Bio-inventory of 7704, 7780 and 7840 Superior Road, Lantzville, B.C.

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1.0 INTRODUCTION

Toth and Associates Environmental Services were retained by Sincana Land Corp. to conduct a bio-inventory and provincial *Riparian Areas Protection Regulation* (RAPR) Assessment of 7704, 7780 and 7840 Superior Road (the subject properties), located between Superior Road and the E&N Railway in upper Lantzville. The three properties total 63.9 acres (25.86 hectares). Access to the south side of the subject properties is provided by Superior Road.

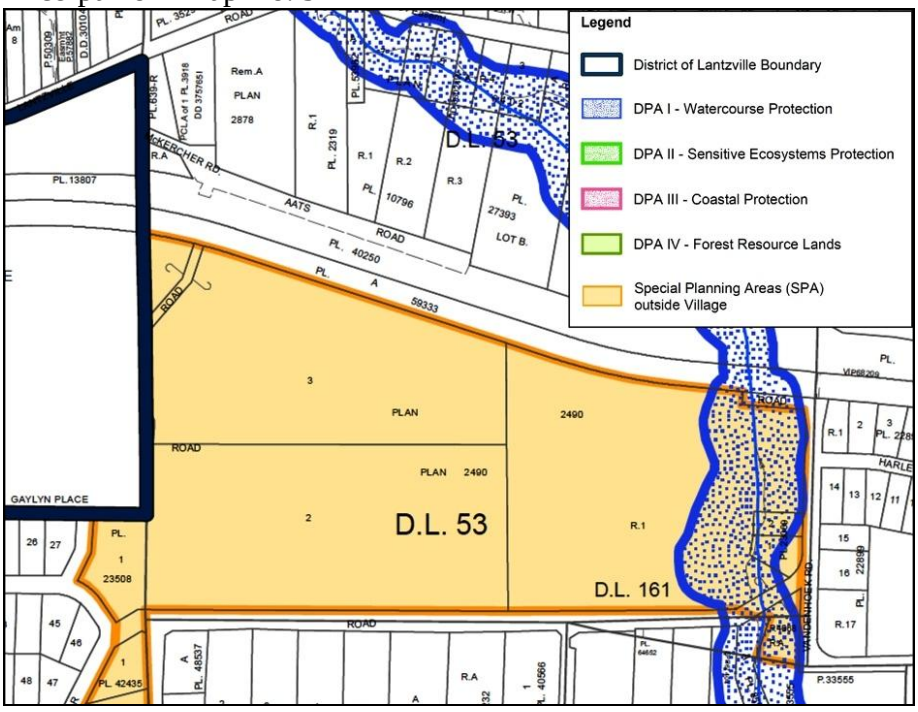
Development Permit Areas (DPAs) designated on the subject properties by the District of Lantzville include:

- Watercourse Protection (DPA 1) associated with Knarston Creek along the east side of 7704 Lantzville Road.
- Upper Lantzville Superior Road Special Plan Area.

DPA 1 areas include all land within a distance of 30 m from top of bank for all watercourses, streams, brooks, creeks, and wetlands.

Initial field surveys were conducted on March 11 and April 1, 2014 by Steve Toth, R.P.Bio. Toth and Associates conducted additional field assessments of the properties on March 15 and April 19, 2018, and January 23, 2025. The area of the properties located outside of the Watercourse Protection DPA was largely logged in 2018.

Excerpt from Map No. 9



1.1 Development Proposal

Sincana Land Corporation's subdivision plan (Figure 1) includes a phased subdivision to create 28 lots, plus 1.84 ha of parkland dedication associated with Knarston Creek.

2.0 METHODS

Survey methods included those outlined in the RAPR's Assessment Methods, Environmental Objectives, Best Management Practices and Requirements for Land Developments (MELP 2001), Develop With Care - Environmental Best Management Practices for Urban and Rural Land Development in British Columbia 2014, District of Lantzville DPA Guidelines and the Field Manual for Describing Terrestrial Ecosystems (LMH #25 MELP, MOF 1998).

3.0 RESULTS

3.1 Background Review

The subject properties have an overall northerly aspect and gentle grades. An exposed bedrock outcrop lies east – west through proposed Lots 4 – 8.

The properties are located in the Coastal Douglas-fir moist maritime (CDFmm) biogeoclimatic zone.

