trees to provide suitable cavity nesting habitat and

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intact forest stands continuous with surrounding forests for this species to hunt within.

Western Screech Owl, *kennicotti* subspecies (*Megascops kennicottii kennicottii*): Provincially Blue-listed

This owl species occurs at lower elevations within moist, coniferous and mixed forests and riparian woodlands. Often, they are associated with bigleaf maple or black cottonwood in riparian areas. They nest in natural tree cavities or abandoned woodpecker holes. This species is a generalist predator, feeding on small mammals (mice and shrews), insects and small birds (*BC CDC*) but also fish, frogs and slugs (*COSEWIC*, 2012). This species is uncommon or localized within the Nanaimo area year-round. The forest within the study area and cavities excavated in trees and snags may provide suitable habitat for this secondary cavity nester, and the forest is expected to provide forage.

Hoary Bat (*Lasiurus cinereus*): Provincially Blue-listed

Vancouver Island’s largest bat with adult body length of 120-146mm. This bat is typically solitary, except for mother-young association; however, may form groups of hundreds during migration. Habitat includes primarily deciduous and coniferous forests and woodlands, including areas altered by humans. Forages for insects, especially moths, over various open areas and along riparian corridors. Usually roosts in foliage of large coniferous or deciduous trees near the end of branches 9-13m above the ground. May roost in rock crevices but rarely in caves. Roost site fidelity is low. Likely overwinters in southeastern USA, Western California and Mexico. May hibernate in tree cavities, squirrel’s nests or in a clump of Spanish moss. (*BC CDC*). The study site may offer resting sites in hollow trees and is located near some small wetlands that may offer forage.

Little Brown Myotis (*Myotis lucifugus*): Provincially Blue-listed; SARA Endangered (1-E (2014))

The core range of this species appears to be from the Alaska-Canada Boreal Forest south through the northeastern United States, with smaller populations in the southern and western United States. In the northeast, individuals may migrate hundreds of kilometers between winter and summer habitats; in the west, these bats are believed to hibernate near their summer range. These bats use a wide range of habitats including human-made structures for resting and maternity sites as well as caves and hollow trees. Winter hibernation sites have a stable temperature of 2-12°C and include caves, mines, tunnels, etc. Maternity colonies are commonly found in warm buildings (e.g. attics) and less commonly in hollow trees. Foraging requirements are also generalized, typically over water, along stream and lake edges or in woodlands near water. This species was changed from Yellow- to Blue-listed in 2022. The study site may offer



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resting sites in hollow trees and is located near some small wetlands that may offer insect forage.

Townsend's big-eared bat (*Corynorhinus townsendii*): Blue-listed

In Canada, it is restricted to British Columbia. On the coast, it inhabits Vancouver Island, the Gulf Islands and the Vancouver area. In British Columbia this species is associated with a variety of habitats from coastal forests to arid grasslands of the interior. Its elevational range in the province is from sea level to 1070 metres, although most occurrences are from low elevations. Although it is widespread across most of southern British Columbia, this bat is particularly vulnerable to human activity. Disturbing females with young will affect breeding success, and repeated disturbance at winter hibernacula will increase winter mortality. Females form colonies of a dozen to several hundred in dimly lit areas in buildings, caves or mines. This is one of the few bats that have been consistently found hibernating in British Columbia. The only nursery colony found in British Columbia was in the attic of a house on Vancouver Island; it consisted of about 60 females and their young. A late flyer, Townsend's Big-eared Bat emerges an hour or so after dark. It is an agile bat that is capable of flying at slow speeds (*BC CDC*). Due to the forest stands, open forest edges, open grassy areas and insect-rich wetland pockets, it is possible that the study site may provide foraging and roosting habitat for these bats.

Northern red-legged frog (*Rana aurora*): Provincially Blue-listed

Range extends from southwestern British Columbia, including Vancouver Island in Canada, south along the coast of the United States. Red-legged Frogs have been observed in a variety of aquatic and terrestrial habitats typically at elevations below 500m. They breed in shallow, littoral zones of lakes, temporary and permanent pools and wetlands, and bogs and fens regardless of size but in close proximity to forest; tadpoles associate with benthic habitats. Lotic habitats with little to no flow may be utilized by red-legged frogs, and riparian areas are important for newly metamorphosed froglets. Outside of the breeding season, red-legged frogs utilize shady cool forest as "core" and primarily utilize all forest and woodland types, but individuals are occasionally found in more open and rural areas such as shrubland/chaparral, cropland/hedgerow, old fields, and suburban/orchard (*BC CDC*). Wetland habitat located within the subject parcel may offer suitable breeding habitat to this species if water depth is sufficient and there is a reasonable probability that Red-legged frogs may be found in the surrounding forest environment.

Propertius duskywing (*Erynnis propertius*): Provincially Red-listed

This butterfly species is closely associated with Garry oak as the larval foodplant and a source of nectar for the adult life stage. Leaves at the base of the tree are important for protection of



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larvae during hibernation. Historically collected only at the southeastern tip of Vancouver Island and on adjacent Gulf Islands, occurrences have been recorded in multiple locations throughout the South Island including the Cedar area in association with Garry oak ecosystems. (BC CDC). The open meadows within the property provide potentially suitable habitat for this species.

Common wood-nymph, *incana* subspecies: Provincially Red-listed

This species is restricted to southern Vancouver Island and the gulf islands, with scattered records in Sunshine Coast and lower mainland areas. Known from southeast Vancouver Island, Thetis Island, Qualicum Beach, Hornby Island, Wellington, greater Victoria area and other gulf islands. Butterflies are known to require specific larval and adult food plants for their continued survival in a location. Larvae of *C.p.incana* are known to use grasses and sedges such as *Tridens flavus*, *Avena fatua*, *Stipa*, *Andropoon* and *Carex* (Guppy and Shepard 2001; Layberry *et al.* 1998). Adults are known to nectar on wildflowers (Layberry *et al.* 1998). The species occurs within the fragmented Garry oak ecosystems, and further decline of this habitat type threatens this subspecies. Invasive plants also threaten its habitat. (BC CDC). This species is attracted to open meadows for wildflower forage and has been recorded by the BC CDC at a nearby location east of the study site.

