

2191 EAST WELLINGTON ROAD (MILLSTONE FLATS)

Biophysical Assessment Report

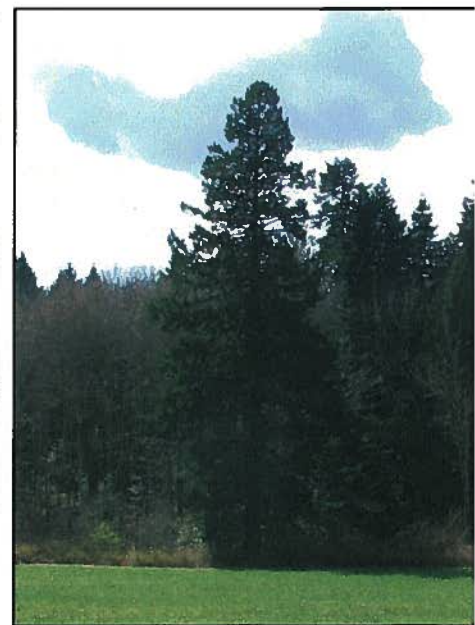
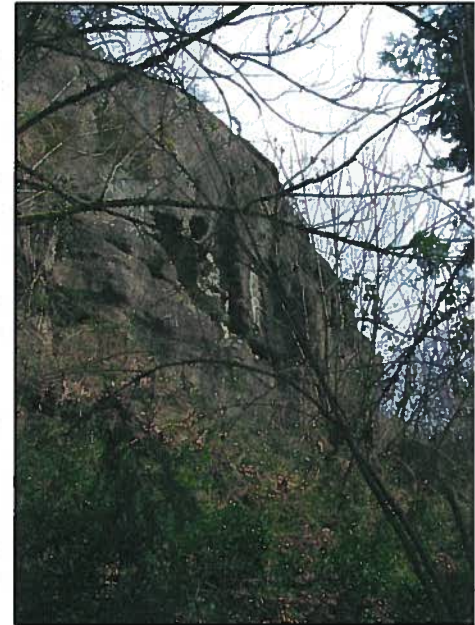


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1.0 INTRODUCTION

Chatwin Engineering Ltd. (Chatwin) was retained by the City of Nanaimo Parks Recreation and Culture Department to complete a Biophysical Inventory (BI) for a property newly acquired by the City for park land. The subject parcel is located at 2191 East Wellington Road, Nanaimo BC and legally identified as follows:

**Lot 1, Section 14 and 15, Range 7, Mountain District, Plan 14201,
Except Part in Plan 45345.**

The biophysical inventory was requested by city staff to determine existing habitat conditions of the property and explore potential habitat enhancement opportunities including the construction of a side channel or series of ponds connected to the Millstone River.

In preparation of this BI, Chatwin completed a spring site visit of the property on April 8, 2011. Chatwin also attended an additional walk of the site on April 15, 2011 with Mel Sheng (DFO) and Alan Britton (City of Nanaimo). A site plan map of the property identifying the proposed location of the study area in relation to the City of Nanaimo is included as Figure 1. A selection of photographs taken of the site has been included as Appendix A.

2.0 SCOPE OF WORK

Tasks to complete the Biophysical Inventory for this study were as follows:

- Task 1 A review of background information for the site made available by the City of Nanaimo and provincial resource agencies including electronic information regarding sensitive ecosystems and species at risk as identified by the provincial Conservation Data Centre (BC CDC) and government fisheries databases of fish presence for the Millstone River.

- Task 2 Aerial photograph interpretation of the site and orthophoto review to identify and map variants in vegetation communities and presence of environmentally sensitive features including creeks, wetlands, steep slopes, and rock outcrops. Variants in vegetation communities on the aerial photographs - orthophotos were pre-typed for verification during the field investigation.

- Task 3 A field survey of the site in order to confirm and document the site's ecological composition and the presence of aquatic and wildlife habitat values (including birds and their nests, small mammals, amphibians, and reptiles), rare plants and animals as well as Environmentally Sensitive Areas (ESAs) identified during pre-typing of aerial photographs.

- Task 4 Information reviewed from provincial agencies and collected in the field were incorporated into the production of baseline biophysical maps, including the location of ESAs, vegetation communities and water features.

- Task 5 Completion of an environmental assessment report that identifies and summarizes the presence of vegetation communities, wildlife and fisheries resources, and any potential opportunities for habitat enhancement on the site. Recommendations to assist in minimizing impacts to ESAs found on the site and with the surrounding environment during enhancement construction works have also been included.

3.0 SITE DESCRIPTION

The subject property is understood to be 29.65 acres in size and has been used as an agricultural field to grow hay for a number of years. The property has an irregular shape approximately 250m wide by 580m in length oriented northwest to southeast. The property is confined between the Millstone River forming the southwest border of the property and a rocky escarpment along the southeast boundary.

As identified by the City of Nanaimo's Habitat Atlas, the property lies within the floodplain of the Millstone River. The property is also identified as an Environmentally Sensitive Area (ESA) – Seasonally Flooded Agricultural Field. The majority of the parcel is a grass field bordered by stands of deciduous and coniferous trees with a dense shrub understory.

Between the field and the toe of the rock escarpment on the northeast boundary is a naturally vegetated buffer. Within the vegetated buffer, near the edge of the field is an excavated ditch running parallel to a municipal sanitary line that runs the length of the property. Shallow depressional areas within the centre of the field and toward the northeast side of the field are seasonally flooded to a depth of up to approximately 40cm. A short side channel of the Millstone River appears to provide some drainage from the central wetted areas of the field. Review of orthophoto imagery of the site indicates it is associated with a series of connected wetlands extending for more than 20km through the region.

4.0 PHYSICAL AND HISTORICAL SITE INFORMATION

In order to complete a physical and historical assessment of the property, Chatwin reviewed information from provincial sources and documented observations on site.

4.1 Physical Resources

The physical resources of the region are interrelated and are influenced by the surficial geology, topography, climate and drainage of the surrounding environment. These physical attributes are described as follows:

4.1.1 Climate

The property lies within the Moist Maritime 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 range from sea level to approximately 150m.

The CDFmm lies in the rainshadow 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 CDF represents the mildest climate in Canada. (Green, R.N and K. Klinka, 1994).

4.1.2 Land/Soils

The Soils of Southern Vancouver Island MOE Technical Report 17 identified the soil association within the subject property as the Chemainus Soil Association (CH). Chemainus soils are common throughout the coast Douglas Fir Subzone of the Coastal Western Hemlock Forest Zone. They occur mainly in the Nanaimo Lowland physiographic subdivisions and on the floors of low elevation valleys in the Vancouver Island ranges. They have developed in deep, silty fluvial deposits and are subject to varying degrees of flooding. Slopes are usually less than 5% with elevational ranges from sea level to approximately 700m.

Chemainus soils are moderately well to imperfectly drained. The upper horizons are usually comprised of loam or silt and subsoils consist of fine sandy loam. Chemainus soils are normally free of coarse fragments, although minor gravelly areas may occur. Surface and sub-surface horizons are usually less than 100cm thick, dark yellowish brown to olive brown, and medium to strongly acidic. Relatively unweathered parent material is encountered at depths between 100 and 250m. A modar or mull layer between 1-15cm thick is present on the soil surface. The usual taxonomic classification is Ortho Dystric Brunisol. (*Jungen 1985*)

4.1.3 Surface Water

The City of Nanaimo Habitat Atlas identifies the property is located within the floodplain of the Millstone River. The Millstone River forms the southwestern boundary of the property. A drainage ditch is located along the northeastern edge of the field which flows southeast forming ponded areas in the field during the rainy season. The drainage ditch located along the northeastern edge of the field is likely influenced from groundwater seepage existing near the toe of the escarpment. A ponded area in the centre of the field appears to be wetted most of the year. Ponded water on site is directly related to seasonal water levels in the Millstone River and from underlying groundwater levels.

4.1.4 Ground Water

Groundwater levels within the site are expected to be high throughout the year due to the topography of the area and the proximity of the Millstone River.

5.0 FIELD OBSERVATIONS

In order to document ecological characteristics within the property, Chatwin completed a biophysical inventory of vegetation communities, wildlife and fish presence on April 8, 2011. Chatwin also completed a review of government database sources regarding fisheries and rare and endangered plant communities, and plant and animal species with the BC Conservation

Data Centre. The following sections present an ecological overview of the site, and a discussion of vegetation, fish, bird, and wildlife habitat.

5.1 Ecological Overview

The following section includes a review of vegetation, wildlife and aquatic resources within the study site. A biophysical map using 2010 orthophoto imagery of the property was generated to show ecological attributes documented during the site visit. A map of the wetted areas within the site has been included as Figure 2 within this report. A map showing the habitat types and dominant vegetation within the property has been included as Figure 3.

