

**Attachment 5**



**Zoning Amendment Application Environmental Impact Assessment**

**7025 Herbert Road, Vernon, BC**

Kofoed Contracting Inc.



| <b>Revision History</b> |             |  |                          |
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## Disclaimer

This report is rendered solely for the use of Kofoed Contracting Ltd. (the Client) in connection with the zoning amendment application for a proposed development at 7025 Herbert Road, Vernon, BC (the Project), and no person may rely on it for any other purpose without Triton Environmental Consultants Ltd.'s (Triton) prior written approval. Should a third party use this report without Triton's approval, they may not rely upon it. Triton accepts no responsibility for loss or damages suffered by any third party as a result of decisions made or actions taken based on this report.

The objective of this report is to address the following scope requirements:

- Prepare an Environmental Impact Assessment (EIA) as per the requirements set out by the City of Vernon's Official Community Plan and Environmental Management Areas strategy.

This report is based on facts and opinions contained within the referenced documents, including the results of any data collection programs carried out in relation to this report. We have attempted to identify and consider facts and documents relevant to the scope of work, accurate as of the time period during which we conducted this analysis. However, the results, our opinions, or recommendations may change if new information becomes available or if information we have relied on is altered.

The following assumptions were relied on during the preparation of this report:

- The GIS mapping from the Regional District of North Okanagan (RDNO) is accurate for the needs of this report; and
- The provincial and federal web link mapping resources and layers are satisfactory with respect to reported data.

We applied accepted professional practices and standards in developing and interpreting data. While we used accepted professional practices in interpreting data provided by the Client or third-party sources, we did not verify the accuracy of any such data.

This report must be considered as a whole; selecting only portions of this report may result in a misleading view of the results, our opinions, or recommendations.

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## 1.0 Introduction

### 1.1 Project Purpose

Triton Environmental Consultants Ltd. (Triton) was retained by Kofoed Contracting Ltd. (the Client) to complete a habitat assessment and prepare an Environmental Impact Assessment (EIA) at 7025 Herbert Road, Vernon, BC (the Property). The Client has submitted an application to amend the zoning of the Property to the City of Vernon (the City). The services of a qualified professional are required in accordance with the City's Environmental Management Areas (EMA) Strategy (City of Vernon, 2012) to support the zoning amendment application and the Development Permit application for the Property.

### 1.2 Methodology

This report was prepared through a review of the existing background information including maps, provincial databases, desktop resources, and reconnaissance field visits to the Property. Desktop review was completed prior to the site visit to identify the biophysical resources of the Property, as well as any potential environmental resources including rare and endangered species or critical habitat that could potentially occur. The sensitive ecosystem inventory (SEI) was reviewed, and SEI classifications were determined and verified during the site visit. Additional resources including the City's Official Community Plan (OCP) and EMA Strategy, and the Regional District of North Okanagan (RDNO) ArcGIS website (as well as additional web resources) were used to determine the location of the Property boundaries, Property description, and biodiversity indexes. Site visits were conducted to review the natural resource values associated with the Property and any potential sensitivities associated with the proposed development area. Photographs taken during the site visits are provided in Appendix 1.

### 1.3 Project Location

The Property is located at 7025 Herbert Road, Vernon and in the RDCO (Figure 1). The PID for the Property is 004-119-665 and it is 2.01 hectares in size. The legal description is Lot 3, Plan No. 29910, Section 18, Township 5, Osoyoos Division Yale District (Table 1). The Property is bounded on the west by Silver Star Road, to the northwest and west by Bates Roads, to the east by Herbert Road, and to the south by a residential development (Figure 2). The foothills residential neighborhood of Vernon is on the west side of Silver Star Road. The City limits end directly north of the Property and north of the Property are rural and agricultural properties.

**Table 1. Site description and classifications**

| <b>Classification</b>            | <b>Description</b>                         |
|----------------------------------|--|
| <b>Administrative Boundaries</b> |  |
| Forest Region                    | Thompson Okanagan Region                   |
| Forest District                  | Okanagan Shuswap Forest District           |
| Natural Resource District        | Okanagan Shuswap Natural Resource District |
| Watershed Group                  | Okanagan River                             |
| Regional District                | North Okanagan                             |

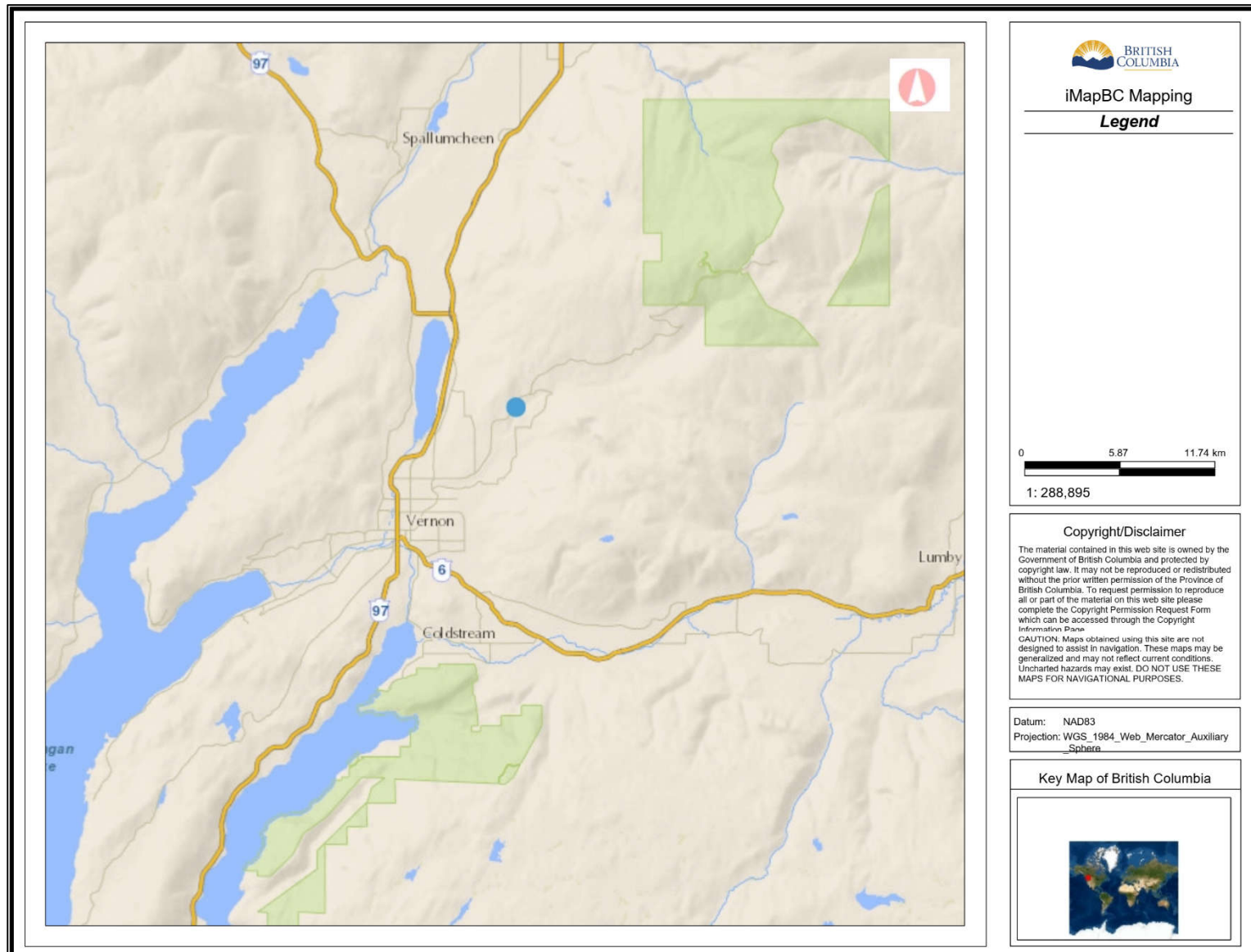
| General Location  |   |
|---|---|
| Municipality  | Vernon  |
| UTM   | 11U 342758 E 5575101 N  |
| Ecosystem Classification  |   |
| Ecodomain   | Dry   |
| Ecodivision   | Semi-Arid Steppe Highlands                                      |
| Ecoprovince   | Southern Interior   |
| Ecoregion   | Thompson Okanagan Plateau                                       |
| Ecosection  | Northern Okanagan Basin   |
| Biogeoclimatic Ecosystem Classification:<br>Biogeoclimatic Zone<br>Subzone<br>Variant | Interior Douglas Fir (IDF)<br>Very Dry Hot (xh)<br>Okanagan (1) |
| Elevation Range (m)   | ~ 650-670 m ASL   |

<sup>1</sup>Source: Province of British Columbia, 2021.

#### **1.4 Historic, Current, and Proposed Use and Access**

The Property has historically been used for residential and agricultural purposes. Existing structures at the Property include a mixture of residential and farm buildings which include two houses and outbuildings. Vehicle access to the Property and the houses is via two paved driveways, one accessed from Bates Road, and one accessed from Herbert Road. Hiking pathways are located at the end of Herbert Road off of the southern section of the Property. These pathways connect Herbert Road with Manning Place to the south. The Property is currently zoned country residential (CR) and a zoning amendment application has been submitted to the City. The Client proposes to build a multi-unit townhome development on the Property. A preliminary site plan of the proposed development is provided in Appendix 2. These plans are preliminary and are subject to change prior to submission of the Development Permit application and development.