The B.C. Conservation Data Centre's map site[1] was reviewed to provide documented occurrences of rare species in the vicinity of the subject properties. The only documented species occurrences included:

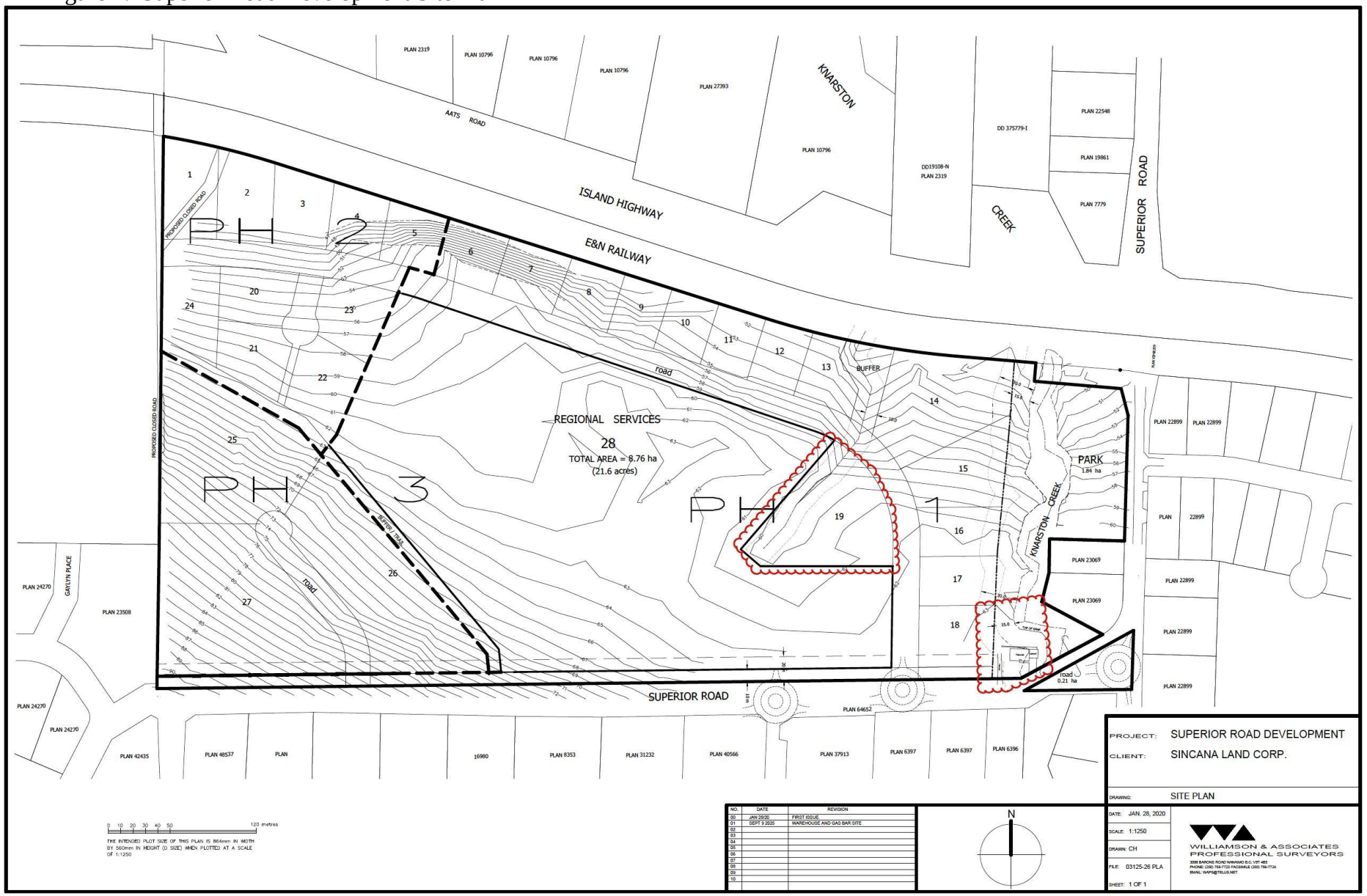
- Blue-listed (of special concern) Northern red-legged frog (*Rana aurora*) documented from the Southwind Drive and Lantzville Road areas;
- Red-listed (endangered) Common wood-nymph (*Cercyonis pegala incana*) documented from the Harwood Drive area;
- Blue-listed Wandering salamander (*Aneides vagrans*) from the Copley Ridge / Lantzville Woodlot area; and,
- Red-listed (endangered) Painted turtle (*Chrysemys picta*) from Doumont Marsh.