5.2.1 Flora (Vegetation)

The majority of the property is a grass field and used to grow hay. The northeast side of the property between the field and the base of the rock bluffs is vegetated with a mixed canopy of deciduous and coniferous trees and dense shrub cover. A drainage ditch is located within the vegetated buffer and runs parallel to a City sanitary sewer line. Canopy species include mature Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), red alder (*Alnus rubra*), big leaf maple (*Acer macrophyllum*), and black hawthorn (*Crataegus douglasii*). Tall shrub species dominate the canopy along the wetted drainage and include willow and red osier dogwood (*Cornus stolonifera*). Low shrub cover in wetted areas are dominated by hardhack (*Spiraea douglasii*) while drier soil areas are dominated by snowberry (*Symphoricarpos albus*) and nootka rose (*Rosa nutkana*). Invasive species include Himalayan blackberry (*Rubus discolor*) and spurge laurel (*Daphne loreola*). Other species include sword fern (*Polystichum munitum*), dull Oregon grape (*Mahonia nervosa*) and Oceanspray (*Holodiscus discolor*). The ditch and adjacent ponded areas were vegetated with Pacific water parsley (*Oenanthe sarmentosa*), common rush (*Juncus effusus*) and common horsetail (*Equisetum arvense*).

Mossy bluff areas of the rocky escarpment were dominated by Veteran Douglas fir, mature Garry oak (*Quercus garryana*) and big leaf maple. Understory species included licorice fern (*Polypodium glycyrrhiza*), white fawn lily (*Erythronium oregonum*) lanky moss (*Rhytidelphus loreus*), step moss (*Hylocomium splendens*) and Oregon beaked moss (*Kindbergia oregana*). Other flowering plants typically found in Garry oak meadows are likely to be found in this area later in the spring season.

The riparian area of the Millstone River located on the southwest side of the property is approximately 10m wide. It is vegetated with a mixed stand of coniferous and deciduous trees with a dense shrub understory. Sections of the riparian area toward the southeast are dominated by shrubs with little canopy cover. Canopy species included veteran Douglas fir, red alder, big leaf maple and black hawthorn. Shrub species included hardhack, snowberry, nootka rose, snowberry, thimbleberry (*Rubus parviflorus*), and Indian plum (*Oemleria cerasiformis*). Herbacious species include palmate coltsfoot (*Petasites palmatus*), trailing blackberry (*Rubus ursinus*), and giant horsetail (*Equisetum telmateia*). Invasive species included Himalayan blackberry and spurge laurel.

5.2.2 Fauna (Wildlife)

The Millstone River watershed supports a diversity of wildlife including large and small mammals, bats, songbirds and amphibians. Large mammals expected to be found within the area include black bear (*Ursus americanus*), black tailed deer (*Odocoileus hemionus*) and cougar (*Puma concolor*). Smaller mammals commonly associated with the area include racoon (*Procyon lotor*), American mink (*Mustela vison*), river otter (*Lontra canadensis*), and several mice and shrew species. The area provides habitat for the common garter snake (*Thamnophis sirtalis*), Pacific tree frog (*Pseudacris regilla*) and red-legged frog (*Rana aurora*) and various salamanders. The sandstone/conglomerate cliffs and large Douglas fir snags likely support roosting habitat for bats.

5.2.3 Avian Species

Because of the site's open field and mixed stand riparian habitat, many bird species are likely to be found in this site including various song birds, hummingbirds, raptors, owls, woodpeckers, ducks and geese. Observations of birds during the inventory were limited to one red-tailed hawk (*Buteo jamaicensis*), bald eagle (*Haliaeetus leucocephalus*), turkey vulture (*Cathartes aura*), killdeer (*Charadrius vociferus*), Canada Goose (*Branta canadensis*), Mallard (*Anas platyrhynchos*) and American robin (*Turdus migratorius*). Several other songbirds were heard calling, but were not identified.

While bald eagles and other raptors were seen flying within the study area, no nests were identified. No guano splashes, prey or pellet remains were noted at the base of trees to indicate the potential for nesting use. No herons or indications of a nesting rookery were identified within the area.

The dense shrub cover adjacent to the field provides nesting habitat for song birds. Veteran, mature and dead standing wildlife trees adjacent to the field provide nesting and foraging habitat for several owl species such as barred owl (*Strix varia*), great horn owl (*Bubo virginianus*) and western screech owls (*Megascops kennicottii*).

5.2.4 Fish and other Aquatic Life

The Millstone River forms the southwestern property line. A search of the provincial Fisheries Inventory – FISS Fish Distributions Report identified the following species are found in the Millstone River: cutthroat trout (*Oncorhynchus clarkii*), sculpin, chum salmon (*Oncorhynchus keta*), coho salmon (*Oncorhynchus kisutch*), pumpkinseed (*Lepomis gibbosus*), steelhead salmon (*Oncorhynchus mykiss*) and threespine stickleback (*Gasterosteus aculeatus*). A copy of the FISS database results has been included as Appendix B.

5.2.5 Species-at-Risk

The Species-at-Risk Act (SARA) is designed to create species awareness and prevent or reduce the likelihood of wildlife species from becoming extinct or extirpated due to habitat disturbance or destruction. SARA also provides for the recovery and management of endangered or threatened species as a result of harm by human activity. Provisions of SARA include prohibiting the taking or possession of listed

species and the damage or destruction of their resident and critical habitat.

A search of the BC CDC database for species occurrence records for the subject property was completed. No species occurrence records were identified within the property.

A search of the BC CDC database for rare or endangered plant and animal species occurrences and rare plant communities for the Nanaimo area resulted in the identification of 31 Red-listed species and 54 Blue-listed species. Red-listed species are deemed extirpated, endangered or threatened while blue-listed species are deemed to be of special concern. A copy of the CDC search results has been included as Appendix C.

The following is a description of the sensitive species that may be found within the subject property:

American Water Shrew *Sorex palustris brooksi*: Red-listed

A relatively rare shrew dependent on suitable aquatic/riparian habitat, found over a large part of Vancouver Island. Vancouver Island Water Shrews are habitat specialists, living at the water's edge. They are dependent on the presence of high-quality intact riparian systems. They live in a diverse range of stream habitats, from narrow to wide streams, from slow-moving to moderately-fast flowing waters. The substrate of the streambed is usually cobble or gravel, and the stream typically has a complex environment with in-stream coarse woody debris, and dense riparian vegetation (shrubs and herbs). They are found at low elevations, in a variety of forest types and age classes, as long as the riparian corridor is intact. The Millstone River may provide suitable habitat for this species. (*BC Conservation Data Centre*)

Red-legged frog (*Rana aurora*) – 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. 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 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. Red-legged Frogs are most common at elevations below 500 m, with low slopes, and containing moist, mature/old forest in some areas. The ditch, wetted areas and the Millstone River and adjacent riparian habitat found at the site likely provide suitable habitat for the red-legged frog (*BC Conservation Data Centre*).

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

This member of the onion family grows on vernal moist rocky bluffs and meadows in the lowland zone, is infrequent on South East Vancouver Island, the Gulf Islands and the adjacent mainland (Powell River). Mossy bluffs on the northeast side of the property

provide suitable habitat for this species (*BC Conservation Data Centre*).

Geyer's onion (*Allium geyeri* var. *Tenerum*): Blue-listed

This member of the onion family grows on moist meadows, banks, and rock outcrops in the lowland, steppe and montane zones; infrequent on Vancouver Island and in the Fraser and Thompson River valleys. Mossy bluffs on the northeast side of the property may provide suitable habitat for this species (*BC Conservation Data Centre*).

Great Blue Heron (*Ardea herodias fannini*): Blue-listed

Resides along the Pacific coast from southeastern Alaska (Yakutat Bay) south to Washington. Non-breeders range north to Cook Inlet, Alaska and east to the interior of central and southern British Columbia. They nest colonially in tall Sitka spruce, western red cedar, western hemlock, pine, red alder and black cottonwood. Isolation from disturbance appears to be an important factor in nest site selection. Foraging habitat includes aquatic areas generally less than 0.5 m deep, such as: marine intertidal areas, estuaries, riparian areas, wetlands, freshwater lakes, and muskegs. These areas are generally within 5 km of the nest site, although some areas have been identified up to 33 km. Great blue heron are frequently spotted in the Millstone River watershed (*BC Conservation Data Centre*).

Short-eared Owl (*Asio flammeus*): Blue-listed

The species breeds in small numbers in every province and territory in Canada. During the non-breeding season, this owl occurs mostly in the southern parts of most Canadian provinces. Local abundance varies with vole abundance. In the winter, short-eared owls congregate at sites that provide good foraging. Breeding habitat includes broad expanses of open land with low vegetation for nesting and foraging such as fresh and saltwater marshes, bogs, dunes, prairies, grassy plains, old fields, tundra, moorlands, river valleys, meadows, savanna, open woodland, and heathland. In general, any area that is large enough, has low vegetation with some dry upland for nesting, and that supports suitable prey may be considered potential breeding habitat for short-eared owls. They nest on the ground, generally in a slight depression, often beside or beneath a bush or clump of grass. Many nests are near water but generally are on dry sites. Open fields and adjacent forest edges within the subject property may provide suitable habitat for this species (*BC Conservation Data Centre*).