**Figure 1. Project location (source: iMapBC)**

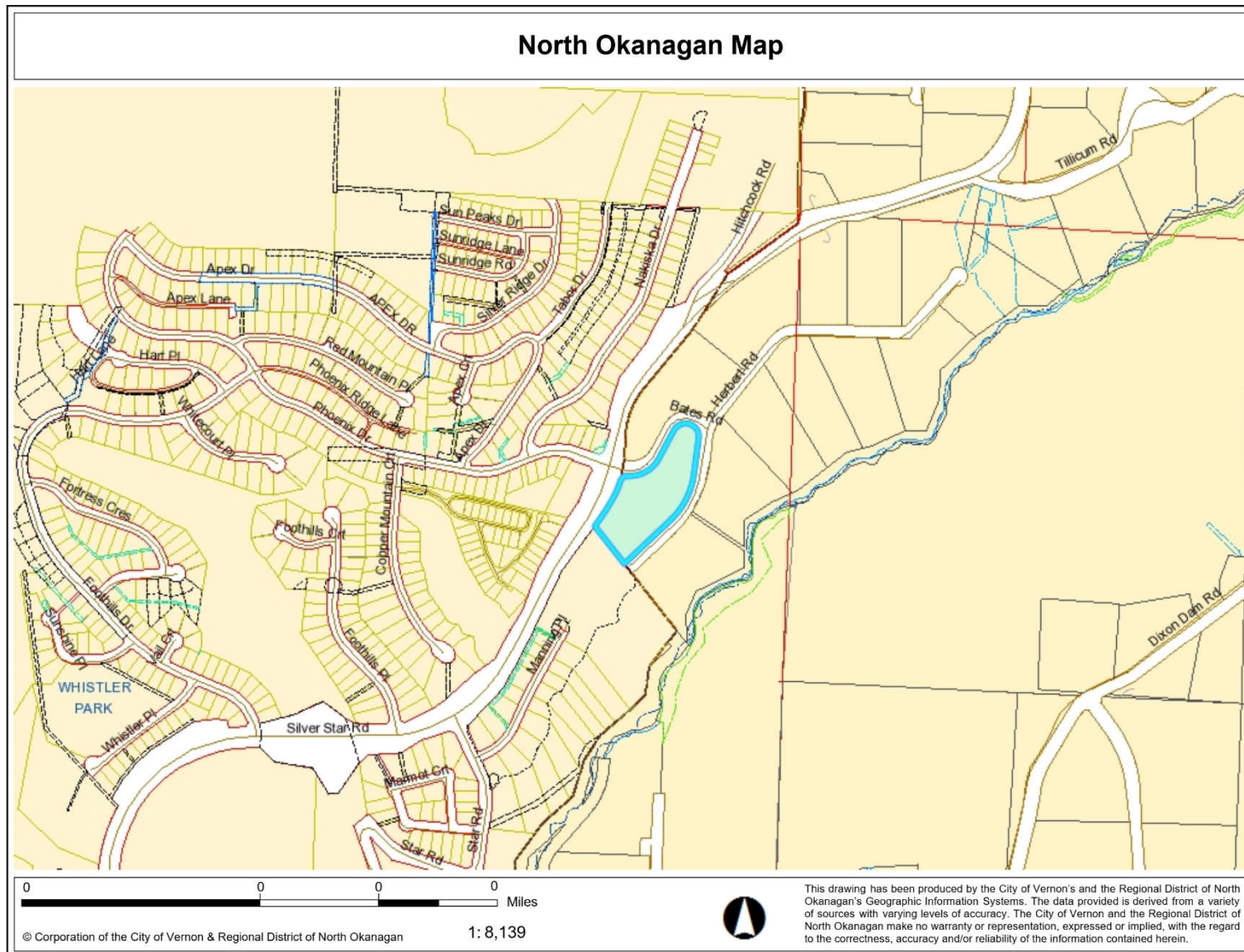


Figure 2. Project location (source: RDNO GIS)

## 2.0 Background Inventory Review

### 2.1 Property Overview

A desktop background review was conducted to collect existing information relevant to the area and identify potential environmental sensitivities which could occur within the area using provincial and federal government databases and mapping tools. The background review included searches for mapped watercourses and known occurrences of rare and/or endangered species known to be present or potentially present within the project area. Searches were conducted again in September 2022 to reflect current conditions of the Project area. Databases and sources utilized in the background review included:

- DataBC iMapBC Mapping Tool (DataBC, 2022);
- BC Ministry of Environment's (MOE) Fish Inventories Data Queries (FIDQ) (MOE, 2022);
- Sensitive Ecosystem Inventory (SEI): Vernon to Commonage (Iverson et al., 2005) and SEI: of the Okanagan Valley: Vernon to Osoyoos (Iverson et al., 2008);
- RDNO GIS mapping and associated layers (RDNO, 2022);
- BC Conservation Data Centre (CDC) BC Species and Ecosystems Explorer. (CDC, 2022); and
- The City of Vernon Environmental Management Areas Strategy (City of Vernon, 2012).

### 2.2 Biogeoclimatic Zone and Climate

According to the Biogeoclimatic Ecosystem Classification (BEC) for BC, the Property exists in the Interior Douglas Fir (IDF) biogeoclimatic zone within the Very Dry Hot subzone Okanagan variant (xh1) (DataBC, 2022). The climate of the Okanagan region is generally very dry as it is in the rain shadow of the Coast and Cascade mountain ranges. Warmest temperatures occur during June, July and August and the coldest month is January. Precipitation is mainly in the form of rain with highest rainfalls occurring in the summer months from May to September. The average amount of precipitation for the Okanagan Valley is approximately 350 mm per year (Meidinger, D., J.Pojar, 1991).

The forests of the IDF BEC zone are dominated by Douglas fir (*Pseudotsuga menziesii*) with sections of lodgepole pine (*Pinus contorta* var. *latifolia*), with ponderosa pine (*Pinus ponderosa*) found in the lower, drier elevations. The understory is dominated by pinegrass (*Calamagrostis rubescens*), birch-leaved spirea (*Spiraea betulifolia*), Saskatoon (*Amelanchier alnifolia*) and tall Oregon grape (*Mahonia aquifolium*). Soopolallie (*Shepherdia canadensis*) and kinnikinnik (*Arctostaphylos uva-ursi*) are also common understory shrubs. In wetter phases trembling aspen (*Populus tremuloides*) and red-osier dogwood (*Cornus canadensis*) are common. Frequent fires favour Douglas fir due to its thick protective bark (Meidinger, D., J.Pojar, 1991).

### **2.3 Topography**

The topography of the Property is relatively flat on the upper portion of the Property adjacent to Silver Star Road. It gradually slopes to the east and a low spot occurs in the north of the Property at the corner of Bates Road and Hebert Road (Figure 3). There is a small area of pooling water observed in this section of the Property during the field visit in February 2021 which further indicates the low point of the Property.

### **2.4 Sensitive Ecosystem Ranking**

The City's EMA Strategy identifies a three-class rating system which ranks sensitivities of an area from low to high. Each class requires different levels of consideration during development based on their simplified Sensitive Ecosystem Rankings (SER) value. Green or low risk areas are considered previously disturbed and require the lowest level of conservations and protection planning but must also account for site specific conditions. Yellow or medium risk ranking reflect areas with moderate levels of disturbance and moderate sensitivity. Development proposals in these areas are required to consider conservation, protection, and mitigation as part of the development permit application process. Red or high-risk rankings reflect areas with no previous disturbance and high sensitivity. The Property is identified as being medium risk (City of Vernon, 2012).

### **2.5 Sensitive Ecosystem Inventory**

The City's tiered system of EMAs is largely a reflection of the Sensitive Ecosystem Inventory (SEI) works. SEI uses Terrestrial Ecosystem Mapping (TEM) and modelling to identify and predict ecosystems at risk, which can then be used by various levels of government to aid in development planning. SEI ranked the Property as GR:dg (grasslands and disturbed grasslands dominated by invasive species) (Iverson, 2008) (Figure 4). These ecosystems develop following the disturbance of grassland ecosystems, and no longer consist of climax species typical of undisturbed grasslands. These systems differ from grassland ecosystems due to the presence of noxious weed species (10 – 50%). Many of the species who inhabit grassland ecosystems can also find habitat in disturbed grassland ecosystems, and many rare, endangered and protected species are found in these areas (Iverson, 2008).