Banded Cord Moss: Provincially Blue-listed; SARA Special Concern (1-SC (2006))

Extremely local on periodically damp or humid earth of terraces of exposed outcrop knobs in open stands of arbutus and Garry oak on southern and eastern Vancouver Island. On soil to 700m. It faces widespread, low-level threats from urban development, recreational activities and climate change. The habitat trend is declining and the species will become increasingly vulnerable if habitat destruction occurs at its present rate. This moss species has been recorded near Harmac (BC CDC) and was also documented in a large meadow located on the east side of the Cable Bay Trail by Madrone in 2009. It has potential to be located within the study site as well though it was not found during the site assessment in 2023.

Howell’s triteleia (*Triteleia howellii*): Provincially Red-listed

Grows in Garry oak woodlands. Deep, dark soils and an extremely rich understory of low shrubs characterise the Garry oak woodlands in the Cowichan Garry oak Preserve. This species also occurs in Garry oak – arbutus stands at the base of rock outcrops, where the well-developed shrub layer has a high cover of oceanspray and tall Oregon-grape. Disturbed sites include private yards and roadsides. Flowers in late May and June. Out-competed by Scotch broom and invasive grasses. (BC CDC). The forest-meadow interface within the site may provide suitable habitat for this plant species. Potentially, removal of broom from the site may



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allow this species to establish populations.

Muehlenberg’s centaury (*Centaurium muehlenbergii*): Provincially Red-listed; SARA Endangered (1-E (2010))

This small annual herb arises from a short taproot, growing to a height of 3-30cm, but in BC they are often 4-5cm tall. Tube-shaped flowers on a simple stem are white to deep pink with fused petals. Found in two distinct habitats in BC: a vernal pool within a large meadow in a Garry oak woodland, or along the margins of a tidal salt marsh. Seed dispersal seems poor and little is understood about seed bank dynamics. Requires open patches of bare soil for growth and germination. This species appears to be a poor competitor and may be outcompeted by invasive grasses. (BC CDC). This species has been identified in close proximity to the study site. Seepage areas and flow paths that may be suitable for this species in the open meadows of the study site might support this species though none were identified in the 2023 survey.

Rough-leaved aster (*Eurybia radulina*): Provincially Blue-listed

Perennial herb from a slender rhizome, 10-70cm tall. Habitat includes dry rock outcrops and open forests in the lowland zone. Known only in southeastern Vancouver Island south to California. (*E-Flora*). Little information is available about this species, but the meadows within the study site may provide suitable habitat. None were identified in the 2023 survey.

Slimleaf onion (*Allium amplexans*): Provincially Blue-listed

This vascular perennial herb is found in scattered sites on south Vancouver Island, the Gulf Islands and the Sunshine Coast. It flowers in May and June, growing from a small bulb. All BC populations are found in Garry oak meadows or on dry, rocky bluffs (GOERT, 2011). Populations are usually found on south/southwestern exposures in full to partial sun. A key habitat requirement is soil that is reliably moist in the spring time. This species has been identified in habitat adjacent to the subject parcel by Madrone in 2009 and is mapped within close proximity to the study site by the BC CDC. There is a probability that populations could be supported by the terrestrial herbaceous ecosystems found within the subject parcel. None were identified in the 2023 survey.

Twisted Oak Moss (*Syntrichia laevipila*): Provincially Blue-listed; SARA Special Concern (1-SC (2005))

Only found on southeastern Vancouver Island restricted to the bark of primarily Garry oak trees but also bigleaf maple trees as an epiphyte. This moss grows in small clumps at the base of

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trees where it is susceptible to damage from dogs, grazing animals or during routine maintenance. Only 22 occurrences have been mapped. (BC CDC). Mature oak and maple trees within the study site may support this species. None were identified in the 2023 survey.

White-lip Rein Orchid (*Platanthera ephemerantha*): Provincially Blue-listed

(Previously named *Piperia candida*). A perennial herb from tubers. Grows 20-55cm tall with terminal flower spike of small white flowers, sometimes faintly green, and an unpleasant scent. Found in dry forests and forest margins in the lowland to montane zones, north to Alaska and south to California; rare in coastal BC. (*E-flora*). Though rare in the general location, the dry forest ecosystem found within the site may provide suitable habitat for this orchid species. None were identified in the 2023 survey.

White-top Aster (*Sericocarpus rigidus*): Provincially Blue-listed; SARA Special Concern (1-SC (2019))

A 4–12-inch erect perennial emerging from a creeping rhizome. A leafy stem has a single, compact terminal cluster of flower heads. The general habitat is typically open, non-forested habitats that are seasonally mesic but somewhat moisture stressed during late summer, such as those found in Garry oak – arbutus – Douglas fir forest or woodland ecosystems or in open stands of shrubs including invasive Scotch broom. Requires shallow soils among rocky outcrops and full sun to partial shade. Flowering peaks in late July to early August. (BC CDC). Desirable habitat characteristics for this species were observed in the study area, and this species has been previously recorded east of the subject parcel. None were identified in the 2023 survey.