5.3 Land Use

The following section outlines a broad assessment of the land use immediately surrounding the study area.

5.3.1 Present Land Use

The property fronts onto East Wellington Road and rural residential properties abut the subject property on the other three sides. The majority of the property is an agricultural field. Remnants of an old building and a small shed that may have been a pump house are located on the southwest corner near the road.

5.3.2 Municipal Protection Measures

The property lies within the floodplain of the Millstone River and is classified as an Environmentally Sensitive Area (ESA) – Seasonally Flooded Agricultural Field on the City of Nanaimo’s Habitat Atlas.

Land use activities in leave strips are regulated under the Zoning Bylaw (Bylaw 4000) and Plan Nanaimo (Bylaw 6000), the City’s new Official Community Plan. All watercourses and their leave strips within the City’s boundaries are designated as Watercourse Development Permit Areas as follows:

- 30 metres from the top of bank* on the Nanaimo River and Millstone River.
- 7.5 or 15 metres from the top of bank on most other creeks and streams.
- 15 metres from the natural boundary (or high water mark) for lakes, ponds and wetlands.

5.3.3 Special Places

A request for information with the Ministry of Forests, Lands and Natural Resource Operations Archaeological Branch was completed. No known archaeological sites were identified within the property. However, while there are none mapped on the subject property, some proportions of the property have high potential for previously unrecorded archaeological sites. While all archaeological sites, recorded or not, are protected under the Heritage Conservation Act, the open field within the property has been altered for many years by agricultural use (including ploughing). If evidence is found during habitat construction works then an Archaeological Impact Assessment (AIA) of the study area, completed by a qualified professional archaeologist is recommended prior to any ground-altering development. A copy of the archaeological search results has been included as Appendix D.

6.0 SUMMARY AND RECOMMENDATIONS

Chatwin Engineering completed a biophysical inventory of 2191 East Wellington Road in the in the City of Nanaimo on April 8, 2011 to document environmental characteristics within the site including plant communities, aquatic and wildlife habitat values, sensitive ecosystems and rare plants and animals, as well as opportunities and constraints as they apply to creating new habitat enhancement opportunities on the site for fish or wildlife use.

Ecological site conditions show the property to be a seasonally flooded agricultural field within the floodplain of the Millstone River. A ditch with seasonally inundated ponded areas is located along the northeast side of the property. The southwest and northeast sides of the property are comprised of mixed stands of mature trees with several veteran Douglas fir and a thick shub understory providing important edge habitat for several species of birds including raptors, owls and song birds. The grass field provides habitat for various species of mice and voles. The Millstone River is a locally known watercourse supporting populations of chum and coho salmon and cutthroat and rainbow trout. The seasonally flooded areas of the property provide habitat for ducks and geese and foraging song birds.

At the time of the survey, the water level in the Millstone River was approximately 2m below the elevation of the field. A short side channel was identified that appeared to provide some drainage from the centre wetted area of the field. Evidence of recent flooding was observed up the side channel and across portions of the field from the Millstone River. Due to the topography of the property and the proximity of the Millstone River as well as wetted areas on the other side of the property, there is potential for fish and wildlife habitat enhancement opportunities on the site.

Enhancement could include the excavation of a large, deep central pond with a series of smaller shallow ponds (seasonally flooded) all connected by an excavated side channel to the Millstone River. The stream and wetland system could allow for seasonal rearing of fish and new foraging, nesting and rearing habitat for various wildlife.

Chatwin understands that a pedestrian path could be constructed along the northeast side of the property to connect to an existing trail system. Due to the seasonally wetted nature of the area, an elevated boardwalk is being considered.

While the property offers good opportunities for the development of side channels and wetland ponds, Chatwin recommends the following environmental protection measures be considered during construction:

1. Restrict boardwalk construction and pond/side channel excavations to outside the period of January 30 to June 30 in a given year, if possible, to consider the incubation and fledging of forest song birds and any raptors who may nest within the property; or have a biologist examine the site further to identify whether nest(s) have been constructed and are in use and that active nests are protected during construction operations;
2. That pond/side channel excavations be restricted to the dry seasonal months due to the proximity of the Millstone River and that an appropriate sediment and erosion control plan be in place before any stripping of the site is allowed to commence;
3. Following construction of side channels and wetland ponds for fish habitat, that the riparian areas and ponds be planted with native trees, shrubs and wetland species in the rainy season following construction;
4. That the location of the boardwalk be located on the edge of the grass field outside of the treed buffer to protect bird habitat and root systems of mature trees;

6.1 Further Enhancement Opportunities

The following is a list of other habitat enhancement opportunities that could potentially be implemented on the site over time:

- Removal of invasive species in the treed portions of the property;
- Additional tree plantings along the riparian area of the Millstone River to widen the riparian area to 30m;

- Native tree and shrub plantings throughout the parcel with pedestrian/mixed use areas to outcompete the grass and eventually eliminate the need for mowing;
- Installation of swallow boxes to control mosquito populations.

Chatwin will be available to further discuss habitat design features that could be created for the site or other recreational plans to increase public use.

7.0 CLOSURE

Chatwin Engineering Ltd. (Chatwin) was retained by The City of Nanaimo to complete a Biophysical Inventory (BI) for 2191 East Wellington Road. The completion of the Biophysical Inventory was requested to assess the existing habitat within the property and identify enhancement opportunities and mitigation measures during construction.

Information provided in this report includes findings from government databases, consultation with government agencies, site observations and from experience and knowledge by Chatwin Engineering Ltd's staff of biologists

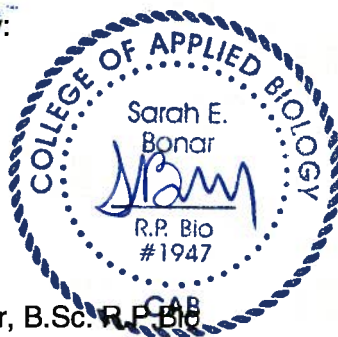
Prior to construction start-up, Chatwin recommends that an on-site meeting with the project contractor be conducted to review all environmental related issues and to discuss the appropriate use of mitigation measures to limit any potential impacts to the environment.

Chatwin trusts that the information provided in this report meets your requirements. Any questions regarding information provided in this document, please contact the undersigned at (250) 753-9171.

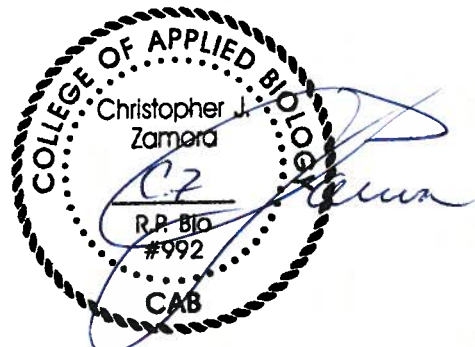
Yours truly,

CHATWIN ENGINEERING LTD.

Prepared by:



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Project Biologist.



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Senior Project Biologist

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Attached:

Figure 1: Site Location Map

Figure 2: Watercourse Map & Wetted Features

Figure 3: Habitat Map (11x17)

Appendix A: Site Photographs

Appendix B: FISS Data Base Search Results

Appendix C: BC CDC Record of Occurrence and Species and Ecosystem Explorer Database

Appendix D: Archaeological Branch Search Results

8.0 REFERENCES

BC Conservation Data Centre. <http://www.env.gov.bc.ca/atrisk/toolintro.html>

BC Ministry of Environment Fisheries Information Summary System (FISS).
<http://www.env.gov.bc.ca/fish/fiss/index.html>