### **2.6 Environmental Development District**

In addition to the SEI ranking, the City divides development groups into three sectors with different requirements for development permits (DPs). Each Development District is characterized by different proportions of identified low, moderate, and high sensitivity ecosystem polygons to reflect different levels of significance for conservation and protection. The Property is within Development District 3 – Hillside Residential and Agriculture (DD3), which notes steep slope management; ridgeline and hilltop protection; grassland and rangeland management and protection; as key considerations for projects (City of Vernon, 2012). Further, the SEI study identified riparian areas of all types, grassland and rangeland and sparsely vegetated, as well as associated wildlife habitats and potential wildlife corridor areas as sensitive ecosystems of concern in DD3. Other goals for DD3 include:



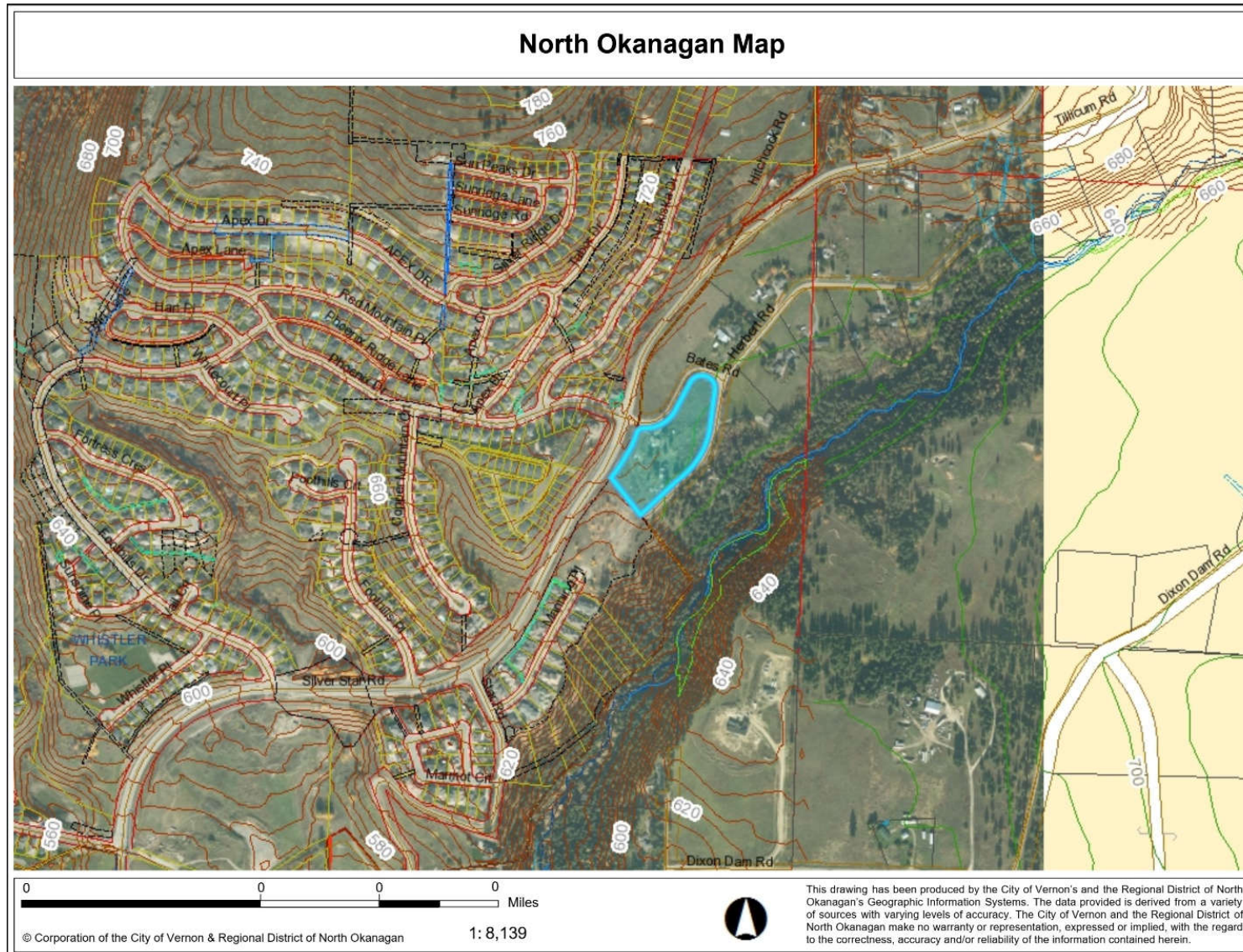


Figure 3. Slope contours (5 m interval-red lines) for the Property (outlined in blue) and surrounding area (source: RDNO GIS)

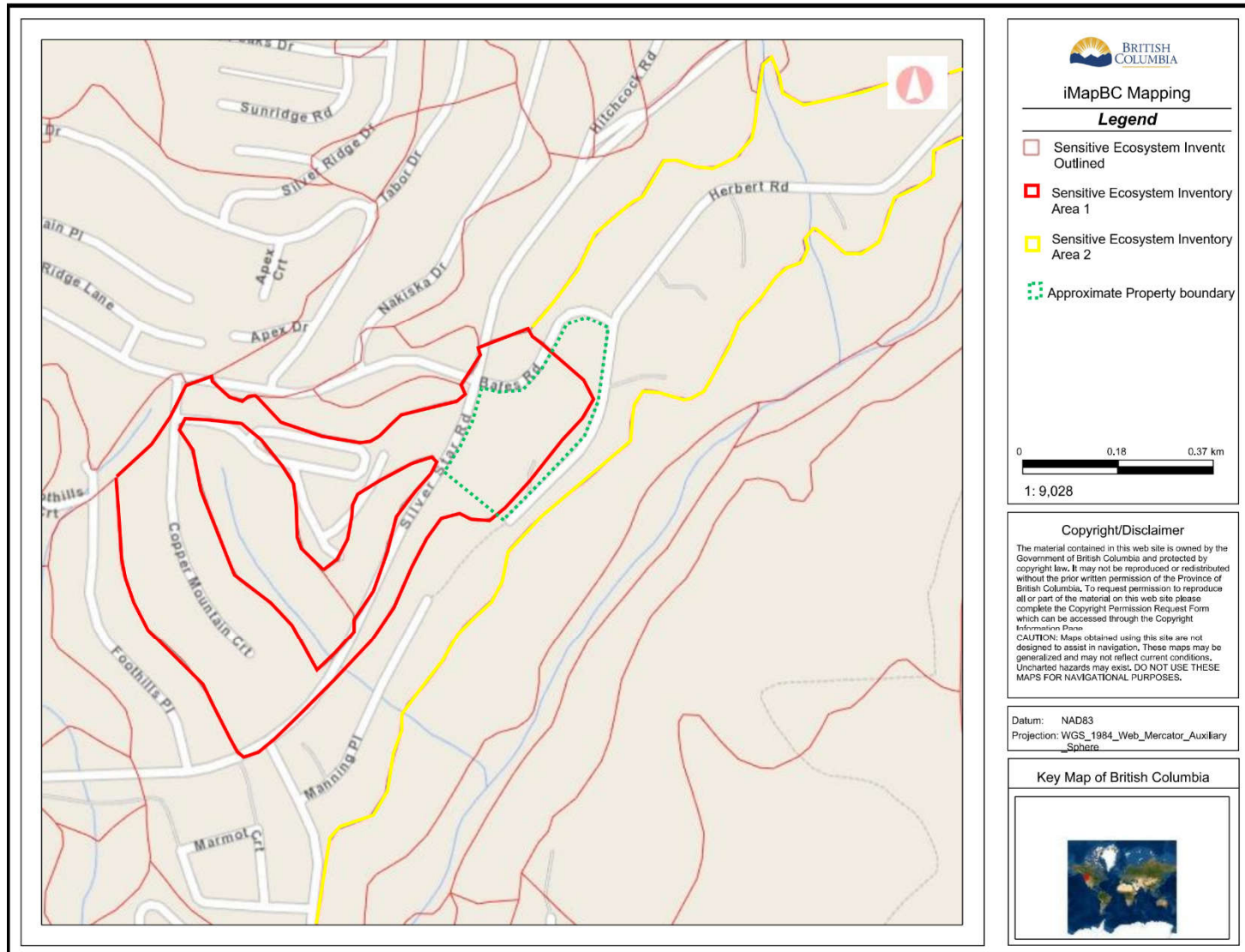


Figure 4. SEI rankings identified at the Property (source: imapBC)



- invasive species management;
- protection of biodiversity;
- maintenance of ecosystem function;
- forest land and fire protection;
- reclaimed water use;
- moderate and high sensitivity ecosystem protection and management; and
- hazard land exclusions from use.

## 2.7 Aquatic Resources

There are no mapped watercourses on the Property. BX Creek (watershed code: 310-939400-08200) is approximately 140 m east of the Property and Herbert Road at the bottom of a steep gully. It is a 3<sup>rd</sup> order stream, is approximately 24.89 km long, and is one of the largest tributaries to Swan Lake which eventually flows into Okanagan Lake. According to the BC Ministry of Environment's (BC MOE) Fish Inventories Data Queries (FIDQ) system, various fish species have been recorded in BX Creek (Table 2) (Province of BC, 2022).