Yellow Montane Violet, *praemorsa* subspecies (*Viola praemorsa praemorsa*): Provincially Red-listed

A 6-30cm tall yellow flowering perennial growing from a short, vertical rhizome. Occurs in many habitats in Garry oak woodland communities and grass-dominated meadows. These low-elevation dominated ecosystems are generally confined to coastal situations along southeastern Vancouver Island and on nearby offshore islands. Most microhabitats have shallow soils over bedrock, are relatively level or south-facing, or have little to no shrub cover and are dominated by a cover of herbaceous species. Generally, shade-intolerant but sometimes found in partial shade of Garry oaks. *Viola praemorsa* also grows in exposed grassy fields in areas of deep soil that retain moisture during summer drought. (BC CDC). The site may have suitable habitat to support this plant species. None were identified in the 2023 survey.



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None of these rare, provincially listed plant species were identified within the site. While the initial site survey of the overall area was completed outside of the wildflower season, additional spring and summer flowering plant surveys were conducted in May and July 2023 to determine if any listed plant species were supported by the two small central meadows that are expected to be impacted by the proposed development. Other meadows were not surveyed at this time because they will be preserved by the proposed trail buffer and DPA setback. Provincially listed wildflowers identified above were not found in the meadows that are expected to be impacted, but they may be present within meadow areas that are planned to be preserved within and adjacent to the site.

5.0 SUMMARY

In general, the subject parcel appears to have changed little in overall ecosystem composition since the Madrone 2009 study. Aquaparian identified three terrestrial herbaceous ecosystems (meadows) within the confines of the subject parcel. Madrone’s report only mapped one (ESA #657) which was found to be consistent with the SEI mapped polygon and has not appeared to change significantly in shape or size. Madrone’s description and classification of the second growth forest present within most of the site appears consistent with Aquaparian’s observations. Extensive selective logging has impacted the site historically, but many large veteran trees remain that appear to have been left as seed trees during previous logging. Madrone’s report includes an inventory of all the trees within the site classified as “Significant Trees” by the City of Nanaimo based on species and stem size. Aquaparian confirmed that at least two Significant Douglas-fir trees have fallen since the 2009 study. One eagle nest tree mapped by Madrone which was not included in the WiTS database, was confirmed by Aquaparian to be dead. While still standing, no nest or nest material was observed.

Madrone’s study included detailed animal and plant species surveys. Aquaparian’s reconnaissance of the parcel suggests that species recorded by Madrone are likely to continue to find suitable habitat in the parcel given its existing condition. Some of the Provincially listed species that were observed in proximity to the subject parcel have been re-classified since Madrone’s study and are discussed in Section 4.2.7.

6.0 IMPACT ASSESSMENT

Aquaparian has identified 3 wetland ESAs and 3 terrestrial herbaceous ESAs. None of these wetlands or terrestrial herbaceous ESAs are mapped within the CoN Schedule 6 DPA 1: Environmentally Sensitive Areas map. One of the three identified terrestrial herbaceous habitats is mapped on the SEI map. The total area of identified wetland habitat is 1493.8 m²



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while environmentally sensitive terrestrial habitat comprises 12,855 m². An agreement has been met between the CoN and NFP to protect a tree buffer on the west side of the Cable Bay Trail that is to have an average width of 100m. Preliminary layout of this buffer has been designed to capture as much of the wetland and terrestrial herbaceous polygons as possible. The proposed tree buffer shown on the attached plan covers 11,200m².

At the time of writing this report, NFP is in the process of creating a plan for the proposed industrial lands including access roads, servicing, and potential lease lot areas for industrial use. It is assumed that the leased lots will be extensively cleared for the intended use. If all of the property is cleared and graded except for the tree buffer area, two terrestrial herbaceous meadows located in the east central area will be lost. Two of the small wetlands are located within and just beyond the tree buffer and the remainder of the setback can be accommodated. The other small wetland is located on the south boundary and the remainder of the setback can be accommodated. A portion of the southern terrestrial herbaceous polygon extends beyond the proposed tree buffer but is very near the southern boundary and can be accommodated. The location of Significant trees is shown on Figure 2 that shows the number and species that will be logged. A tree inventory including Significant trees was previously completed by Madrone. This has been used as a base plan to complete a Tree Management Plan attached as Figure 5 which also shows the above-mentioned polygons with DPA buffer areas. A tree removal permit application will be required once the final development plan is approved. Preliminary discussions with the City (W. Ernst & D. Mousseau) for proposed tree replacement calculations and criteria were that replacement should be based on the removal of 100 trees per ha of land cleared and replacement to be based on 1200 forestry seedlings per hectare preferably within the subject lands owned by Nanaimo Forest Products within the City boundary. This density and tree planting method follows a typical coastal reforestation model and accounts for some mortality.

The City of Nanaimo’s DPA1 guidelines require a *leave strip* to be determined as specified on Schedule 6 of the *City Plan* for Watercourse ESAs including wetlands. The *leave strip* is 15m measured horizontally from, and at right angles to, the wetland boundary. The width of the terrestrial ESA *leave strip* shall be determined by a *Qualified Registered Professional* (QEP). If disturbance to the ESA or *leave strip* cannot be avoided, the City requires that a restoration and enhancement plan including a detailed cost estimate for restoration works be prepared by a QEP. The City requires that the restoration plan follow the principle of *net gain*. The restoration plan must demonstrate “how an increase in the quality and quantity of functional habitat within the ESA and ESA leave strip will be achieved once the proposed development is complete, such that any areas restored shall be of better ecological value.” The target is to establish a habitat that is twice the area of encroachment that will result in functional habitat in 20 years.



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Assuming a 15m recommended *leave strip* for terrestrial ESAs, the total area for these features is 30,623.6 m². Given the required 15m *leave strip*, the total wetland area is 7381.1 m². Most of these ESAs can be retained; however, the two meadows centrally located that cover 1743.5m² and 3933.2 m² respectively (5676.7 m² total) are expected to be lost to development based on the current plan. The compensation requirements would be 11,353.4m². The meadows support a variety of spring and summer flowering herbaceous plant species; however, no rare species were identified in the two wildflower surveys conducted in May and July 2023.