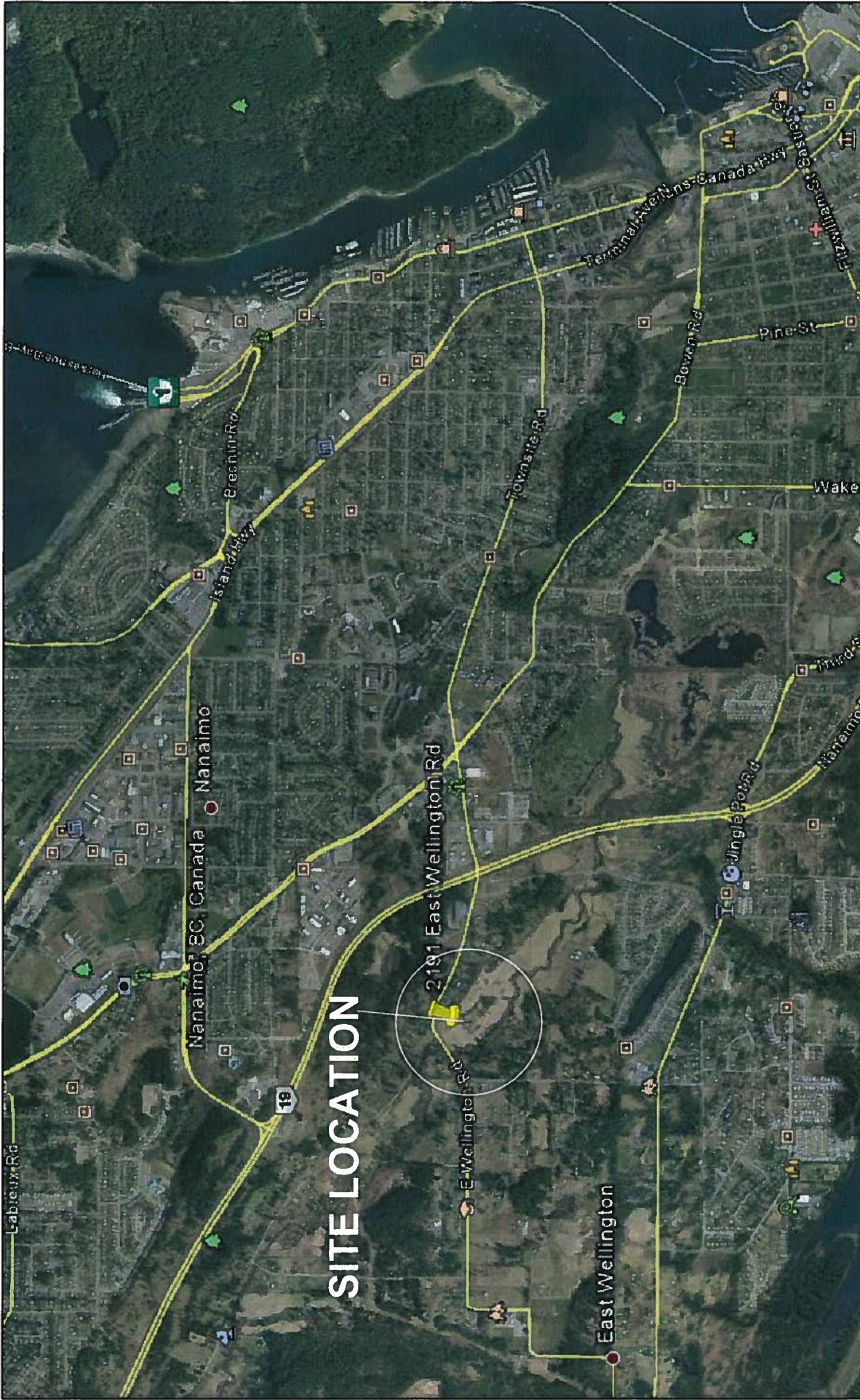
BC Ministry of Natural Resource Operations Archaeological Branch. Pers. Comm. Diana Cooper 13/04/11.

City of Nanaimo Habitat Atlas. http://enviro.nanaimo.ca/index.cfm?tab_ID=3&content_ID=7
Jungen, J.R., 1989. Soils of Southern Vancouver Island. Ministry of Environment. Technical Report 17.

Green, R.N and K. Klinka, 1994. *A Field Guide for Site Identification and Interpretation for the Vancouver Forest Region*. 285 pp

Pojar and Mackinnon, 1994. *Plants of Coastal British Columbia Including Washington, Oregon and Alaska*. Lone Pine Publishing . 527 pp.

**FIGURE 1
SITE LOCATION MAP**



SITE LOCATION

2191 East Wellington Rd

CLIENT
 DRAWING TITLE
 DATE: APRIL 13, 2011 DRAWING NO. N063-043-E1


PROJECT
 2191 EAST WELLINGTON RD
 CHATWIN
 ENGINEERING
 LIMITED



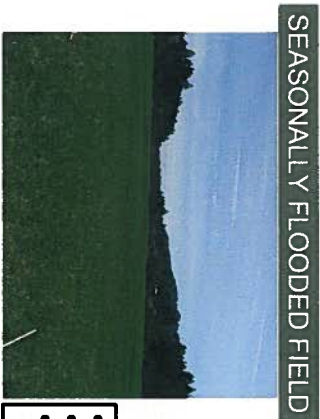
**FIGURE 2
WATERCOURSE MAP & WETTED FEATURES**



CLIENT CITY OF NANAIMO
 DRAWING TITLE WATERCOURSE & WETTED FEATURES
 DATE: APRIL 13, 2011 DRAWING NO. N063-043-F2

PROJECT 2191 EAST WELLINGTON RD

 CHATWIN
 ENGINEERING
 LIMITED

**FIGURE 3
HABITAT MAP**



SEASONALLY FLOODED FIELD

- GRASS
- BUTTERCUP
- SEDGES IN WET AREAS



MOSS BLUFFS

- BIG LEAF MAPLE
- RED ALDER
- SWORD FERN
- SNOWBERRY
- MOSS
- LICORICE FERN
- FAWN LILY



TREED EDGE HABITAT

- TREMBLING ASPEN
- RED ALDER
- RED OSIER DOGWOOD
- HARDHACK



RIPARIAN BUFFER TREE DOMINANT

- DOUGLAS FIR
- BIG LEAF MAPLE
- RED ALDER
- SNOWBERRY
- NOOTKA ROSE
- INDIAN PLUM



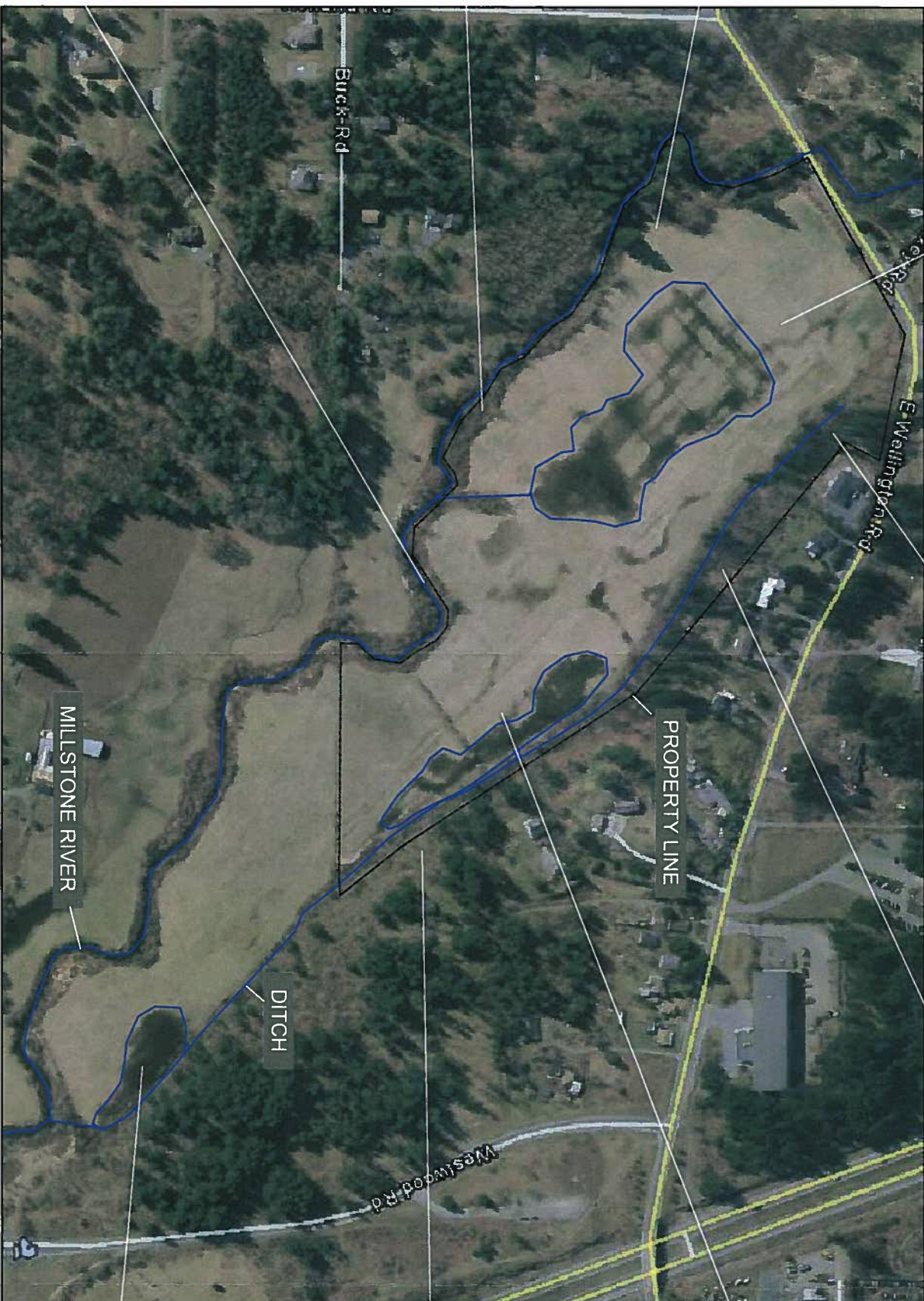
RIPARIAN BUFFER SHRUB DOMINANT

- HARDHACK
- THIMBLEBERRY
- NOOTKA ROSE
- SNOWBERRY
- BRACKEN FERN
- INDIAN PLUM
- HAWTHORN



RIPARIAN BUFFER YOUNG MAPLE

- YOUNG MAPLE
- HAWTHORN
- SNOWBERRY
- HARDHACK
- NOOTKA ROSE
- THIMBLEBERRY



TREED EDGE HABITAT

- DOUGLAS FIR
- GRAND FIR
- WILLOW
- ALDER
- SNOWBERRY



ROCKY ESCARPMENT

- GARRY OAK
- RED OSIER DOGWOOD
- REED CANARY GRASS



PONDED AREA

- STANDING WATER ~40CM
- GRASS
- RUSHES/SEDGES
- BUTTERCUP

HABITAT MAP

N063-043-F3

LEGEND:

SCALE: NTS

CITY OF NANAIMO



**East Wellington Road Park
City of Nanaimo
April 2011**

**APPENDIX A
SITE PHOTOGRAPHS**

**2191 East Wellington Road
Photo Sheet 1**



Photo 1. Looking southeast across the property from East Wellington Road. The rocky escarpment is to the left side of the photo. The Millstone River is to the right side of the photo. Wetted areas are visible in the field.