**Table 2. Fish species recorded in BX Creek**

| Common Name       | Scientific Name                |
|-------------------|--------------------------------|
| Bridgeslip Sucker | <i>Catostomus columbianus</i>  |
| Brook Trout       | <i>Salvelinus fontinalis</i>   |
| Burbot            | <i>Lota</i>                    |
| Carp              | <i>Cyprinus carpio</i>         |
| Prickly Sculpin   | <i>Cottus asper</i>            |
| Pumpkinseed       | <i>Lepomis gibbosus</i>        |
| Rainbow Trout     | <i>Oncorhynchus mykiss</i>     |
| Redside Shiner    | <i>Richardsonius balteatus</i> |
| Suckers (general) | <i>Catostomus</i> spp.         |

The outlet of BX Creek to Swan Lake is approximately 7.3 km downstream of the Property. According to the FIDQ, several fish species have been recorded in Swan Lake (Table 3). The lake has been stocked yearly with Rainbow Trout (*Oncorhynchus mykiss*) since 1948 and with Brook Trout (*Salvelinus fontinalis*) between 1967 – 2006 (Province of BC, 2022).

**Table 3. Fish species recorded in Swan Lake**

| Common Name         | Scientific Name                  |
|---------------------|----------------------------------|
| Bridgeslip Sucker   | <i>Catostomus columbianus</i>    |
| Brook Trout         | <i>Salvelinus fontinalis</i>     |
| Burbot              | <i>Lota</i>                      |
| Northern Pikeminnow | <i>Ptychocheilus oregonensis</i> |
| Rainbow Trout       | <i>Oncorhynchus mykiss</i>       |

| Common Name       | Scientific Name                |
|-------------------|--------------------------------|
| Redside Shiner    | <i>Richardsonius balteatus</i> |
| Suckers (general) | <i>Catostomus</i> spp.         |
| Yellow Perch      | <i>Perca flavescens</i>        |

## 2.8 Terrestrial Resources

### 2.8.1 Rare and Endangered Wildlife

Species at risk information is available from provincial and federal sources (Table 4). Provincially, BC MOE maintains information on the BC Species and Ecosystems Explorer for species in the province (CDC, 2022). Data on known species at risk occurrences are available through the BC Conservation Data Centre (BC CDC) online database (CDC, 2022). Federally, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was established under Section 14 of the *Species at Risk Act* (SARA) and ranks species. Schedule 1 of SARA provides the list of species at risk. SARA typically only applies to federal land and only aquatic species as defined by the federal *Fisheries Act* and migratory birds listed under the federal *Migratory Bird Act* are protected under SARA on private or provincially owned lands.

**Table 4. Definitions of conservation status classifications**

| Regulation             | Status               | Definition  |
|------------------------|----------------------|---|
| COSEWIC<br>(federal)   | Endangered (E)       | A species facing imminent extirpation or extinction.  |
|                        | Threatened (T)       | A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction. |
|                        | Special Concern (SC) | A species that may become threatened or endangered because of a combination of biological characteristics and identified threats. |
| BC CDC<br>(provincial) | Red-listed           | Species, subspecies, or ecological communities considered to be Extirpated, Endangered, or Threatened.                            |
|                        | Blue-listed          | Species, subspecies, or ecological communities considered to be of Special Concern (formerly Vulnerable).                         |
|                        | Yellow               | Species or subspecies that is apparently secure and not at risk of extinction.  |

### 2.8.2 Wildlife Species at Risk

The Project area has the potential to provide important foraging, breeding, nesting, and travel corridor habitat for rare and endangered wildlife. The CDC database was used to prepare a list of red- and blue-listed wildlife species which have the potential to occur in and around the Project area. Results showed 22 provincially red- (five) or blue-listed (seventeen) animal species could potentially occur within the project area (CDC, 2022) (Table 5).

**Table 5. Animal species at risk with potential to occur in Project area**

| Common Name     | Scientific Name        | BC Status |
|-----------------|------------------------|-----------|
| American Badger | <i>Taxidea taxus</i>   | Red       |
| Barn Owl        | <i>Tyto alba</i>       | Red       |
| Barn Swallow    | <i>Hirundo rustica</i> | Blue      |



| Common Name                          | Scientific Name                        | BC Status |
|--------------------------------------|--|-----------|
| Bobolink                             | <i>Dolichonyx oryzivorus</i>           | Blue      |
| Columbia Plateau Pocket Mouse        | <i>Perognathus parvus</i>              | Blue      |
| Fringed Myotis                       | <i>Myotis thysanodes</i>               | Blue      |
| Gopher Snake, deserticola subspecies | <i>Pituophis catenifer deserticola</i> | Blue      |
| Grasshopper Sparrow                  | <i>Ammodramus savannarum</i>           | Red       |
| Great Basin Spadefoot                | <i>Spea intermontana</i>               | Blue      |
| Horned Lark, merrilli subspecies     | <i>Eremophila alpestris merrilli</i>   | Blue      |
| Lark Sparrow                         | <i>Chondestes grammacus</i>            | Blue      |
| North American Racer                 | <i>Coluber constrictor</i>             | Blue      |
| Olive-sided Flycatcher               | <i>Contopus cooperi</i>                | Blue      |
| Preble's Shrew                       | <i>Sorex preblei</i>                   | Red       |
| Short-eared Owl                      | <i>Asio flammeus</i>                   | Blue      |
| Spotted Bat                          | <i>Euderma maculatum</i>               | Blue      |
| Swainson's Hawk                      | <i>Buteo swainsoni</i>                 | Red       |
| Townsend's Big-eared Bat             | <i>Corynorhinus townsendii</i>         | Blue      |
| Western Harvest Mouse                | <i>Reithrodontomys megalotis</i>       | Blue      |
| Western Rattlesnake                  | <i>Crotalus oreganus</i>               | Blue      |
| Western Skink                        | <i>Plestiodon skiltonianus</i>         | Blue      |
| Western Small-Footed Myotis          | <i>Myotis ciliolabrum</i>              | Blue      |

<sup>1</sup>Search parameters: Animals Okanagan Shuswap Forest District; RDNO; BGC Zone: IDF

### 2.8.3 CDC Identified Wildlife Occurrences

The CDC database and mapping tool was accessed to identify known occurrences of wildlife species at risk (an area of land and/or water where a species or ecosystem is known to occur) within and in proximity (within 1 km) to the Project area. One rare and endangered animal species occurrence was recorded in the search radius of the Property.

#### 2.8.3.1 **American Badger (Occurrence ID No. 74373)**

The American Badger (*Taxidea taxus*) is provincially Red-listed and listed as an Endangered species under COSEWIC and SARA (Schedule 1-Endangered). The Property is within a large mapped American Badger range polygon extending from the U.S. border to the north end of Okanagan Lake (ID #74373). The occurrence polygon is inclusive of 498 reported sightings of badgers (most between 1995 and 2012), occurring throughout the polygon, but are concentrated within grassland/agricultural interface zones in the Vernon, Lumby, Mission Creek, Osoyoos, Anarchist Mountain/Rock Creek, and Grand Forks areas (DataBC, 2022).

### 2.8.4 Critical Habitat

The CDC database and mapping tool was accessed to identify designated critical habitat of wildlife species at risk and in proximity (within 1 km) to the Project area. The

Project area overlaps with proposed critical habitat for the American badger (CDC, 2022).

#### 2.8.4.1 American Badger (Proposed Core Critical Habitat ID No. 73112)

The Recovery Strategy for the American Badger *jeffersonii* subspecies is currently in the public comment period (ECCC, 2021). As part of the recovery strategy, several proposed “core” (necessary to support feeding, foraging, and denning functions) and “safe movement” (necessary to support movement activities to sustain all other life functions) critical habitat polygons for American Badger have been identified. A core polygon overlaps the Property, and several other core and safe movement polygons occur within 1 km of the Project area (BC CDC, 2022). Core critical Habitat ID No. 73112 overlaps the Project area. The polygon is approximately 25 hectares in size.

#### 2.8.5 Vegetation Species-at-Risk

The BC Species and Ecosystems Explorer database (BC CDC, 2022) was searched to determine at risk plant species with the potential to occur in and around the Project area. Results showed 13 provincially Red- (three) and Blue-listed (ten) plants were identified (Table 6).

**Table 6. Plant species at risk with potential to occur in project area<sup>1</sup>**

| Common Name              | Scientific Name                           | BC Status |
|--------------------------|---|-----------|
| American sweet-flag      | <i>Acorus americanus</i>                  | Red       |
| blue vervain             | <i>Verbena hastata</i> var. <i>scabra</i> | Blue      |
| cut-leaved water-parsnip | <i>Berula erecta</i>                      | Blue      |
| dark lamb's quarters     | <i>Chenopodium atrovirens</i>             | Blue      |
| dark-green hawthorn      | <i>Crataegus atrovirens</i>               | Blue      |
| Engelmann's knotweed     | <i>Polygonum engelmannii</i>              | Red       |
| Mexican mosquito fern    | <i>Azolla Mexicana</i>                    | Red       |
| orange touch-me-not      | <i>Impatiens aurella</i>                  | Blue      |
| peach-leaf willow        | <i>Salix amygdaloides</i>                 | Blue      |
| porcupinegrass           | <i>Hesperostipa spartea</i>               | Blue      |
| red-rooted Cyperus       | <i>Cyperus erythrorhizos</i>              | Blue      |
| three-flowered waterwort | <i>Elatine rubella</i>                    | Blue      |
| Tweedy's willow          | <i>Salix tweedyi</i>                      | Blue      |

<sup>1</sup>Search parameters: Plants Okanagan Shuswap Forest District; RDNO; BGC Zone: IDF

#### 2.8.6 CDC Identified Vegetation Occurrences

The CDC database and mapping tool was accessed to identify known occurrences of vegetation species at risk within and in proximity (within 1 km) to the Project area. No vegetation species at risk occurrences were identified (DataBC, 2022).