There is a "masked" element occurrence polygon covering the properties; however the centre of the occurrence is located approximately 4.7 km west of the properties. Masked element information is considered too sensitive to be publicly available and is only available from the CDC upon application with supporting rationale.

The CDC's map site indicates that a rare ecological community (Douglas-fir / dull Oregon-grape) has been mapped on the subject properties. The red-listed (endangered) Douglas-fir / dull Oregon-grape (*Pseudotsuga menziesii / Mahonia nervosa*) ecological community presence on the subject properties was identified by a Terrestrial Ecosystem Mapping (TEM) project (Madrone Environmental Services Ltd. 2008). As indicated previously the properties were largely logged in 2018 and therefore the purported rare ecological community occurrence does not depict current site conditions.

[1] https://maps.gov.bc.ca/ess/hm/cdc/

Figure 1. Superior Road Development Site Plan



The Species and Ecosystems Explorer site[2] was searched for red and blue-listed species with potential to occur in the project area. The search was restricted to the Regional District of Nanaimo area. The B.C. Species and Ecosystems Explorer search identified approximately 67 animal species and 42 plant species with potential to occur within the Regional District of Nanaimo area.

The list of animal species was refined by excluding those species known not to occur within the study area based on known limits of distribution, specific habitat requirements or extirpation. The refined list included 15 animal species with potential to occur within the general area of the subject properties (Table 1).

Table 1. List of potential animal species

Scientific Name	English Name	BC List	Potential	Comments
Aneides vagrans	Wandering Salamander	Blue	Moderate	Wandering salamanders are widespread in low numbers throughout low elevation forests on southern Vancouver Island.
Ardea herodias fannini	Great Blue Heron, *fannini* subspecies	Blue	Very low	There are no good foraging habitats on the property and potential nesting sites are limited to the Knarston Creek parklands.
Cercyonis pegala incana	Common Wood-nymph, *incana* subspecies	Red	Low	This species is known to be a Garry Oak ecosystem dependent species – which does not occur on the property. However, we have recently documented this species on disturbed lands in the Nanaimo area where Garry Oaks are not present.
Cervus elaphus roosevelti	Roosevelt Elk	Blue	Very low	While there are occasional sightings of elk (usually individual young bulls) in the Lantzville area, there are no known elk herds in the Lantzville area.
Chordeiles minor	Common Nighthawk	Blue	Low	Use restricted to foraging over the property. We have previously documented nesting sites on the open rock outcrops of the Lantzville Foothills.
Chrysemys picta pop. 1	Painted Turtle - Pacific Coast Population	Red	Very low	Included due to nearby record in Doumont Marsh. Requires permanent open-water water-bodies, which are not present on the properties.
Euphyes vestris	Dun Skipper	Blue	Low	Larval food plants are listed as sedges, which are present but not prolific on the properties.
Glaucidium gnoma swarthi	Northern Pygmy-Owl, *swarthi* subspecies	Blue	Very low	We still document this species occasionally in the Nanaimo area, but usually at much higher elevations.
Megascops kennicottii kennicottii	Western Screech-Owl, *kennicottii* subspecies	Blue	Very low	This species has become increasingly rare, with predation by the recently arrived Barred-owl as the suspected main cause of decline. Considering the relatively high numbers of Barred-owl in the area, the chances of this species occurring on the property is very low.
Mustela richardsonii anguinae	Ermine, *anguinae* subspecies	Blue	Very low	We have observed this species only once in 32 years and that location (near Elsie Lake) was within 10 m of a sighting documented 30 years prior.
Myotis lucifugus	Little Brown Myotis	Blue	Low	Widespread in a wide variety of habitats and still relatively common. Use would be restricted to foraging.
Myotis yumanensis	Yuma Myotis	Blue	Low	Widespread in a wide variety of habitats and still considered abundant. Use would be restricted to foraging.
Oncorhynchus clarkii clarkii	Cutthroat Trout, *clarkii* subspecies	Blue	Known	Knarston Creek supports cutthroat trout.