The proposed Cable Bay Trail tree buffer area roughly compensates for the proposed impacts to the two terrestrial herbaceous meadows that will be lost to development. Areas within the tree buffer that were previously logged and are not regenerating a tree canopy will be planted with most or all of the replacement trees required by the Tree Removal Permit process. Additional tree planting areas may be allocated around the perimeter of the proposed development area or adjacent lands owned by NFP.

7.0 CLOSURE

Aquaparian Environmental Consulting Ltd was retained to complete an Environmental Assessment to support a re-zoning application to the City of Nanaimo for industrial use of two adjacent parcels, 950 Phoenix Way and the west portion of 1260 Phoenix way, a hooked property which straddles the Cable Bay Trail Right-of-Way. This report was completed to identify general habitat conditions and features within the study area to be compared with a similar study completed by Madrone in 2009. A focus of this study was to identify and map Environmentally Sensitive Areas (ESAs) located within the parcel. No detailed species presence assessments were completed for this study.

This report has been prepared at the rezoning stage. At the time of writing this report, only a preliminary layout plan was provided. At the design and development stage, the area of the ESAs and their *leave strips* proposed to be impacted will need to be confirmed to identify if the proposed tree retention area is sufficient to offset the loss and result in a net gain. A Tree Management Plan and tree removal permit will be required for tree removal once clearing limits have been finalized. Phasing of the project would also need to be planned accordingly. The development stage will also require that an Environmental Protection Plan is prepared to provide mitigation measures to avoid or limit potential impacts to sensitive environmental features during construction works.

This report has been completed in accordance with generally accepted biological practices. No other warranty is made, either expressed or implied. Aquaparian trusts that the information provided in this report meets your requirements. Any questions regarding information provided



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in this document, please contact the undersigned at (250) 591-2258.

Respectfully submitted,

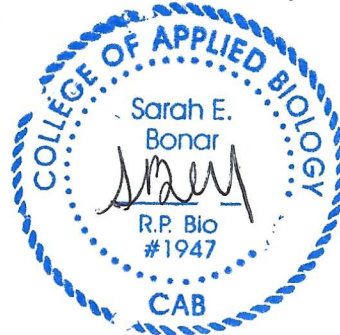
AQUAPARIAN ENVIRONMENTAL CONSULTING LTD.

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FIGURE 1A & 1B
SITE LOCATION MAP