### 2.8.7 Ecological Communities

The BC CDC was queried to identify mapped occurrences of rare ecological communities within a 1 km radius of the Project area. Two red-listed ecological communities occur within this radius (Table 7).

**Table 7. Mapped ecological communities at risk in the vicinity of the Project area**

| <b>Occurrence ID</b> | <b>Ecological Community</b>                                  | <b>Scientific Name</b>   | <b>BC Status</b> | <b>Comments</b>   |
|----------------------|--|--|------------------|---|
| 81517                | trembling aspen /<br>common snowberry/<br>Kentucky bluegrass | <i>Populus tremuloides</i><br>/ <i>Symphoricarpos</i><br><i>albus</i> / <i>Poa</i><br><i>pratensis</i> | Red              | Occurrence is located on the lower slopes of the Okanagan Valley in draws and low-lying areas. It is surrounded by grasslands, areas of rural and agricultural development, and coniferous woodlands.                         |
| 77540                | black cottonwood /<br>common snowberry -<br>roses            | <i>Populus trichocarpa</i><br>/ <i>Symphoricarpos</i><br><i>albus</i> – <i>rosa</i> spp.)              | Red              | Occurrence is located near the bottom of the Okanagan valley along 5.5 km of BX Creek in a gully (approx.. 150 m south of the Project area). Area is surrounded by coniferous forests and agricultural and urban development. |

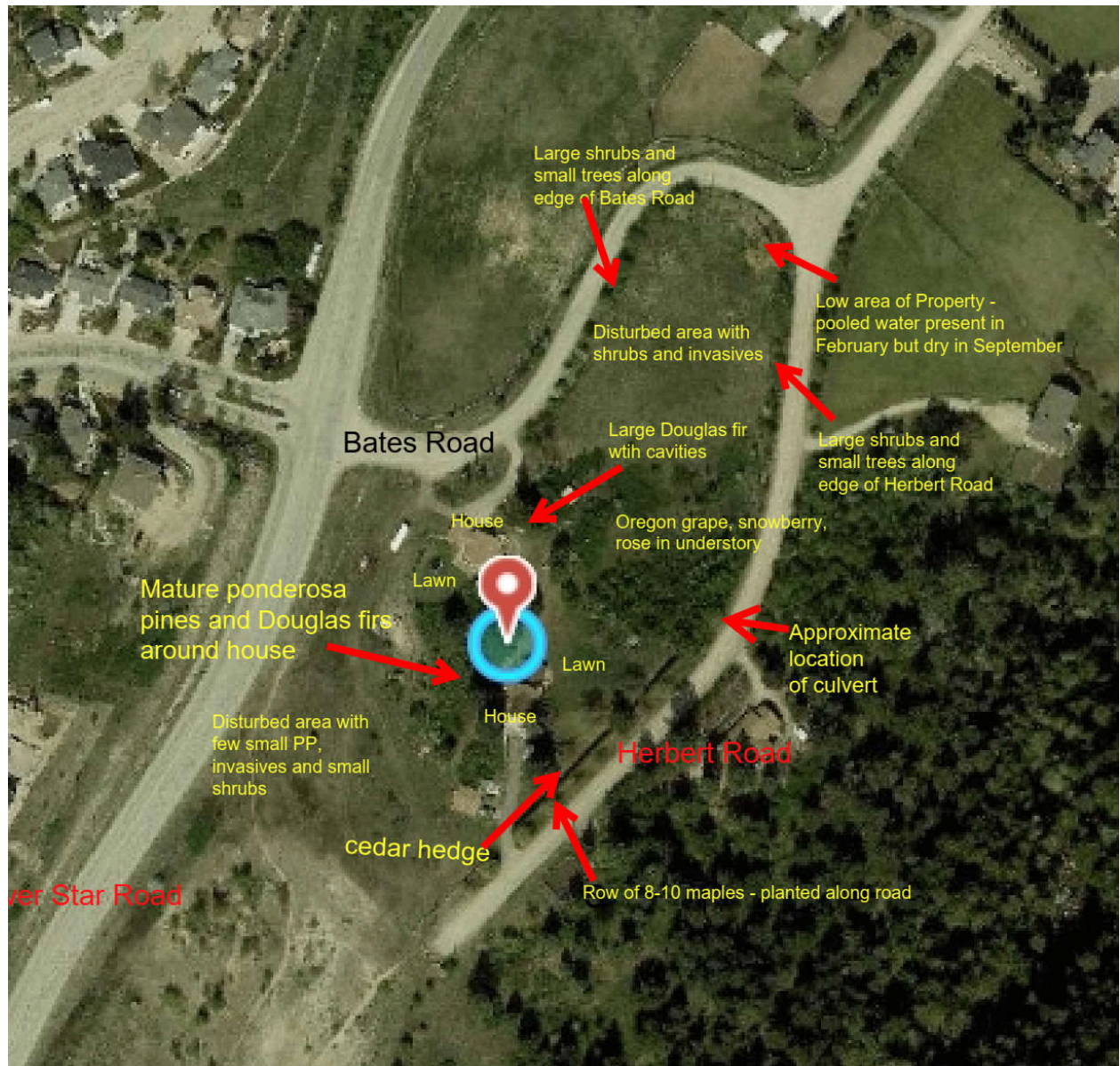
### 2.8.8 Masked Occurrences

One “masked occurrence” was identified in the search radius of the property. Masked occurrences are species or ecodata that is considered to be susceptible to persecution or harm is data is publicly available. CDC personnel will be contacted prior to development to determine if the proposed project would impact the species.

## 3.0 Field Visits and Impact Assessment

### 3.1 Field Visits

An initial field visit was conducted by Triton on February 25, 2021 to confirm findings of the desktop review and identify additional information and parameters. Representative photographs from the site visit are provided in Appendix 1. The site visit was done when the Property was covered in snow which reduced the ability to survey vegetation. Additional field visits were conducted on September 21, 2021 and September 28, 2022 during snow free conditions. Points of interest at the Property are provided in Figure 5. Additional field surveys are expected to be conducted during the Development Permit stage and prior to development.



**Figure 5. Additional points of interest assessed during field visits**



## 3.2 Terrestrial Resources

### 3.2.1 Vegetation Resources

The south, west, and north portions of the Property can be described as Disturbed Grassland based on SEI classification and vegetation observed during the field visits. Vegetation in these areas indicate a high degree of anthropologic influence and disturbance and limited native species contributing to habitat or ecological value. These sections of the Property are predominately disturbed fill with forbs, shrubs, and small trees interspersed with non-native and invasive weed species dominant in the understory (Table 8). Young (seral stage) ponderosa pine are interspersed in the southern section of the Property.

**Table 8. Dominant non-native vegetation species observed in disturbed areas of the Property**

| Common Name        | Latin Name  | Comments   |
|--------------------|---|--|
| Canada thistle     | <i>Cirsium arvense</i>                            | Non-native species associated with the disturbed areas in the southwest and northern portions of the Property. These areas show signs of previous disturbance and placement of non-native fill material. |
| cheatgrass         | <i>Bromus tectorum</i>                            |  |
| common burdock     | <i>Arctium minus</i>                              |  |
| dalmatian toadflax | <i>Linaria genistifolia</i> ssp. <i>dalmatica</i> |  |
| dandelion          | <i>Taraxacum officinale</i>                       |  |
| great mullein      | <i>Verbascum thapsus</i>                          |  |
| sulphur cinquefoil | <i>Potentilla recta</i>                           |  |
| chicory            | <i>Cichorium intybus</i>                          |  |
| rush skeletonweed  | <i>Chondrilla juncea</i>                          |  |

Large, mature trees and areas of native shrubs, forbs, and grasses were observed in the central portion of the Property and adjacent to the two houses (Table 9). Dominant overstory species in this section of the Property consist of ponderosa pine, Douglas fir, trembling aspen, and water birch (*Betula occidentalis*). Willow (*Salix* sp.) and black cottonwood (*Populus balsamifera*) trees were observed along Herbert Road but in lower numbers than the dominant tree species. A densely vegetated area dominated by shrubs including Oregon grape, rose (*rosa* sp., red osier dogwood, hawthorn (*Crataegus* sp.), and common snowberry (*Symphoricarpos albus*) occurs east of the houses and extends down to Herbert Road. Additionally, one mature black cottonwood (*Populus trichocarpa*) tree was observed at the northern area of the Property. An old farm fence borders the Property along Bates Road and Herbert Road. A strip of shrubs occurs between the road and the Property.