[2] https://a100.gov.bc.ca/pub/eswp/

Scientific Name	English Name	BC List	Potential	Comments
Patagioenas fasciata	Band-tailed Pigeon	Blue	High	While this species has drastically declined throughout southwestern BC it is still present in low numbers during the breeding season.
Rana aurora	Northern Red-legged Frog	Blue	Moderate	Documented nearby.

The list of plant species was refined to exclude those species with known limits of distribution or habitat requirements not found within the study area. No potential rare plant species were identified, and no rare plant occurrences have been identified by the CDC in the Lantzville area.

The *Sensitive Ecosystem Inventory: East Vancouver Island and Gulf Island 1993 – 1997* did not identify any sensitive ecosystems on the property. The Wildlife Tree Stewardship Atlas[3] did not identify any raptor nests on or adjacent to the property. The Great Blue Herons Atlas[4] did not identify any Great Blue Heron colonies on or adjacent to the properties.

3.2 Soils

The BC Soils information Finder Tool[5] (excerpt included below) indicates that there are several soils polygons on the subject properties, with Royston and Parksville soils dominant.

Soil polygons on the subject properties

[3] https://cmnmaps.ca/WITS_gomap/
[4] https://cmnmaps.ca/gbhe_gomap/
[5] https://governmentofbc.maps.arcgis.com/apps/MapSeries/index.html?appid=cc25e43525c5471ca7b13d639bbcd7aa

The *Soils of Southeast Vancouver Island Duncan – Nanaimo Area* indicates that **Royston** soils have developed in moderately stony, medium-textured morainal deposits which are partially derived from less resistant sedimentary bedrock formations. These soils are imperfectly drained with seasonal perched water-tables and lateral water movement over the unweathered compact parent material during rainy periods. They are characterized by loam to clay loam textures with a mottled horizon overlying a very compact horizon at 1 m. Royston soils have high bearing strengths but septic tank effluent disposal is impeded by the slowly permeable subsoil.

Parksville soils are poorly drained with seasonal perched watertables at 15 to 100 cm depth. They have developed in non-stony, sandy fluvial or sandy marine veneers that are underlain by fine marine material. Characteristically they have a dark brown or black organic matter-enriched surface horizon which grades into a light brown to grey, prominently mottled silty loam to silty clay at depths below 40 cm. Without adequate drainage, winter ponding of surface water presents challenges to both agricultural and urban uses.

Denman Island soils poorly drained and have a perched seasonal watertable. Denman Island soils are stone-free and generally have an organic matter enriched surface. They have sandy loam or loamy sand textures and normally have an underlying impermeable layer of either compacted moraine or bedrock.

Qualicum soils have developed on deep coarse-textured fluvial and fluvio-glacial deposits associated with all major streams and rivers in the survey area. They also occur on deep, coarse-textured marine deposits. Qualicum soils are rapidly drained, rapidly permeable, and generally do not have a watertable within 3 m of the surface. Many of these deep glacial outwash deposits have numerous springs and seepage areas along their escarpments. Areas where Qualicum soils occur generally have economically significant gravel deposits.

Dashwood soils are found on very gently to strongly sloping areas in glacial till landscapes. They have developed in well to moderately well drained, coarse textured fluvial, fluvio-glacial or marine deposits which overlie very compact morainal deposits. The highly permeable upper horizons are characterized by high coarse fragment contents of mostly gravel size with a loamy sand to sand matrix. The underlying till generally occurs at 60 to 100 cm depth and has a strongly cemented upper 20 to 30 cm that is gravelly to very gravelly sandy loam and has very low permeability. Dashwood soils are moderately suited for urban and related uses due to their upland location and high bearing strength although lateral movement of water along the relatively impermeable till contact can lead to excess water in some lower slope areas.

Beddis soils occur on nearly level to steep slopes below elevations of about 100 m. Generally they are found on well to rapidly drained sandy fluvial terraces, old post-glacial beaches and other marine deposits. Beddis soils are stone-free with loamy sand or sandy loam surface horizons. The lower horizons are compact and are loamy sand to sand in texture.