Photo Sheet 2

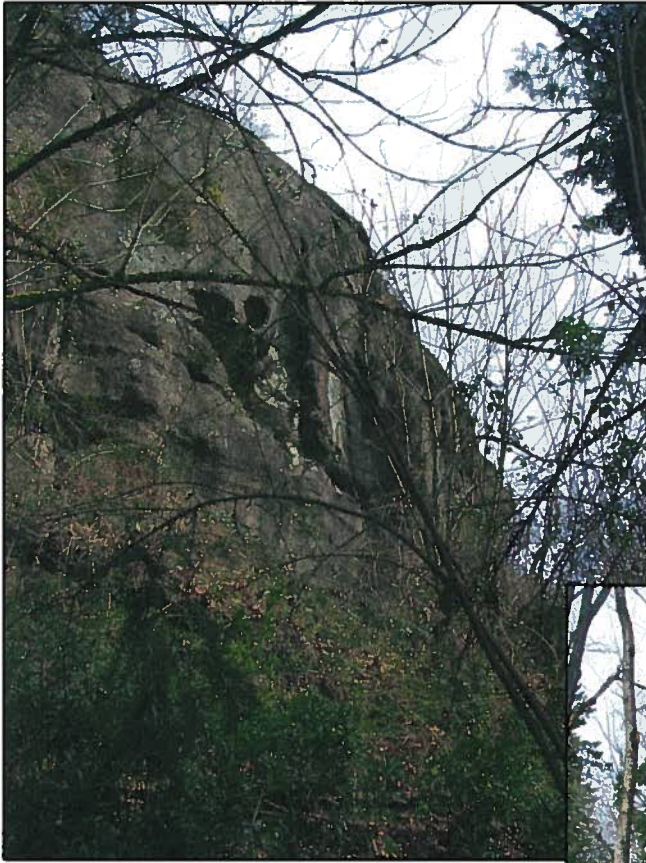


Photo 2 & 3. Showing the rocky escarpment that runs along the northeast side of the property.



Photo 4. Fawn lilies growing in patches on the rocky bluffs.

Photo Sheet 3



Photo 5. Showing the rocky escarpment that runs along the northeast side of the property with the ditch along the bottom.



Photo 6. Showing a photo of the ditch and ponded water at the base of the rocky escarpment providing amphibian habitat. A sanitary alignment runs along the northeast side of the ditch.

Photo Sheet 4



Photo 7. Looking downstream along the Millstone River near the northwest corner of the property where there is mature canopy cover.



Photo 8. Looking upstream along the Millstone River near the side channel where the riparian vegetation is comprised of shrubs.

Photo Sheet 5



Photo 9. Showing the riparian vegetation along the Millstone River and Himalayan blackberry providing good edge habitat for various bird species.



Photo 10. Showing another section of the Millstone River riparian cover dominated by shrubs providing nesting habitat for song birds.

Photo Sheet 6



Photo 11. Showing the short side channel identified by the stand of young alder trees.



Photo12. Showing a close-up of the side channel that is clogged with woody debris from recent flooding.

Photo Sheet 8



Photo 13. Looking across the central wetted area of the field from the side channel where ponds and side channels could be excavated to improve fish habitat.

Photo Sheet 9



Photo 14. Within the adjacent property to the southeast and where the ditch spills out to a ponded area. The ditch enters a channel to the Millstone River at the shrub line seen in the back of the photo.

APPENDIX B
FISS DATABASE SEARCH RESULTS

**APPENDIX B
FISS DATABASE SEARCH RESULTS**

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Fisheries Inventory - FISS Fish Distributions Report

50 record(s) matched your query.
 Report created on : Mon Apr 11 14:32:44 PDT 2011

Your report was based on the following criteria:

Gazetted Name/Alias : Millstone River
 Watershed Code : 920-395400
 Ordered By : Gazetted Name

Gazetted Name	Region Code	Species Name	Stock Type	Stock Char	Stock Name	Management Class	Activity	Map 1	Point 1	Type 1	Map 2	Point 2	Type 2	Refs And Dates	DFO District	DFO Sub-District	DFO Watershed Habitat Code
MILLSTONE RIVER	1	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	1046	Hatchery production	OBL Fish observed at this point or zone		307190	W				(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	1048	Hatchery production	OBL Fish observed at this point or zone		307190	W				(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	1049	Hatchery production	OBL Fish observed at this point or zone		307190	W				(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	1050	Hatchery production	OBL Fish observed at this point or zone		307190	W				(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	1056	Hatchery production	OBL Fish observed at this point or zone		307190	W				(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	1057	Hatchery production	OBL Fish observed at this point or zone		307190	W				(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	1058	Hatchery production	OBL Fish observed at this point or zone		307190	W				(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	1059	Hatchery production	OBL Fish observed at this point or zone		307190	W				(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400

MILLSTONE 1 RIVER	ACT	Cutthroat Trout (Anadromous)	NOT SPECIF	Not Specif	Augmented	OBL Fish observed at this point or zone	092G04 22	U	(14-9, 01-JAN-1993)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified at this point or zone	OBL Fish observed at this point or zone	092F01 336562 P	P	(RABSVY-175209, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified at this point or zone	OBL Fish observed at this point or zone	092F01 340728 P	P	(RABSVY-182248, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified at this point or zone	OBL Fish observed at this point or zone	092F01 340729 P	P	(RABSVY-182249, 16-MAY-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CC	Sculpin (General)	NOT SPECIF	Not Specif	Not Specified at this point or zone	OBL Fish observed at this point or zone	092F01 340730 P	P	(RABSVY-182251, 13-SEP-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CH	Chinook Salmon	NOT SPECIF	Anadromous	Not Specified at this point or zone	OBL Fish observed at this point or zone	307190 W	W	(17-21, 01-JAN-1982)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified at this point or zone	OBL Fish observed at this point or zone	092G04 18	P	(SISSM01, 01-JAN-1995)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CM	Chum Salmon	NOT SPECIF	Anadromous	Not Specified Spawning location	SPL	092G04 19	U	(14-9, 01-JAN-1993) (17-20, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified at this point or zone	OBL Fish observed at this point or zone	092F01 18	P	(14-12, no date) (14-9, 01-JAN-1993)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified at this point or zone	OBL Fish observed at this point or zone	092G04 20	P	(SISSM01, 01-JAN-1995)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CO	Coho Salmon	NOT SPECIF	Anadromous	Not Specified Spawning location	SPL	092G04 21	U	(14-9, 01-JAN-1993) (17-15, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CT	Cutthroat Trout	NOT SPECIF	Fluvial	Wild indigenous	OBL Fish observed at this point or zone	092F01 6500	U	(14-9, 01-JAN-1993) (17-20, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE 1 RIVER	CT	Cutthroat Trout	NOT SPECIF	Not Specif	Not Specified at this point or zone	OBL Fish observed at this point or zone	092F01 336562 P	P	(RABSVY-175209, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400

MILLSTONE RIVER	1	CT	Cutthroat Trout	NOT SPECIF	Not Specif	092F01 340728 P	(RABSVY-182248, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	CT	Cutthroat Trout	NOT SPECIF	Not Specif	092F01 340729 P	(RABSVY-182249, 16-MAY-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	CT	Cutthroat Trout	NOT SPECIF	Not Specif	092F01 340730 P	(RABSVY-182251, 13-SEP-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	CT	Cutthroat Trout	NOT SPECIF	Not Specif	307190 W	(HQ1478, 01-FEB-1998)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	PMB	Pumpkinseed	NOT SPECIF	Not Specif	092F01 336562 P	(RABSVY-175209, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	PMB	Pumpkinseed	NOT SPECIF	Not Specif	092F01 340730 P	(RABSVY-182251, 13-SEP-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	PMB	Pumpkinseed	NOT SPECIF	Not Specif	307190 W	(17-14, 01-JAN-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	SB	Stickleback (General)	NOT SPECIF	Not Specif	092F01 336562 P	(RABSVY-175209, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	SB	Stickleback (General)	NOT SPECIF	Not Specif	092F01 340728 P	(RABSVY-182248, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	SB	Stickleback (General)	NOT SPECIF	Not Specif	092F01 340729 P	(RABSVY-182249, 16-MAY-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Anadromous WINTER Augmented	092G04 24 P	(14-31, 01-JAN-1994) (14-9, 01-JAN-1993)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Anadromous WINTER Augmented	092G04 23 P	(14-9, 01-JAN-1993) (17-22, no date)	3	17	SOUTH 920-COAST 395400