FIGURE 1A & 1B – SITE LOCATION MAP

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FIGURE 2

**ENVIRONMENTALLY SENSITIVE AREAS
AND SIGNIFICANT TREE LOCATION MAP
(TURNER & ASSOCIATES LAND SURVEYING)**

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FIGURE 3

WITS MAP

FIGURE 3a – WILDLIFE TREE STEWARDSHIP (WiTS) MAP

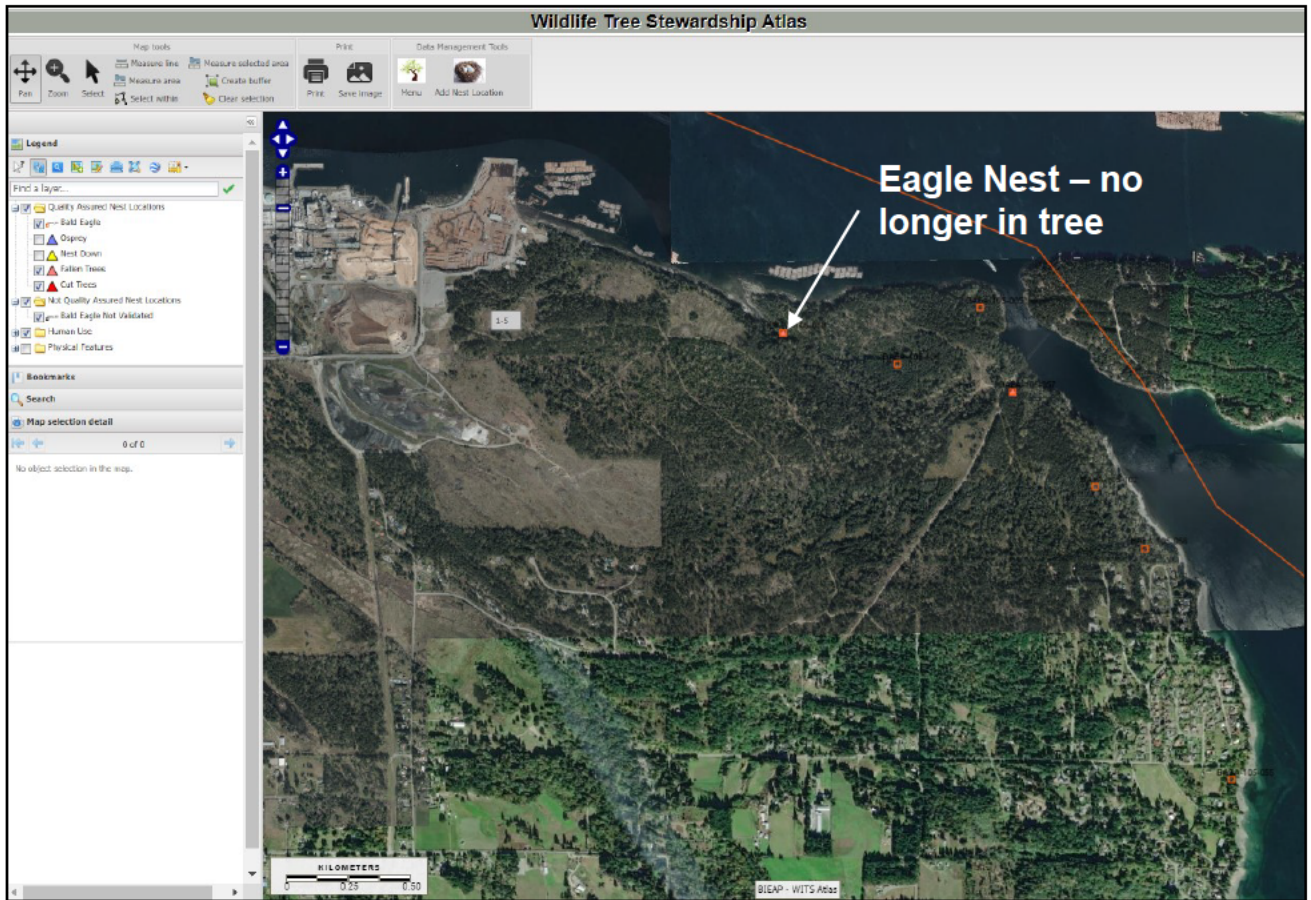


FIGURE 3b – WiTS NESTS SHOWN IN RELATION TO PARCEL BOUNDARIES



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FIGURE 4
SENSITIVE ECOSYSTEM INVENTORY MAP



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SENSITIVE ECOSYSTEMS INVENTORY MAP 092-G-0011 (1997 / DISTURBANCE UPDATED 2004)

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Section 18

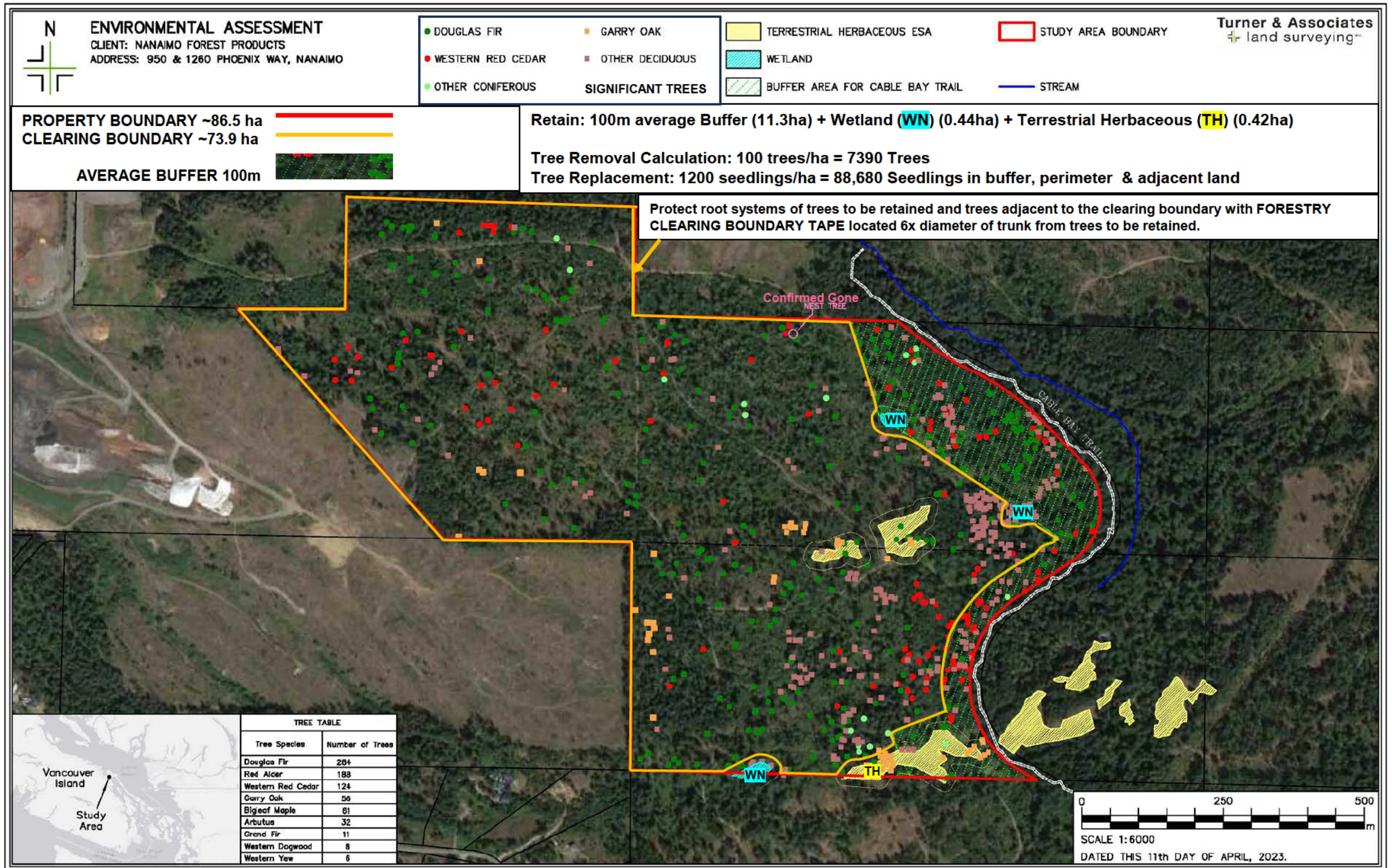
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FIGURE 5

TREE MANAGEMENT PLAN

**NANAIMO FOREST PRODUCTS – PHOENIX WAY INDUSTRIAL LANDS DEVELOPMENT
TREE MANAGEMENT PLAN OVERLAY (DRAFT)
950 PHOENIX WAY & WEST PORTION 1260 PHOENIX WAY**



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APPENDIX A

SITE PHOTOGRAPHS

APPENDIX A – SITE PHOTOGRAPHS

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Photo 1: Majority of forested habitat on site includes selectively logged second growth dry Douglas fir forest. Photo shows forested slope with northeast aspect near east side of parcel.