3.3 Field Assessment

Field surveys were conducted by Steve Toth, R.P.Bio. All features documented during the field surveys were geo-referenced using a Garmin Map60CSx handheld Global Positioning System (GPS). Field survey effort included 10.98 km of survey. The properties consisted of three broad ecotypes including:

1. Pasture lands
2. Logged areas
3. Knarston Creek Ravine parklands

3.3.1 Pasture lands

The pasture lands (Photograph 1) include a section of pasture in the south central portion of 7704 Superior Road and a small unused area of former pasture lands on the east side of 7780 Superior Road. The pasture is comprised of grasses and common weeds, fringed with Himalayan blackberry, Nootka rose and scotch broom. The unused pasture areas were reverting to forest lands and are comprised of grasses, sapling red alder, Himalayan blackberry, salmonberry, and wild gooseberry. Old drainage ditch networks were documented. Lack of ditch maintenance had resulted in flooding of pasture lands and expression of early successional stage wetland characteristics in some areas.

Photograph 1. January 23, 2025. View west from 7704 Lantzville Road through pasture lands

3.3.2 Logged areas

Forest cover over the vast majority of the properties consists of approximately 7 year old regenerative forest typical of logged areas (Photographs 2 & 3). Tree cover is represented by seedling arbutus, Douglas-fir, and bigleaf maple suckers from stumps. The shrub layer is comprised of ocean spray, dull Oregon-grape, salal, trailing blackberry, thimble berry, Nootka rose, blackcap, common snowberry, and invasive spurge laurel, Himalayan blackberry, scotch broom, English ivy and English holly. The herb layer is comprised of sword fern, bracken fern, thistle, stinging nettle, common weeds and grasses.

Photograph 2. January 23, 2025. View east from 7780 Lantzville Road through logged area to pasture lands.

Photograph 3. January 23, 2025. View west from proposed Lot 6 through logged area.

3.3.3 Knarston Creek Ravine Parklands

Forest cover within the proposed parklands includes Young Forest stage (i.e. 30 – 80 years) Douglas-fir, bigleaf maple, red alder and western redcedar with an understorey of sword fern, sparse salal, salmonberry and spurge laurel (see photos below).