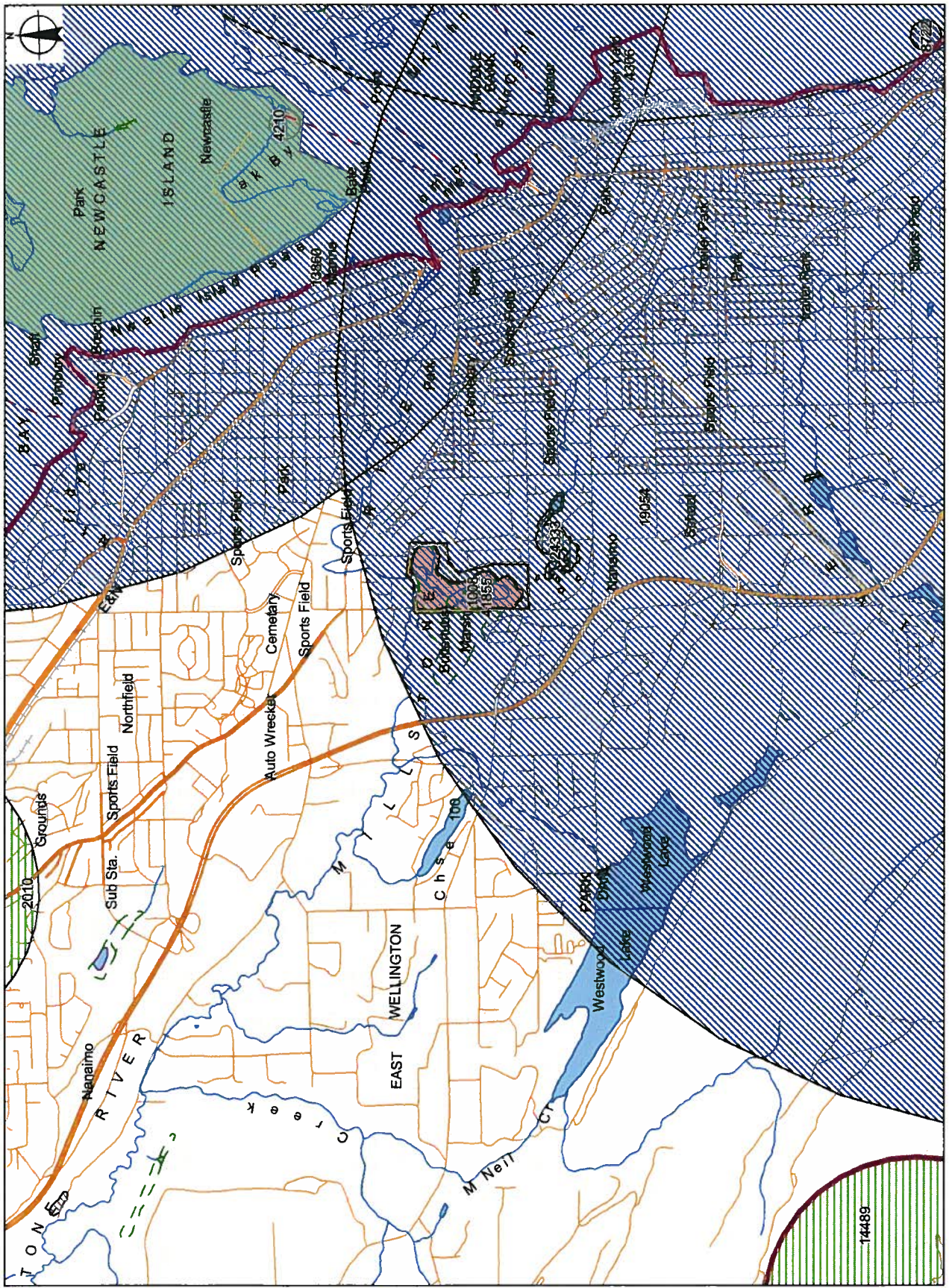
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	158	Hatchery production	location OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	164	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	167	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	168	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	169	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	170	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	171	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	172	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	173	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	174	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif	3695	Hatchery production	OBL Fish observed at this point or zone	307190 W	(REL-SUM, no date)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	ST	Steelhead	NOT SPECIF	Not Specif		Not Specified	OBL Fish observed at this point or zone	307190 W	(STLHD-SUM, no date)	3	17	SOUTH 920-COAST 395400

MILLSTONE RIVER	1	TSB	Threespine Stickleback	NOT SPECIF	Not Specif	Not Specified at this point or zone	307190 W	(14-9, 01-JAN-1993)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	WST	Steelhead (Winter-run)	NOT SPECIF	Not Specif	Not Specified at this point or zone	092F01 336562 P	(RABSVY-175209, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	WST	Steelhead (Winter-run)	NOT SPECIF	Not Specif	Not Specified at this point or zone	092F01 340728 P	(RABSVY-182248, 02-OCT-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	WST	Steelhead (Winter-run)	NOT SPECIF	Not Specif	Not Specified at this point or zone	092F01 340729 P	(RABSVY-182249, 16-MAY-1979)	3	17	SOUTH 920-COAST 395400
MILLSTONE RIVER	1	WST	Steelhead (Winter-run)	NOT SPECIF	Not Specif	Not Specified at this point or zone	092F01 340730 P	(RABSVY-182251, 13-SEP-1979)	3	17	SOUTH 920-COAST 395400

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**APPENDIX C
BC CDC SEARCH RESULTS**



BC Species and Ecosystems Explorer Search Results

							Status		
Scientific Name	English Name	RISC Code	Provincial	BC List	COSEWIC	Global	CF	Priority	
<i>Abronia latifolia</i>	yellow sand-verbena	ABROLAT	S3 (2002)	Blue		G5 (1988)		1	
<i>Accipiter gentilis laingi</i>	Northern Goshawk, <i>laingi</i> subspecies	B-NOGO-LA	S2B (2010)	Red	T (2000)	G5T2 (2008)		1	
<i>Allium amplexans</i>	slimleaf onion	ALLIAMP	S3 (2001)	Blue		G4 (1988)		2	
<i>Allium crenulatum</i>	Olympic onion	ALLICRE	S2 (2000)	Red		G4 (1988)		3	
<i>Allium geeyeri</i> var. <i>tenerum</i>	Geyer's onion	ALLIGEY2	S2S3 (2005)	Blue		G4G5T3T5 (2002)		3	
<i>Anagallis minima</i>	chaffweed	ANAGMIN	S3 (2008)	Blue		G5 (1984)		2	
<i>Ardea herodias fannini</i>	Great Blue Heron, <i>fannini</i> subspecies	B-GBHE-FA	S2S3B,S4N (2009)	Blue	SC (2008)	G5T4 (1997)		1	
<i>Asio flammeus</i>	Short-eared Owl	B-SEOW	S3B,S2N (2009)	Blue	SC (2008)	G5 (2008)		2	
<i>Bartramia stricta</i>	apple moss	BARTSTR	S2 (2008)	Red	E (2009)	GU (2006)		2	
<i>Botrychium simplex</i>	least moonwort	BOTRSIM	S2S3 (2000)	Blue		G5 (1998)		3	
<i>Brachyramphus marmoratus</i>	Marbled Murrelet	B-MAMU	S3B,S3N (2010)	Blue	T (2000)	G3G4 (2008)		1	
<i>Bulbostylis capillaris</i>	densetuft hairsedge	BULBCAP	S1 (2006)	Red		G5 (1984)		2	
<i>Butorides virescens</i>	Green Heron	B-GRHE	S3S4B (2009)	Blue		G5 (1996)		4	
<i>Callophrys eryphon sheltonensis</i>	Western Pine Elfin, <i>sheltonensis</i> subspecies	IL-CALERY-SH	S3 (2006)	Blue		G5TNR		4	
<i>Callophrys mossii mossii</i>	Moss' Elfin, <i>mossii</i> subspecies	IL-CALMOS-MO	S2S3 (2006)	Blue		G4T4 (2001)		2	
<i>Carex feta</i>	green-sheathed sedge	CAREFET	S2 (2002)	Red		G5 (1990)		2	
<i>Carex tumulicola</i>	foothill sedge	CARETUM	S2 (2007)	Red	E (2008)	G4 (1985)		2	
<i>Carychium occidentale</i>	Western Thorn	IM-CAROCC	S2S3 (2008)	Blue		G3G4 (2002)		2	
<i>Ceratophyllum echinatum</i>	spring hornwort	CERAECH	S3 (2002)	Blue		G4? (1995)		4	
<i>Cercyonis pegala incana</i>	Common Wood-nymph, <i>incana</i> subspecies	IL-CERPEG-IN	S2 (2006)	Red		G5T4T5 (2003)		2	
<i>Chamaesyce serpyllifolia</i> ssp. <i>serpyllifolia</i>	thyme-leaved spurge	CHAMSER1	S2S3 (2000)	Blue		G5T5 (2001)		2	
<i>Chrysemys picta</i> pop. 1	Western Painted Turtle - Pacific Coast Population	R-CHPI-01	S2 (2007)	Red	E (2006)	G5TNR (2007)		2	
<i>Coenonympha tullia insulana</i>	Common Ringlet, <i>insulana</i> subspecies	IL-COETUL-IN	S1 (2006)	Red		G5T3T4 (1998)		1	
<i>Contopus cooperi</i>	Olive-sided Flycatcher	B-OSFL	S3S4B (2009)	Blue	T (2007)	G4 (2008)		2	
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	M-COTO	S3 (2006)	Blue		G4 (1996)		2	
<i>Cuscuta campestris</i>	field dodder	CUSCPEN	S2S3 (2000)	Blue		G5 (2007)		2	