**Table 9. Dominant native vegetation species observed at the Property**

| Common Name          | Latin Name                                      | Comments (location)  |
|----------------------|---|--|
| <b>Trees</b>         |   |  |
| black cottonwood     | <i>Populus balsamifera</i>                      | Upslope and adjacent to the culvert inlet.   |
| Douglas fir interior | <i>Pseudotsuga menziesii</i> var. <i>glauca</i> | Multiple mature Douglas fir trees in central portion of Property. One large Douglas fir with several cavities. |
| ponderosa pine       | <i>Pinus ponderosa</i>                          | Multiple mature ponderosa pine trees in central portion of Property and around the                             |

| <b>Common Name</b>   | <b>Latin Name</b>              | <b>Comments (location)</b>  |
|----------------------|--------------------------------|---|
|                      |                                | houses. Young ponderosa pines in disturbed areas.   |
| trembling aspen      | <i>Populus tremuloides</i>     | Groups in various stages in central portion of Property.  |
| water birch          | <i>Betula occidentalis</i>     | Groups in various stages in central portion of Property.  |
| willow               | <i>Salix</i> sp.               | Observed in the low portion of the Property which had pooling water during the February field visit.                                  |
| <b>Shrubs</b>        |                                |   |
| black hawthorn       | <i>Crataegus douglasii</i>     | Along the edge of Bates Road and Herbert Road between the fence and Property.   |
| choke cherry         | <i>Prunus virginiana</i>       | Along the edge of Bates Road between the fence and the Property.  |
| common snowberry     | <i>Symphoricarpos albus</i>    | Dominant understory species which occurs throughout Property in disturbed and undisturbed areas.                                      |
| mountain alder       | <i>Alnus incana</i>            | Observed in central portion of Property in the densely vegetated, shrub-dominated area upslope of the culvert inlet and Herbert Road. |
| Oregon grape         | <i>Mahonia aquifolium</i>      | Dominant understory species which occurs throughout the Property in disturbed and undisturbed area.                                   |
| red-osier dogwood    | <i>Cornus stolonifera</i>      | Observed in central portion of Property in the densely vegetated, shrub-dominated area upslope of Herbert Road.                       |
| rose                 | <i>Rosa</i> spp.               | Dominant understory species which occurs throughout Property in disturbed and undisturbed area.                                       |
| Saskatoon            | <i>Amelanchier alnifoli</i>    | Dominant understory species which occurs throughout Property in disturbed and undisturbed area.                                       |
| smooth sumac         | <i>Rhus glabra</i>             | Along the edge of Bates Road and Herbert Road between the fence and Property.   |
| <b>Forbs</b>         |                                |   |
| Arrowleaf balsamroot | <i>Balsamorhiza sagittate</i>  | Native forbs in understory in central portion of Property.  |
| showy milkweed       | <i>Asclepias speciosa</i>      | Observed along Bates Road and Herbert Road, especially on the northern edge of the Property.  |
| silky lupine         | <i>Lupinus sericeus</i>        | Native forbs in understory in central portion of Property.  |
| yarrow               | <i>Achillea millefolium</i>    | Native forbs in understory in central portion of Property.  |
| <b>Grasses</b>       |                                |   |
| bluebunch wheatgrass | <i>Pseudoroegneria spicata</i> | Native grass species in understory in central portion of Property.  |
| rough fescue         | <i>Festuca</i> sp.             | Native grass species in understory in central portion of Property.  |

### 3.2.2 Wildlife Resources

#### 3.2.2.1 **Avian**

Several mature ponderosa pine and Douglas fir trees were noted in the central portion of the Property between the two houses. One large Douglas fir near the driveway access to the upper house off of Bates Road has several cavities in the lower portion of the trunk. No other snags or nests were observed during the field visits. No active nests were noted at the time of site visits, but this area could contain both ground and cavity nesting species at appropriate times of the year.

#### 3.2.2.2 **Amphibians**

Standing water, wetlands, and slow-moving watercourses provide breeding habitat for amphibians and rearing habitat for tadpoles. Upland areas become more important during the adult stage. Within the Property there is a small area of pooled water from recent snowmelt. This pooling did not appear to have inlet or outlet channels and is likely only wet during spring snow melt. This area was dry during the site visits in September 2021 and September 2022. There is a low possibility of amphibian use in this area however it is recommended to survey the Property during the assessments during the Development Permit phase.

#### 3.2.2.3 **Reptiles**

In general, reptiles prefer warm, drier areas and are negatively impacted by agriculture and urban developments (CDC, 2021). This limits the likelihood of finding key reptile features, such as dens, rock outcrops or fissures, within the Property. Masked occurrences may move through the Property, but overall habitat value is low for reptiles. No key habitat features were identified on site.

#### 3.2.2.4 **Mammals**

Well vegetated areas can provide thermal protection, cover, foraging habitat, and migratory routes for a variety of mammals including ungulates (Iverson et al, 2008). White-tailed deer (*Odocoileus virginianus*) have the potential to also forage on grasses in the undisturbed portion of the Property. High insect density and mature trees provide forage and nesting habitat for bats (Iverson, 2008). The proximity of roadways and residential areas may limit the area being regularly used by larger mammals.

### 3.3 **Aquatic Resources**

There are no mapped watercourses on the Property. BX Creek is located approximately 140 m east of the Property. There is an area in the north-western portion of the Property near the corner of Bates Road and Herbert Road which had pooling water during the field visit conducted in February 2021. This area was dry during the site visits in September 2021 and September 2022. This area occurs on a low spot on the Property and likely collects snow melt during the spring months. A roadside ditch runs along the eastern portion of the Property and Herbert Road. It is densely vegetated with hawthorn and birch, and it ends at a culvert under Herbert Road at approximately the center point of

the Property. The inlet was visible during the site visits, but the outlet could not be found during the initial site visit due to snow cover. The ditch was dry, and no flow or indication of recent flow was observed in the ditch during any of the site visits. The ditch is overgrown with vegetation and there is no indication that a significant amount of flow runs in the ditch for extended periods of time. Directly upslope of the culvert is a section of dense vegetation. There is potential this area historically captured runoff from the upslope portion of the Property. However, the upper portion of the Property adjacent to Silver Star Road has been disturbed with fill and construction of the houses. The culvert outlets at a property across Herbert Road and there was no indication of a channel downstream of Herbert Road observed during the site visits. Based on the field assessments conducted in September 2021 and September 2022, the ditch would not be subject to assessment under the Riparian Areas Protection Regulation (RAPR).

### **3.4 Environmentally Sensitive Areas**

The City's EMA Strategy identifies the requirement for stratification of communities within the Property based on their environmental sensitivity (City of Vernon, 2012). This allows for the identification of areas of significant environmental values, or Environmentally Sensitive Areas (ESAs), to take into consideration or avoid during development on the Property. It also allows for the identification of areas on the Property for development opportunities. For the purposes of this report, the ESA ratings were done in a preliminary fashion and were based on the SEI inventory, background information, and observations made during the field visit. Development planning is in the initial stages and the ESAs will be revisited at an appropriate time of year, during the Development Permit process and prior to any development.



## 4.0 Recommendations During Development

### 4.1 Proposed Development

At this stage, the Client has submitted a zoning amendment application to the City with an intent to amend the zoning designation of the Property. Preliminary mitigation measures to implement during construction are presented in the following sections. A detailed Environmental Management Plan will be prepared by a Qualified Professional during the Development Permit stage and prior to development.

### 4.2 Potential Disturbance from Development

Proposed development should limit disturbance to trees or other vegetation as much as feasible. Any trees removed by construction must be compensated for with native vegetation at a rate of 3:1 as per the City's guidelines (City of Vernon, 2012). A list of recommend shrubs and trees for replanting efforts are provided in Table 10. Staking from plants located on site could be the most effective method for ensuring planting success. All planted vegetation should be monitored in subsequent years to ensure success.

**Table 10. Suggested plant list for restorative native planting**

| Tree Species        |                              |
|---------------------|------------------------------|
| Common Name         | Latin Name                   |
| ponderosa pine      | <i>Pinus ponderosa</i>       |
| Douglas fir         | <i>Pseudotsuga menziesii</i> |
| maple spp.          | <i>Acer spp.</i>             |
| mountain alder      | <i>Alnus tenuifolia</i>      |
| Shrub Species       |                              |
| Common Name         | Latin Name                   |
| Saskatoon           | <i>Amelanchier alnifoli</i>  |
| chokecherry         | <i>Prunus virginiana</i>     |
| common snowberry    | <i>Symphoricarpos albus</i>  |
| prickly rose        | <i>Rosa acicularis</i>       |
| Oregon Grape        | <i>Mahonia aquifolium</i>    |
| birch leaved spirea | <i>Spirea betulifolia</i>    |
| common juniper      | <i>Juniperus communis</i>    |
| red osier dogwood   | <i>Cornus sericea</i>        |
| mock orange         | <i>Philadelphus lewisii</i>  |
| smooth sumac        | <i>Rhus glabra</i>           |

### 4.3 Potential Access

There are two existing accesses to the Property. It is anticipated these existing accesses will be used during construction and as access for the future development and no additional access points should be necessary.

### 4.4 Further Studies

At this stage a zoning amendment application has been submitted to the City. This EIA report is a required component of the zoning amendment application. This report is

based on the site plan for proposed development that has been provided by the Client (Appendix 2). Prior to development, an updated EIA report and Environmental Management will be prepared.