Photo 2: Forest is fragmented by disturbed forest openings such as this one. This area appears to have been cleared and potentially used as a staging area as it does not have typical meadow attributes.



Photo 3: Lower area with moist soils support red alder and big leaf maple with western red cedar and dense sword fern understory.



Photo 4: Several wide dirt roads from previous logging cross through the parcel.



Photo 5: Second growth forest with a low bedrock escarpment near the Cable Bay trail.



Photo 6: Looking across a hardhack wetland straddling the south parcel boundary.



Photo 7: A view of the southern hardwood wetland showing saturated ground and woody debris.



Photo 8: A view of the linear wetland located in the central far eastern side of the parcel. Vegetated with grass and rushes, This I depression may have formed from an old logging road that has begun to naturalize into a wetland over time.



Photo 9: A view of the small north wetland. Patches of sedge dominate. This wetland would be seasonally inundated.



Photos 10 & 11: Showing two views within the larger southern ESA previously mapped by Madrone and the provincial SEI mapping. Open meadows with thin, rapidly draining soils over bedrock are characteristic of a terrestrial herbaceous ecosystem.



Photo 12: A small terrestrial herbaceous ESA that is situated to the west of an intersection of dirt roads situated in the central east side of the parcel.



Photo 13: Another small terrestrial herbaceous ESA that is situated to the east of the dirt road intersection.



Photo 14: Abundant shooting star plants growing in the small central east meadow (May wildflower survey).



Photo 15: Shooting star flower amongst western buttercup and a variety of grasses (May wildflower survey).



Photo 16: Flat spurred piperia found in the small central meadows (July wildflower survey).



Photo 17: Rattlesnake plantain before flowering (May wildflower survey).



Photos 18, 19 & 20:
large diameter
Significant Douglas fir
trees that have fallen
down since Madrone's
study in 2009.



Photo 21: An eagle nest tree mapped
by Madrone in 2009 appears to be
dead and inactive with no nest
present. Other trees in this stand
appear unsuitable for eagle nesting.

950 & 1260 (West) Phoenix Way, City of Nanaimo, BC
Environmental Assessment – Rezoning
December 2023

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APPENDIX B

PRELIMINARY SITE PLAN
(TURNER & ASSOCIATES LAND SURVEYING)



203- 321 Wallace Street, Nanaimo, BC V9R 5B6
SARAH BONAR 250-714-8446 CHRIS ZAMORA 250-714-8864



SITE PLAN TO ACCOMPANY REZONING APPLICATION FOR:
LOT 4, SECTIONS 21, 22 AND 23, RANGE 2 AND SECTION 21, RANGE 3, CEDAR DISTRICT, PLAN VIP65621 EXCEPT PLAN EPP23851 (PID 023-922-907) AND
PART OF SECTION 20, RANGE 3, CEDAR DISTRICT, EXCEPT THAT PART IN PLAN VP59192 (PID 008-747-741).

Civic Address: 950 & 1260 PHOENIX WAY, NANAIMO	Existing Zoning: AR1	Proposed Zoning: I4
File: 19-177 PRO LAYOUT_REV4_20221216	Scale: 1:2500	Date: DECEMBER 16, 2022
Drawn by: RJT	Checked by:	INDUSTRIAL

Client: **NANAIMO FOREST PRODUCTS**

Project:



SCALE 1:2500

DISTANCES AND ELEVATIONS SHOWN ARE IN METRES.

CONTOURS ARE DERIVED FROM CITY OF NANAIMO MAPPING DATA

Note:
THE SUBJECT PROPERTIES ARE AFFECTED BY THE FOLLOWING REGISTERED DOCUMENTS:

CA7710622, CA7710624, H28579, H47153, FL85329, FL85331, EW29984, EW29986, EW29987, FB348676, M78300, EH20847, EH85016, CA7710624, EX113757, 186251G, EK50203, EW29985 & EW29986.

DATE:

DECEMBER 2, 2022

DECEMBER 13, 2022

DECEMBER 16, 2022

REVISION:

FIRST ISSUE

REVISE LAYOUT, LARGE LOT SIZES

REVISE LAYOUT, ROAD ALIGNMENT & LOT CONFIGURATION

Turner & Associates
land surveying™

435 Terminal Avenue North
Nanaimo, B.C.
V9S 4J8
250-753-9778
www.turnersurveys.ca

950 & 1260 (West) Phoenix Way, City of Nanaimo, BC
Environmental Assessment – Rezoning
December 2023

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APPENDIX C

BC CDC SEARCH RESULTS



203- 321 Wallace Street, Nanaimo, BC V9R 5B6
SARAH BONAR 250-714-8446 CHRIS ZAMORA 250-714-8864



CDC Occurrence Map

Legend

Species and Ecosystems at Available Occurrences - CD

FEATURE_CODE

- Animal - Vertebrate
- Animal - Invertebrate
- Plant - Vascular
- Plant - Non-vascular
- Ecological Community

Species and Ecosystems at and Historical) Publicly Avail CDC

FEATURE_CODE

- Animal - Vertebrate
- Animal - Invertebrate
- Plant - Vascular

0 0.80 1.60 km

1: 39 435

Copyright/Disclaimer

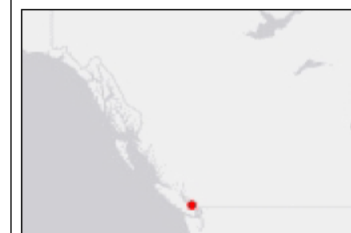
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CAUTION: Maps obtained using this site are not designed to assist in navigation. These maps may be generalized and may not reflect current conditions. Uncharted hazards may exist. DO NOT USE THESE MAPS FOR NAVIGATIONAL PURPOSES.

Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia



BC Species and Ecosystems Explorer Search Results 55 records

Close

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
<i>Accipiter gentilis laingi</i>	Northern Goshawk, <i>laingi</i> subspecies	CDF CWH	S2 (2010)	Red	G5T2 (2016)	T	1-T (2003)	Y		Y	
<i>Allium amplexens</i>	slimleaf onion	CDFmm CWHxm	S3 (2019)	Blue	G4 (1988)					Y	
<i>Allogona townsendiana</i>	Oregon Forestsnail	CDF CMA CWH ESSF MH	S2 (2015)	Red	G3G4 (2010)	E	1-E (2005)			Y	Y
<i>Ardea herodias fannini</i>	Great Blue Heron, <i>fannini</i> subspecies	CDF CWH	S3B,S4N (2022)	Blue	G5T4 (2016)	SC	1-SC (2010)	Y		Y	
<i>Balsamorhiza deltoidea</i>	deltoid balsamroot	CDFmm CWHxm	S2 (2019)	Red	G5 (1988)	E	1-E (2003)			Y	Y
<i>Buteo swainsoni</i>	Swainson's Hawk	BG BWBS CDF ICH IDF MS PP SBS	S2B (2022)	Red	G5 (2016)					Y	

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
<i>Cardellina canadensis</i>	Canada Warbler	BWBS CDF CWH	S3B (2022)	Blue	G5 (2016)	SC	1-T (2010)			Y	
<i>Carychium occidentale</i>	Western Thorn	CDF CWH	S3 (2015)	Blue	G3G4 (2002)						
<i>Cercyonis pegala incana</i>	Common Wood-nymph, <i>incana</i> subspecies	CDF CWH	S2? (2021)	Red	G5T4T5 (2003)					Y	
<i>Chordeiles minor</i>	Common Nighthawk	BG BWBS CDF CWH ESSF ICH IDF MH MS PP SBPS SBS SWB	S3S5B (2022)	Blue	G5 (2016)	SC	1-SC (2023)				
<i>Claytonia washingtoniana</i>	Washington springbeauty	CDFmm CWHdm CWHxm IDFww	S3 (2022)	Blue	G2G4 (2001)					Y	

Provincial “Freedom of Information and Protection of Privacy Act”

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	BG CDF CWH ICH PP	SXB (2022)	Red	G5 (2016)						
<i>Coenonympha californica insulana</i>	Common Ringlet, <i>insulana</i> subspecies	CDF CWH	S1 (2021)	Red	G5T3T4 (1998)					Y	
<i>Contia tenuis</i>	Common Sharp-tailed Snake	CDF CWH	S1S2 (2018)	Red	G5 (2016)	E/T	1-E (2003)			Y	Y
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	BG CDF CWH ICH IDF PP	S3 (2022)	Blue	G4 (2016)					Y	Y
<i>Cryptomastix devia</i>	Puget Oregonian	CDF CWH	SX (2015)	Red	G2 (2017)	XT	1-XT (2005)				
<i>Dryopteris arguta</i>	coastal wood fern	CDFmm	S3 (2019)	Blue	G5 (2011)	SC	1-SC (2003)			Y	
<i>Epargyreus clarus</i>	Silver-spotted Skipper	CDF CWH ESSF ICH IDF MH MS PP	S3 (2020)	Blue	G5 (2020)						

Provincial “*Freedom of Information and Protection of Privacy Act*”

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
<i>Erynnis propertius</i>	Propertius Duskywing	CDF CMA CWH MH	S2 (2020)	Red	G5 (2020)					Y	
<i>Euphagus carolinus</i>	Rusty Blackbird	BG BWBS CDF CWH ESSF MS PP SBPS SBS SWB	S3S4B (2015)	Blue	G4 (2016)	SC	1-SC (2009)				
<i>Eurybia radulina</i>	rough-leaved aster	CDFmm CWHxm	S2 (2022)	Red	G4G5 (1988)					Y	
<i>Glaucidium gnoma swarthi</i>	Northern Pygmy-owl, <i>swarthi</i> subspecies	CDF CWH MH	S3S4 (2018)	Blue	G4G5T3T4Q (2019)			Y		Y	
<i>Hemphillia glandulosa</i>	Warty Jumping-slug	CDF CWH	S2? (2015)	Red	G3G4 (2005)	SC	1-SC (2005)			Y	
<i>Icteria virens</i>	Yellow-breasted Chat	BG CDF CWH ICH IDF PP SBS	S2B (2018)	Red	G5 (2016)	E	1-E (2003)	Y		Y	Y

Provincial “*Freedom of Information and Protection of Privacy Act*”

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
<i>Lasiurus cinereus</i>	Hoary Bat	BG BWBS CDF CWH ICH IDF MS PP SBS	S3S4 (2022)	Blue	G3G4 (2016)						
<i>Lepus americanus washingtonii</i>	Snowshoe Hare, <i>washingtonii</i> subspecies	CDF CWH	S1 (2011)	Red	G5T3T5 (1996)					Y	
<i>Lomatium dissectum</i>	fern-leaved desert-parsley	CDFmm	S2 (2019)	Red	G4T4 (2003)					Y	
<i>Megascops kennicottii kennicottii</i>	Western Screech-Owl, <i>kennicottii</i> subspecies	CDF CWH MH	S2S3 (2017)	Blue	G4G5T4 (2016)	T	1-T (2005)			Y	
<i>Melanerpes lewis</i>	Lewis's Woodpecker	BG CDF CWH ICH IDF PP SBS	S2S3B (2022)	Blue	G4 (2016)	T	1-T (2012)	Y		Y	Y
<i>Mustela frenata altifrontalis</i>	Long-tailed weasel, <i>altifrontalis</i> subspecies	CDF CWH MH	SH (2011)	Red	G5TNR						