<i>Cyperus squarrosus</i>	awned cyperus	CYPESQU	S3 (2001)	Blue		G5 (1993)	2
<i>Dryopteris arguta</i>	coastal wood fern	DRYOARG	S2S3 (2000)	Blue	SC (2001)	G5 (1999)	2
<i>Entosthodon fascicularis</i>	banded cord-moss	ENTOFAS	S2S3 (2007)	Blue	SC (2005)	G4G5 (2001)	2
<i>Epilobium densiflorum</i>	dense spike-primrose	EPILDEN	S1 (2010)	Red	E (2005)	G5 (1988)	1
<i>Eremophila alpestris strigata</i>	Horned Lark, <i>strigata</i> subspecies	B-HOLA-ST	SXB, SNA (2009)	Red	E (2003)	G5T2 (2008)	1
<i>Erynnis propertius</i>	Propertius Duskywing	IL-ERYPRO	S2S3 (2006)	Blue		G5 (2009)	2
<i>Euchloe ausonides insulanus</i>	Large Marble, <i>insulanus</i> subspecies	IL-EUCAUS-IN	SX (2006)	Red	XT (2010)	G5T1 (2010)	2
<i>Euphyes vestris</i>	Dun Skipper	IL-EUPVES	S3 (2006)	Blue	T (2000)	G5 (2006)	2
<i>Falco peregrinus anatum</i>	Peregrine Falcon, <i>anatum</i> subspecies	B-PEFA-AN	S2B (2005)	Red	SC (2007)	G4T4 (2006)	2
<i>Falco peregrinus pealei</i>	Peregrine Falcon, <i>pealei</i> subspecies	B-PEFA-PE	S3B (2005)	Blue	SC (2007)	G4T3 (1997)	1
<i>Githopsis specularioides</i>	common bluecup	GITHSPE	S2S3 (2000)	Blue		G5 (1994)	2
<i>Glaucidium gnoma swarthi</i>	Northern Pygmy-Owl, <i>swarthi</i> subspecies	B-NPOW-SW	S3 (2009)	Blue		G4G5T3Q (1996)	1
<i>Hemphillia dromedarius</i>	Dromedary Jumping-slug	IM-HEMDRO	S2 (2008)	Red	T (2003)	G3G4 (2005)	2
<i>Hemphillia glandulosa</i>	Warty Jumping-slug	IM-HEMGLA	S2S3 (2008)	Blue	SC (2003)	G3G4 (2005)	2
<i>Hesperia colorado oregonia</i>	Western Branded Skipper, <i>oregonia</i> subspecies	IL-HESCOL-OR	S2S3 (2006)	Blue		G5T3T4 (2000)	2
<i>Hirundo rustica</i>	Barn Swallow	B-BASW	S3S4B (2009)	Blue		G5 (1996)	2
<i>Isoetes nuttallii</i>	Nuttall's quillwort	ISOENUT	S3 (2001)	Blue		G4? (1995)	2
<i>Juncus oxymeris</i>	pointed rush	JUNCOXY	S2S3 (2000)	Blue		G5 (1993)	3
<i>Limnanthes macounii</i>	Macoun's meadow-foam	LIMNMAC	S2 (2007)	Red	T (2004)	G2 (2006)	1
<i>Lotus pinnatus</i>	bog bird's-foot trefoil	LOTUPIN	S1 (2000)	Red	E (2004)	G4G5 (2001)	1
<i>Malaxis brachypoda</i>	white adder's-mouth orchid	MALABRA	S2S3 (2000)	Blue		G4Q (2002)	3
<i>Meconella oregana</i>	white meconella	MECOORE	S1 (2005)	Red	E (2005)	G2G3 (2004)	1
<i>Megalodonta beckii</i>	water marigold	MEGABEC	S3 (2001)	Blue		G4G5 (1984)	4
<i>Megascops kennicottii kennicottii</i>	Western Screech-Owl, <i>kennicottii</i> subspecies	B-WSOW-KE	S3 (2009)	Blue	SC (2002)	G5T4 (2003)	1
<i>Microseris bigelovii</i>	coast microseris	MICRBIG	S1 (2000)	Red	E (2006)	G4 (1995)	1
<i>Monadenia fidelis</i>	Pacific Sideband	IM-MONFID	S3S4 (2008)	Blue		G4G5 (2002)	2
<i>Mustela erminea anguinae</i>	Ermine, <i>anguinae</i> subspecies	M-MUER-AN	S3 (2006)	Blue		G5T3 (1996)	2

<i>Myotis keenii</i>	Keen's Myotis	M-MYKE	S1S3 (2006)	Red	DD (2003)	G2G3 (2006)	1
<i>Myriophyllum quitense</i>	waterwort water-milfoil	MYRIQUI	S2S3 (2000)	Blue		G4? (1995)	3
<i>Nearctula sp. 1</i>	Threaded Vertigo	IM-NEASP1	S2 (2008)	Red	SC (2010)	G3G5 (2006)	2
<i>Oncorhynchus clarkii clarkii</i>	Cutthroat Trout, <i>clarkii</i> subspecies	F-ONCL-CL	S3S4 (2004)	Blue		G4T4 (1997)	2
<i>Packera macounii</i>	Macoun's groundsel	PACKMAC	S3 (2001)	Blue		G5 (1993)	2
<i>Patagioenas fasciata</i>	Band-tailed Pigeon	B-BTPI	S3S4B (2009)	Blue	SC (2008)	G4 (2000)	2
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	B-DCCO	S3B (2005)	Blue	NAR (1978)	G5 (1999)	2
<i>Plebejus icarioides blackmorei</i>	Boisduval's Blue, <i>blackmorei</i> subspecies	IL-PLEICA-BL	S3 (2006)	Blue		G5T3 (2006)	3
<i>Plebejus saepiolus insulanus</i>	Greenish Blue, <i>insulanus</i> subspecies	IL-PLESAE-IN	SH (2006)	Red	E (2000)	G5TH (2003)	1
<i>Poocetes gramineus affinis</i>	Vesper Sparrow, <i>affinis</i> subspecies	B-VESP-AF	S1B (2005)	Red	E (2006)	G5T3 (1996)	1
<i>Pristiloma johnsoni</i>	Broadwhorl Tightcoil	IM-PRJJOH	S2S3 (2008)	Blue		G2G3 (2004)	2
<i>Progne subis</i>	Purple Martin	B-PUMA	S2S3B (2005)	Blue		G5 (1996)	3
<i>Promenetus umbilicatellus</i>	Umbilicate Sprite	IM-PROUMB	S3S4 (2008)	Blue		G4 (2000)	2
<i>Prophysaon vanattae</i>	Scarletback Taildropper	IM-PROVAN	S3S4 (2008)	Blue		G4 (2002)	4
<i>Psilocarphus tenellus</i>	slender woolly-heads	PSILTEN	S3 (2006)	Blue	NAR (1996)	G4 (1997)	4
<i>Ranunculus alismifolius var. alismifolius</i>	water-plantain buttercup	RANUALI1	S1 (2009)	Red	E (2009)	G5T5 (1995)	1
<i>Rubus nivalis</i>	snow bramble	RUBUNIV	S3? (2008)	Blue		G4? (1990)	2
<i>Rupertia physodes</i>	California-tea	RUPEPHY	S3 (2001)	Blue		G4 (1985)	2
<i>Salvelinus malma</i>	Dolly Varden	F-SAMA	S3S4 (2004)	Blue		G5 (2000)	2
<i>Schoenoplectus americanus</i>	Olney's bulrush	SCHOAME	S1 (2000)	Red		G5 (1984)	1
<i>Sericocarpus rigidus</i>	white-top aster	ASTECUR	S2 (2008)	Red	SC (2009)	G3 (2007)	1
<i>Sorex palustris brooksi</i>	American Water Shrew, <i>brooksi</i> subspecies	M-SOPA-BR	S2 (2010)	Red		G5T2 (1996)	1
<i>Speyeria zerene bremnerii</i>	Zerene Fritillary, <i>bremnerii</i> subspecies	IL-SPEZER-BR	S2 (2006)	Red		G5T3T4 (1998)	2
<i>Sympetrum vicinum</i>	Autumn Meadowhawk	IO-SYMVIC	S3S4 (2004)	Blue		G5 (1985)	4
<i>Syntrichia laevipila</i>	twisted oak moss	TORTLAE2	S2S3 (2007)	Blue	SC (2004)	GNR	2
<i>Toxicodendron diversilobum</i>	poison oak	TOXIDIV	S2S3 (2000)	Blue		G5 (1999)	2
<i>Trifolium dichotomum</i>	Macrae's clover	TRIFDIC	S2S3 (2007)	Blue		G4? (2002)	2