#### **4.5 Environmental Monitoring Plan**

The purpose of this section is to provide recommendations to implement prior to and during development to reduce the potential of negative impacts on the environmental features at the Property. The following section provides recommendations and best management practices to follow during development.

- Silt fencing or snow fence should be placed around the portion of the Property to be developed to identify a limit of construction and protect other areas from encroachment or damage.
- Vehicle traffic and parking areas will be restricted to existing or designated access roads and landings. Roads should be constructed so mud and sediment are not generated between the interface of existing roads and unpaved, undisturbed areas.
- Protect large old trees and snags which provide important wildlife habitat.
- Control invasive species by managing human and vehicular access. Invasives should be removed from the Property and properly disposed of to prevent spread to other areas of the Property.
- Revegetate exposed soils following land alteration to prevent erosion and noxious weed infestation including the replacement of native bunchgrass and wildflowers.
- Timing of development should consider and avoid times of year when critical wildlife activities occur (e.g., bird breeding and nesting) to protect bird nesting habitat as per the *Migratory Bird Convention Act*, the *Migratory Birds Regulations*, and the *BC Wildlife Act*. If this cannot be avoided, a breeding bird nest field survey will be necessary prior to commencement of tree removal activities proposed to occur within the bird breeding and nesting period for the region (April 1 to August 15) (ECCC, 2022).
- Conduct wildlife sweeps prior to construction to identify any American Badger dens. If identified, prepare necessary management plans and implement mitigation measures during construction.
- Retain as much existing vegetation as possible by implementing the following measures during construction:
  - Minimize clearing of vegetation for equipment access and storage wherever possible;
  - Minimize the quantities and duration of on-site material (e.g., soil and aggregate stockpiling) and limit to previously disturbed areas;
  - Physically mark the boundaries of construction to ensure vegetated areas are not unnecessarily cleared; and

- Washing or disposal of sediment including from equipment into local drainages, ditches, catch basins, storm sewers, etc. will not be permitted.
- Spill containment kits should be onsite and placed on each piece of equipment onsite during construction.
- Work site will be maintained in a clean state - oil containers, cans, grease, tubes, rags, etc. and any other material or packaging will be removed from the work area to an approved disposal location immediately on completion of servicing.
- All equipment used in and around the development must be weed free to minimize the transport of weeds. All contractors should inspect their equipment and vehicles daily to ensure they do not transport noxious weed/seeds onto or off the Property. It is the expectation that equipment will:
  - Be free of weeds and cleaned;
  - Have no leaks and be in good working order; and
  - Have a spill containment kit.
- Topsoil and overburden materials should be obtained from uncontaminated sources and as free of weed seeds as possible.

## 5.0 Conclusion

This EIA report was prepared to assist in the planning of proposed development areas of the Property. The Property at 7025 Herbert Road, Vernon, BC contains a grasslands: disturbed grasslands classified SEI and moderate risk EMA. Additional field surveys during the warmer growing seasons are required to further assess baseline conditions and ESAs of the Property, potential impacts from development, and mitigation measures to implement during construction to satisfy the requirements of the City's EMA Strategy. The current report and assessments to date have not identified any critical habitats or species at risk that would preclude activities within the proposed development area. However, further assessments and development planning will be required to consider the environmental features and values on the site.

## 6.0 References

- City of Vernon. 2012. Accessed March 2021. Environmental Management Areas Strategy. Available at:  
[https://www.vernon.ca/sites/default/files/docs/bylaws/OCP/environmental\\_mgmt\\_strategy.pdf](https://www.vernon.ca/sites/default/files/docs/bylaws/OCP/environmental_mgmt_strategy.pdf)
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- Regional District of North Okanagan. Accessed October 2022. Interactive Mapping Application tool. Available at: <http://www.rdno.ca/index.php/map>

# **APPENDIX 1**

## **PHOTOGRAPHS**



**Photograph 1.** View northeast from central area of Property showing disturbed grasslands (February 25, 2021).



**Photograph 2.** View north towards Silver Star Road showing flat terrain, invasive weeds and limited treed vegetation (February 25, 2021).





**Photograph 3.** View south showing existing cedar hedging along Herbert Road (February 25, 2021).



**Photograph 4.** View northeast showing existing maple trees along Herbert Road (February 25, 2021).





**Photograph 5.** View of pooling water on the Property (February 25, 2021).



**Photograph 6.** View of ponderosa pine stand mid-Property (February 25, 2021).





**Photograph 7.** View northeast of vegetated ditch adjacent to Herbert Road (February 25, 2021).



**Photograph 8.** View of densely vegetated area on the Property upslope of the culvert inlet (February 25, 2021).





**Photograph 9.** View of the house and driveway accessed from Herbert Road on the lower portion of the Property (February 25, 2021).



**Photograph 10.** View of the area around the culvert inlet under snow cover (February 25, 2021).





**Photograph 11.** View of shrubs on edge of Property adjacent to Bates Road (September 28, 2022).



**Photograph 12.** View south of Property from Bates Road. This portion of the Property has been previously disturbed and is dominated by non-native vegetation (September 28, 2022).





**Photograph 13.** View of the low spot on the Property at the corner of Bates Road and Herbert Road. This area was dry during the site visit in September 2021 (September 21, 2021).



**Photograph 14.** View of the low spot. This area was dry in September 2022 (September 28, 2022).





**Photograph 15.** View south of ditch on the side of Herbert Road. The ditch was dry and overgrown with vegetation during all site visits (September 28, 2022).



**Photograph 16.** View of shrubs and vegetation on edge of Property adjacent to Bates Road (September 28, 2022).





**Photograph 17.** Downslope view of the culvert inlet at Herbert Road (September 21, 2022).



**Photograph 18.** Downstream view of the culvert inlet (September 28, 2022).





**Photograph 19.** View of the culvert inlet at Herbert Road (September 28, 2022).



**Photograph 20.** View upslope of densely vegetated area upslope of culvert inlet (September 28, 2022).





**Photograph 21.** View south of planted maple trees along Hebert Road (September 21, 2022).



**Photograph 22.** View of the driveway and lawn near the house on the lower portion of the Property accessed from Herbert Road (September 21, 2022).





**Photograph 23.** View of the lawn and cedar hedges at the edge of the Property adjacent to Herbert Road (September 21, 2022).



**Photograph 24.** View of the lawn of the house on the lower portion of the Property (September 28, 2022).





**Photograph 25.** Upslope view of the house on the lower portion of the Property (September 28, 2022).



**Photograph 26.** View of the disturbed area (Canada thistle and other non-native species) on the portion of the Property south of the house on the lower portion of the Property (September 28, 2022).





**Photograph 27.** View of house on the upper portion of the Property accessed from Bates Road (September 28, 2022).



**Photograph 28.** View north of the upper portion of the Property east of Silver Star Road (September 28, 2022).





**Photograph 29.** View south of the upper portion of the Property east of Silver Star Road. The foothills neighbourhood is shown in the right-hand side of the photograph (September 28, 2022).



**Photograph 30.** Large Douglas fir tree with multiple cavities near the driveway of the house on the upper portion of the Property (September 28, 2022).