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
<i>Mustela richardsonii anguinae</i>	Ermine, <i>anguinae</i> subspecies	CDF CWH MH	S3 (2010)	Blue	G5T3 (2016)					Y	Y
<i>Myotis lucifugus</i>	Little Brown Myotis	BG BWBS CDF CWH ESSF ICH IDF MH MS PP SBPS SBS SWB	S3S4 (2022)	Blue	G3G4 (2021)	E	1-E (2014)				
<i>Nearctula</i> sp. 1	Threaded Vertigo	CDF CWH	S3 (2015)	Blue	G3G5 (2006)	SC	1-SC (2012)			Y	

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
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<i>Oreamnos americanus</i>	Mountain Goat	BAFA BG BWBS CDF CMA CWH ESSF ICH IDF IMA MH MS PP SBPS SBS SWB	S3 (2015)	Blue	G5 (2016)						
<i>Patagioenas fasciata</i>	Band-tailed Pigeon	CDF CWH ICH IDF MS SBS	S3S4 (2022)	Blue	G4 (2016)	SC	1-SC (2011)				
<i>Platanthera ephemerantha</i>	white-lip rein orchid	CDFmm CWHvh	S3 (2019)	Blue	G3? (2012)					Y	
<i>Pristiloma johnsoni</i>	Broadwhorl Tightcoil	CDF CWH MH	S3 (2015)	Blue	G3 (2013)						
<i>Progne subis</i>	Purple Martin	BWBS CDF CWH ICH	S3S4B (2022)	Blue	G5 (2016)					Y	

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
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<i>Prophyaon coeruleum</i>	Blue-grey Taildropper	CDF CWH	S2S3 (2015)	Blue	G3G4 (2010)	T	1-T (2019)			Y	
<i>Sabulina pusilla</i>	dwarf sandwort	CDFmm	S1 (2019)	Red	G3G5 (2004)	E	1-E (2005)			Y	
<i>Sanicula bipinnatifida</i>	purple sanicle	CDFmm CWHxm	S2 (2019)	Red	G5 (1990)	T	1-T (2003)			Y	
<i>Sericocarpus rigidus</i>	white-top aster	CDFmm CWHxm	S3 (2019)	Blue	G3 (2007)	SC	1-SC (2003)			Y	
<i>Setophaga virens</i>	Black-throated Green Warbler	BWBS CDF CWH ESSF ICH SBS	S3B (2015)	Blue	G5 (2016)			Y		Y	
<i>Silene scouleri</i> ssp. <i>scouleri</i>	coastal Scouler's catchfly	CDFmm	S1 (2019)	Red	G5T3T5 (2002)	E	1-E (2005)			Y	
<i>Sorex rohweri</i>	Olympic Shrew	CDF CWH	S2? (2015)	Red	G4G5 (2007)					Y	
<i>Sorex trowbridgii</i>	Trowbridge's Shrew	CDF CWH	S3 (2015)	Blue	G5 (2016)					Y	
<i>Sympetrum vicinum</i>	Autumn Meadowhawk	CDF CWH	S3S4 (2015)	Blue	G5 (2015)					Y	
<i>Syntrichia laevipila</i>	twisted oak moss	CDFmm	S3 (2015)	Blue	GNR	SC	1-SC (2005)			Y	Y

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Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
<i>Tonella tenella</i>	small-flowered tonella	CDFmm	S3 (2019)	Blue	G5 (1990)	E	1-E (2005)			Y	Y
<i>Triteleia howellii</i>	Howell's triteleia	CDFmm	S1 (2005)	Red	G4G5T3T4Q (2020)	E	1-E (2005)			Y	
<i>Tyto alba</i>	Barn Owl	BG BWBS CDF CWH ICH IDF PP	S3 (2022)	Blue	G5 (2016)	T	1-T (2018)				
<i>Uropappus lindleyi</i>	Lindley's microseris	CDFmm	S1S2 (2019)	Red	G5 (1990)	E	1-E (2010)			Y	
<i>Viola howellii</i>	Howell's violet	CDFmm CWHmm CWHxm MHmm	S1S2 (2019)	Red	G4 (1988)					Y	
<i>Viola praemorsa</i> var. <i>praemorsa</i>	yellow montane violet	CDFmm CWHxm	S1 (2019)	Red	G5T3T5 (2000)	E	1-E (2003)			Y	
<i>Zeltnera muehlenbergii</i>	Muhlenberg's centaury	CDFmm	S1 (2019)	Red	G5? (1996)	E	1-E (2010)			Y	

Search Criteria

Animals OR Plants

AND BC Conservation Status:Red (Extirpated, Endangered, or Threatened) OR Blue (Special Concern)

AND 'Municipalities':Nanaimo

AND Habitat Subtypes: Conifer Forest - Dry,Garry Oak Woodland,Mixed Forest (deciduous/coniferous mix)

AND BGC Zone: CDF

Sort Order:Scientific Name Ascending

Notes

1. Citation: B.C. Conservation Data Centre. 2023. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. Available: <https://a100.gov.bc.ca/pub/eswp/> (<https://a100.gov.bc.ca/pub/eswp/>) (accessed Apr 13, 2023).

2. The data contained in the Results Export in BCSEE are provided under the Open Government License - BC (<http://www.data.gov.bc.ca/local/dbc/docs/license/OGL-vbc2.0.pdf>).

3. We welcome your comments at cdcddata@gov.bc.ca.

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