<i>Tyto alba</i>	Barn Owl	B-BNOW	S3 (2009)	Blue	T (2010)	G5 (1996)	2
<i>Uria aalge</i>	Common Murre	B-COMU	S2B,S4N (2005)	Red		G5 (2003)	2
<i>Uropappus lindleyi</i>	Lindley's microseris	UROPLIN	S1 (2000)	Red	E (2008)	G5 (1990)	1
<i>Viola praemorsa</i> ssp. <i>praemorsa</i>	yellow montane violet	VIOLPRA1	S2 (2005)	Red	E (2007)	G5T3T5 (2000)	1
<i>Yabea microcarpa</i>	California hedge- parsley	YABEMIC	S1S2 (2008)	Red		G5? (1990)	1

Search Summary

Time Performed Thu Apr 14 13:12:32 PDT 2011

Results 85 records.

Search Criteria Species Group:Plants & Animals
 AND BC Conservation Status:Red (Extirpated, Endangered, or Threatened) OR Blue (Special Concern)
 AND Forest Districts:South Island Forest District (DSI) (Restricted to Red, Blue, and Legally designated species)
 AND MOE Regions:1- Vancouver Island (Restricted to Red, Blue, and Legally designated species)
 AND Regional Districts:Nanaimo (RDN) (Restricted to Red, Blue, and Legally designated species)
 AND Habitat Types:Riverine,Terrestrial
 AND BGC Zone:CDF
 Sort Order:Scientific Name Ascending

Notes 1. Citation: B.C. Conservation Data Centre. 2011. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed Apr 14, 2011).

2. Forest District, MoE Region, Regional District and habitat lists are restricted to species that breed in the Forest District, MoE Region, Regional District or habitat (i.e., species will not be placed on lists where they occur only as migrants).

[Modify Search](#) | [New Search](#) | [Results](#)

**APPENDIX D
ARCHAEOLOGICAL SEARCH RESULTS**

Sarah Bonar

From: Cooper, Diana NRO:EX [Diana.Cooper@gov.bc.ca]
Sent: April 13, 2011 3:36 PM
To: Sarah Bonar
Subject: RE: Data Request: SARAH BONAR R.P.BIO - R.P.Bio

Hello Sarah!

Thank you for your archaeological data request regarding 2191 East Wellington Road in Nanaimo.

I checked Provincial records for known archaeological sites, and while there are none mapped on the subject property, a large proportion of it has high potential for previously unrecorded archaeological sites. Because all archaeological sites, recorded or not, are protected under the Heritage Conservation Act, an Archaeological Impact Assessment (AIA) of the study area, completed by a qualified professional archaeologist is recommended prior to any ground-altering development.

I have included a screen shot of the area for your reference.

Please let me know if you have any questions.

Regards,

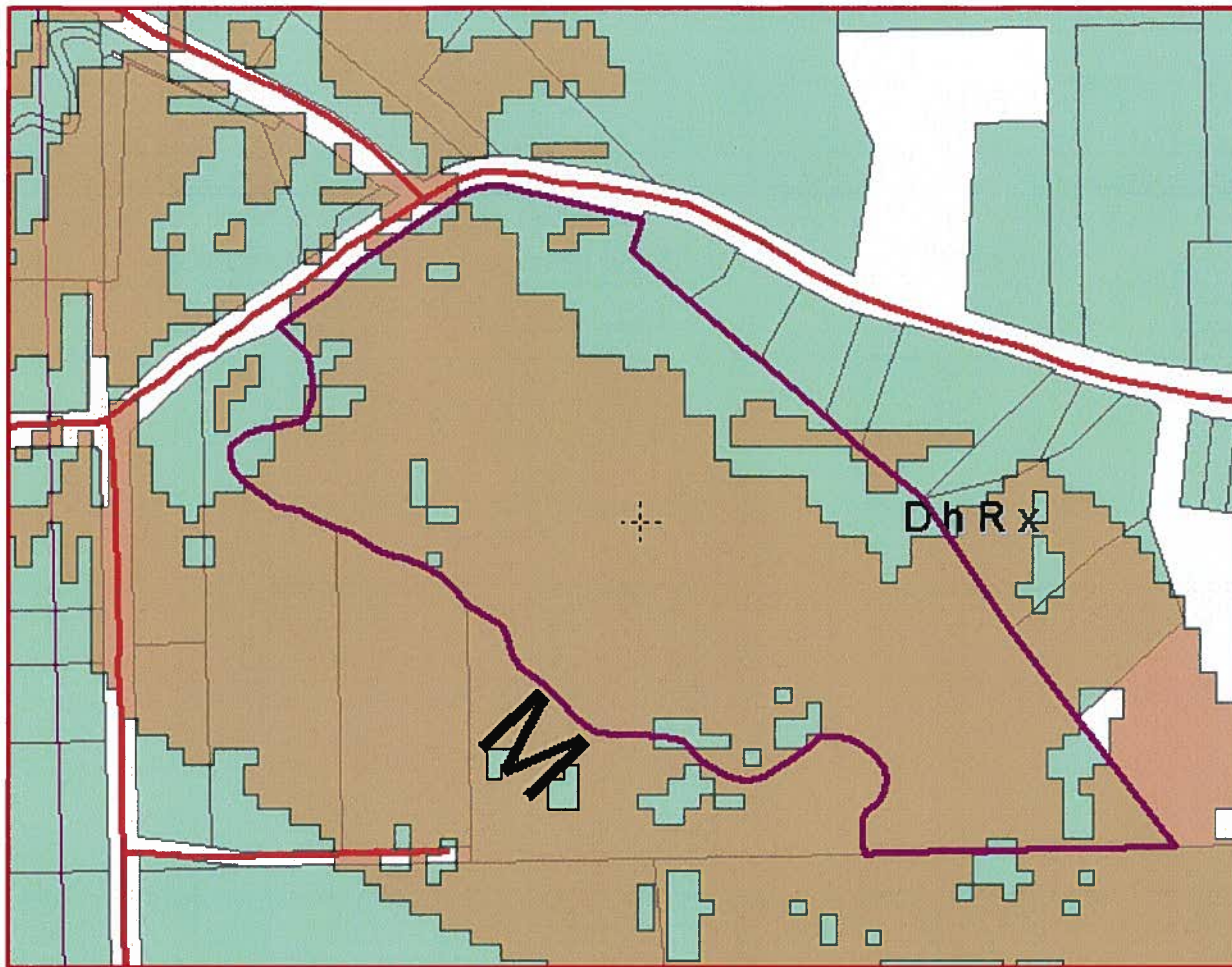
Diana

Diana Cooper | Archaeological Site Inventory Info & Data Administrator

Archaeology Branch | Ministry of Forests, Lands and Natural Resource Operations
Unit 3 - 1250 Quadra Street, Victoria BC V8W 2K7 | PO Box 9816 Stn Prov Govt, Victoria, BC V8W 9W3
Phone: 250-953-3343 | Fax: 250-953-3340 | e-mail: diana.cooper@gov.bc.ca

Visit our website at: <http://www.tti.gov.bc.ca/archaeology/>

The purple outline is our current cadastral data for the area. The brown areas have high potential for unrecorded archaeological deposits.



From: SBONAR@CHATWINENGINEERING.COM [mailto:SBONAR@CHATWINENGINEERING.COM]

Sent: Tuesday, April 12, 2011 12:50 PM

To: ARCWEB FEEDBACK NRO:EX

Subject: Data Request: SARAH BONAR R.P.BIO - R.P.Bio

Terms and Conditions Accepted

Yes

Name SARAH BONAR R.P.BIO

Affiliation R.P.Bio

Address 1614 MOREY ROAD

City NANAIMO

Province BC

Postal Code V9S 1J7

Phone Number (250)753-9171

Fax Number (250)754-4459

Email SBONAR@CHATWINENGINEERING.COM

Why Site Information is Required Biophysical assessment for the City of Nanaimo. The City has recently acquired the property for park land and proposed fish habitat enhancement opportunities within the property that will require excavation. The property lies within the floodplain of the Millstone River. The Address is 2191 East Wellington Road.

Third Party Access City of Nanaimo.

Information
Requested

File Attachment#1 Google 1.jpg

File Attachment#2

File Attachment#3

File Attachment#4

File Attachment#5

Format for Requested Text Data PDF

GIS Data No