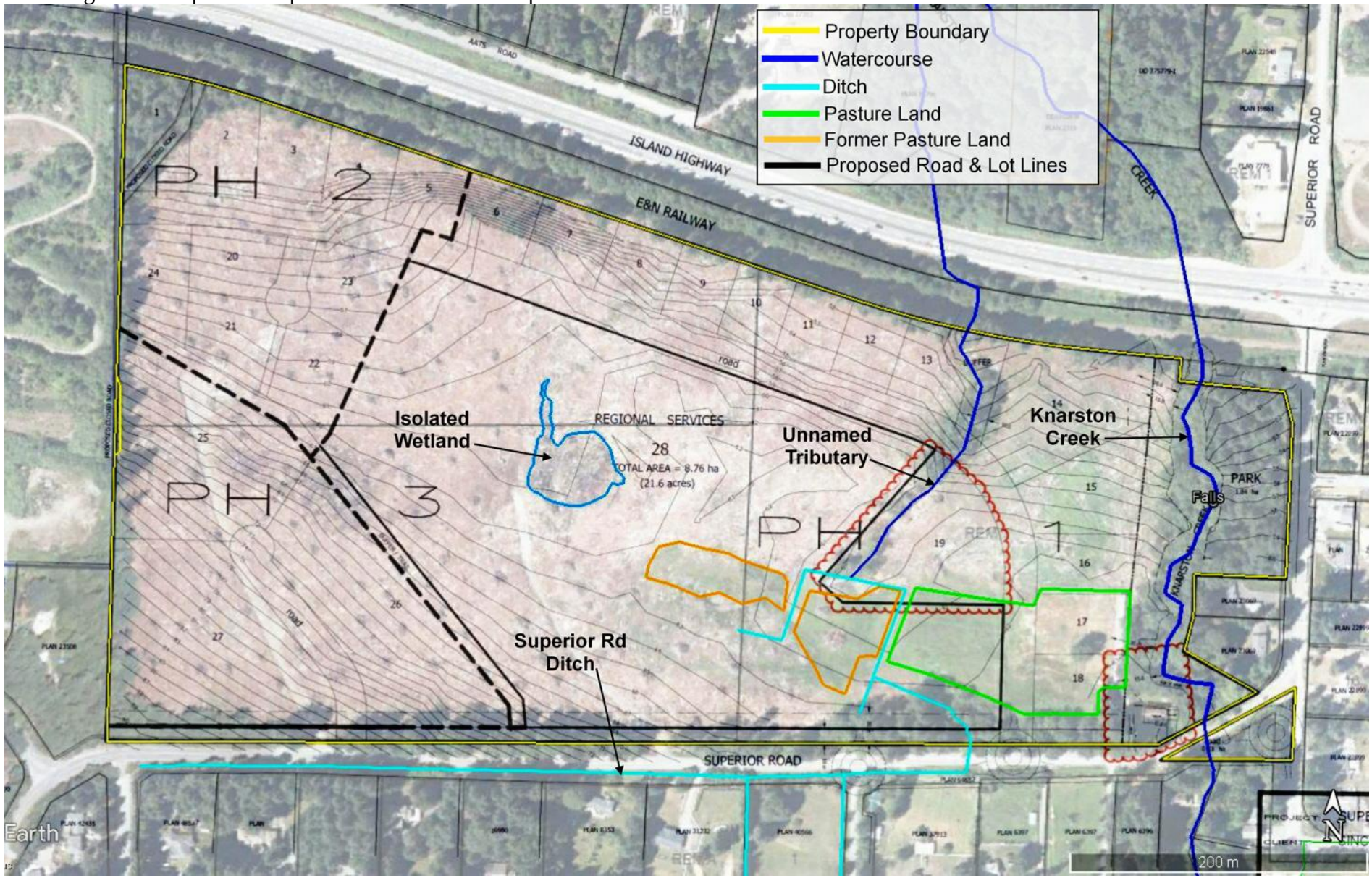
3.4 Water Features

The main water feature on the property is Knarston Creek located on the east side of 7704 Superior Road (Photographs 4 & 5). The RAPR Assessment conducted on Knarston Creek indicated that Knarston Creek would receive a Streamside Protection and Enhancement Area (SPEA) setback of 15.3 m from high water mark. The proposed watercourse setbacks are 15 m from top of ravine bank, which will exceed the RAPR's SPEA setbacks on the west side of the ravine by approximately 0.24 ha.

Photograph 4. January 23, 2025. View from top of ravine bank to falls on Knarston Creek.

Photograph 5. January 23, 2025. View from top of ravine bank downstream on Knarston Creek to E&N Railway culvert.

Figure 2. Proposed site plan overlaid on 2018 air photo



An unnamed tributary to Knarston Creek flows south – north through the west side of Lot 1. The tributary originates as drainage from an approximately 550 m long section of ditching and side street / driveway ditches along the south side of Superior Road that has been directed onto the subject property from a culvert at Superior Road (Photograph 6), as well as minor amounts of ditch drainage originating on the subject property. The ditch drainage has been directed to a shallow gully on the subject property. The channel within the gully downstream of the ditch network is poorly defined in some places. The gully section of the tributary would receive 10.0 m SPEA setbacks. The proposed stream buffer will exceed the SPEA setbacks at the north end near the E&N Railway.

Photograph 6. January 23, 2025. View of culvert discharging ditch flows from Superior Road onto the subject property.

At the upstream end of the gully the stream diverges into two old drainage ditches constructed to receive the drainage from the culvert at Superior Road and drain old pasture lands located between the south end of the gully and Superior Road. The ditches have not been maintained in many years, and as a result during the wet season the drainage from the Superior Road culvert spreads across the former pasture in undefined sheet flow.

The tributary is inaccessible to fish from Knarston Creek due to steep gradient below the tributary's culvert crossing at Highway 19.

An isolated seasonal shallow water wetland occurs in a depression along the north side of 7780 Superior Road. The wetland is dominated by red-osier dogwood thickets and an herb layer of sedge. Water depths at the time of survey were <40cm. No defined source of surface water supply to the wetland was found. The wetland appears to discharge in two directions, but no surface

flows or downstream channels were found. While this wetland appears to represent a natural feature, we noted that an old road grade along the west side of the wetland could have caused the wetland's formation. Based on the conditions noted during the surveys, the wetland may represent a "habitat sink" for amphibian species. Habitat sinks generally represent areas that amphibians are drawn to during the spring breeding season when water levels are high, but do not remain wet long enough through the summer, resulting in the death of the larval amphibians / tadpoles.