**APPENDIX 2**  
**PPRELIMINARY SITE PLAN**



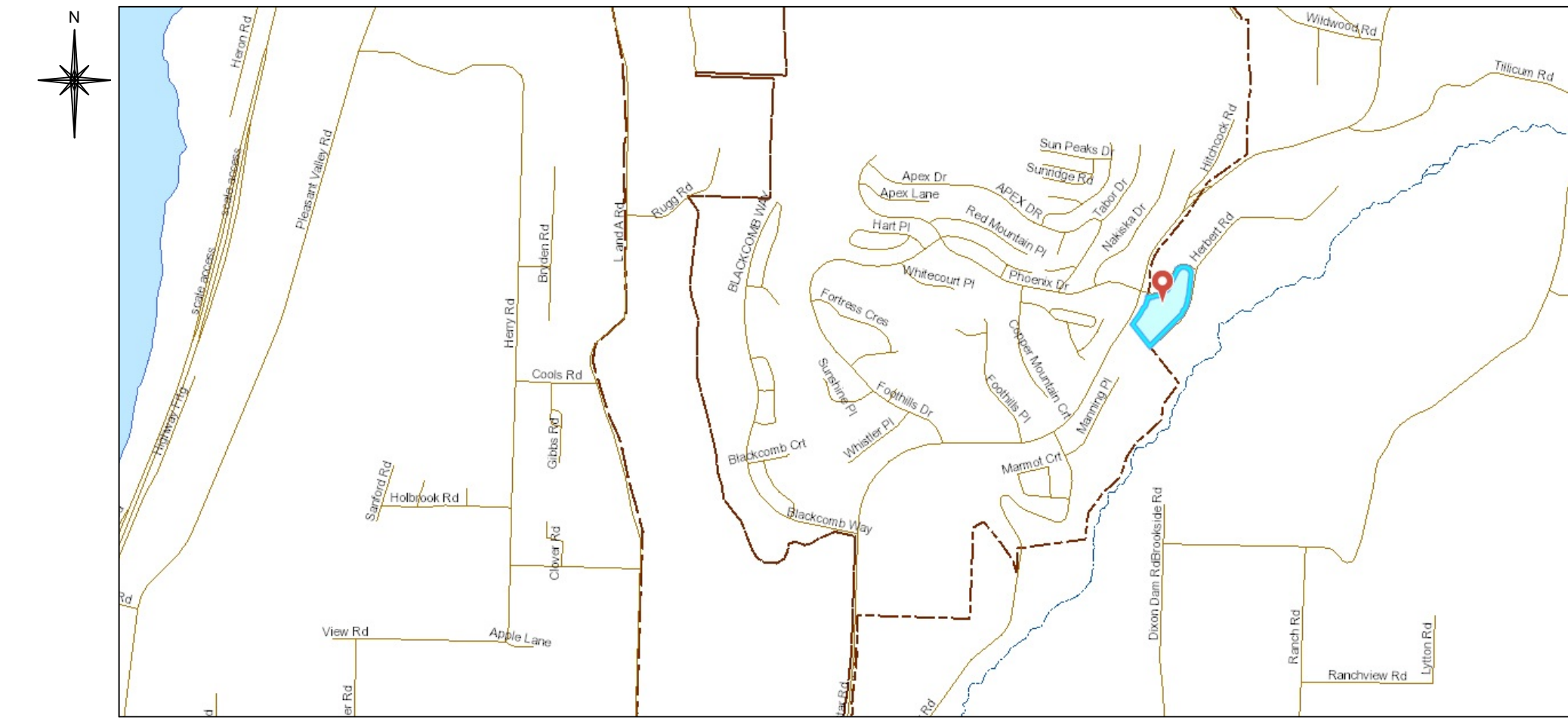
# KOFOED GROUP

## PROJECT INFO:

CIVIC ADDRESS:  
7025 HERBERT RD.

Legal Description:  
PID: 004-119-665  
Plan: 29910  
Lot: 3

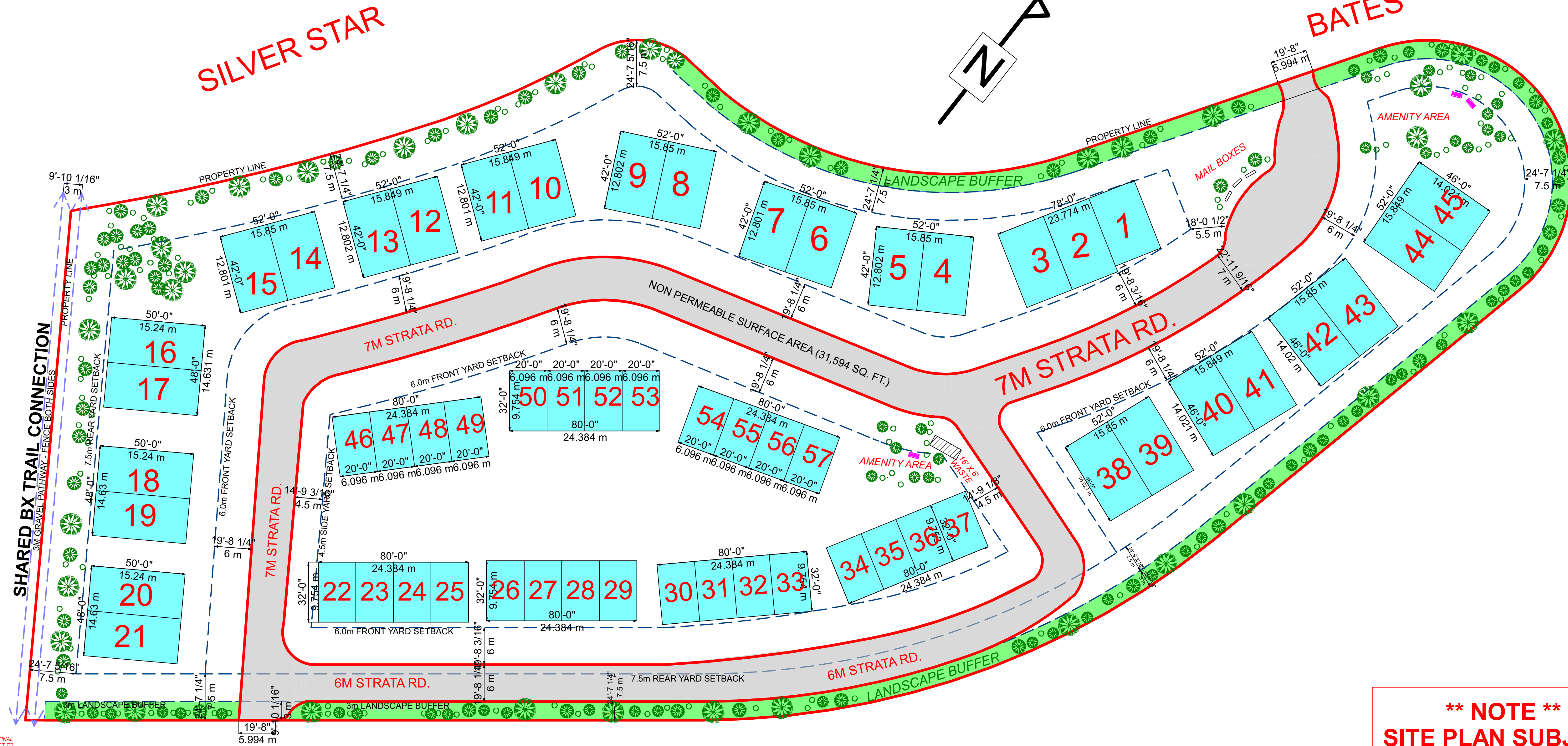
|   |              |        |                         |
|---|--------------|--------|-------------------------|
| TOTAL PROPERTY AREA   | 20,139.97    | SQ. M. | (216,781.6 SQ. FT.)     |
| <b>SITE COVERAGE</b>  |              |        |                         |
| BUILDING FOOTPRINTS   | 23.5%        |        | (51,068 SQ. FT.)        |
| STRATA ROAD   | 14.4%        |        | (31,313 SQ. FT.)        |
| <b>TOTAL SITE COVERAGE INCLUDING NON-PERMEABLE SURFACES</b> | <b>37.9%</b> |        | <b>(82,662 SQ. FT.)</b> |



SOURCE: NORTH OKANAGAN MAP(S)

## GENERAL NOTES

- ALL CONSTRUCTION AND BUILDING TO BE IN ACCORDANCE TO THE LATEST BRITISH COLUMBIA BUILDING CODE (2018).
- CONSTRUCTION TO COMMENCE IN ACCORDANCE TO ALL LOCAL BYLAWS.
- DRAWINGS ARE NOT TO BE SCALED. ALL DIMENSIONS ARE TO WALL CENTERLINES AND EXTERIOR OF SHEATHING.
- CONTRACTORS ARE TO REVIEW ALL DRAWINGS AND REPORT ANY DISCREPANCIES AND ERRORS PRIOR TO CONSTRUCTION.
- PRIOR TO PROCEEDING WITH CONSTRUCTION THE OWNER/BUILDER IS TO ENSURE ALL REQUIRED INSURANCES AND WORKSAFE BC CONFORMANCE ARE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION. IT IS THE RESPONSIBILITY OF ALL TRADES TO CHECK AND VERIFY ALL DIMENSIONS AND DETAILS BEFORE COMMENCING CONSTRUCTION.
- LICENSED AND INSURED PROFESSIONALS MUST VERIFY ALL INFORMATION, DIMENSIONS, SPECIFICATIONS OF THIS PLAN PRIOR TO CONSTRUCTION.
- ERRORS AND EMISSIONS. ZIOLA DESIGN & BRENT ZIOLA SHALL NOT BE RESPONSIBLE FOR ANY VARIATIONS OR ADJUSTMENTS RESULTING IN CONDITIONS ENCOUNTERED AT THE JOB SITE, AND IS THE SOLE RESPONSIBILITY OF THE OWNER OR CONTRACTOR. EVERY EFFORT HAS BEEN MADE TO PROVIDE COMPLETE AND ACCURATE DRAWINGS. ZIOLA DESIGN OR ITS TECHNICIANS CAN NOT ELIMINATE THE POSSIBILITY OF HUMAN ERROR. THEREFORE DRAFTING TECHNICIANS, OR ZIOLA DESIGN, OR BRENT ZIOLA SHALL NOT BE LIABLE FOR ANY ERRORS OR EMISSIONS.



**SITE PLAN**  
SCALE: 1/32" = 1'

HERBERT

**\*\* NOTE \*\***  
**SITE PLAN SUBJECT TO CHANGE, SITE SURVEY REQUIRED**



**HERBERT ROAD**  
**VERNON BC**

|                |                        |                     |
|----------------|------------------------|---------------------|
| PROJECT TITLE  | HERBERT ROAD VERNON BC |                     |
| TITLE          | SITE PLAN              |                     |
| SCALE          | 1/32" = 1'             |                     |
| DATE           | DEC-20-2022            |                     |
| PROJECT NUMBER | Z-138-02               | DRAWING NUMBER 1.11 |
| SHEET          | 1 OF 1                 |                     |