3.5 Wildlife

The surveyor recorded all wildlife utilization evidence (Table 4) including direct observations, vocalizations, tracks, game trails, scat, browsed and grazed vegetation, bones, feathers, nests, nest cavities and woodpecker holes. Utilization of forest types and special habitat features by wildlife was deduced from an analysis of habitat features, and observations and evidence of utilization.

Observations of bird species during the field surveys indicated relatively moderate species diversity and numbers of birds. Due to the early spring and mid-winter timing of the surveys it is expected that bird species diversity would be higher during the nesting season when migratory songbirds are present.

No evidence of raptor or heron breeding use of the property was found. Bird species observed on the property included common resident songbirds with some migratory songbirds documented during the April 1, 2014 survey. Spotted towhee, chestnut-backed chickadee, winter wren, Bewick's wren, golden-crowned kinglet, common raven, American robin, northwestern crow, bushtit, northern flicker, Anna's hummingbird, Wilson's warbler, pileated woodpecker, downy woodpecker, California quail, red-breasted nuthatch, red-breasted sapsucker, varied thrush, and dark-eyed junco were observed. Inactive nests of American robin were noted.

Evidence of use by mammals included common use by black-tailed deer, with some evidence of use by black bear, raccoon, eastern cottontail, red squirrel and introduced eastern grey squirrel. Townsend' vole tunnels were noted in the seasonally wetted areas of the pasture lands.

No herptiles were noted due to the timing of the surveys.

Table 2. Wildlife species documented on the property

Species	**Scientific Name**
Mammals	
Black-tailed deer	*Odocoileus hemionus columbianus*
Red squirrel	*Tamiasciurus hudsonicus*
Raccoon	*Procyon lotor*
Black bear	*Ursus americanus vancouvernsis*
Eastern cottontail	*Sylvilagus floridanus*
Eastern grey squirrel	*Sciurus carolinensis*
Townsend's vole	*Microtus townsendii*
Birds	
Anna's hummingbird	*Calypte anna*
California quail	*Callipepla califonica*
Bushtit	*Psaltriparus minimus*
Northern flicker	*Colaptes nauratus*
Northwestern crow	*Corvus caurinus*
Common raven	*Corvus corax*

Species	Scientific Name
Steller's Jay	*Cyanocitta stelleri*
Pileated woodpecker	*Dryocopus pileatus*
Wilson's warbler	*Wilsonia pusilla*
Downy woodpecker	*Picoides pubescens*
Red-breasted nuthatch	*Sitta canadensis*
Red-breasted sapsucker	*Sphyrapicus ruber*
Varied thrush	*Ixoreus naevius*
Golden-crowned kinglet	*Regulus satrapa*
Dark-eyed junco	*Junco hyemalis*
Chestnut-backed chickadee	*Parus rufescens*
Bewick's wren	*Thryomanes bewickii*
Spotted towhee	*Pipilo erythropthalmus*
Rufous hummingbird	*Selaphorus rufus*
Red-breasted nuthatch	*Sitta canadensis*
Winter wren	*Troglodytes troglodytes*
Robin	*Turdus migratorius*

4.0 DISCUSSION

The subject properties for the most part represent typical previously logged and cleared parcels with early successional stages comprised of shrubs, grasses and regenerating stands of fast growing tree species such as red alder, bigleaf maple and arbutus, as well as invasive plant species.

Wildlife species diversity observed on the property was typical for the area. The 2014 and 2025 field surveys documented evidence of use of the subject properties by black-tailed deer. Evidence included observations of shed antlers, beds, trails and winter browse in March 2014 and observations of 11 deer during the January 2025 field survey.

As the ditches on the subject properties do not originate from natural drainage features they are not regulated "streams" under the provincial *Water Sustainability Act* (*WSA*). Knarston Creek, the section of the tributary contained in the gully downstream of the ditch network, and the isolated wetland are "streams" under the WSA and will require authorization for any proposed alteration to these features.

The isolated wetland is located in the middle of an area that is intended for development. Our experience with attempts at preservation of isolated, seasonal, shallow water wetlands during land development has indicated that those attempts often fail due to changes in site hydrology as a result of development. It appears that there is an opportunity to create an alternate compensation wetland on or near proposed Lot 19 that could receive drainage from the ditch system and contain surface water for a longer duration, thereby providing amphibian breeding habitat. Abandonment of the existing wetland and creation of a new wetland as compensation habitat would require review and a WSA Approval authorization from the province. Preliminary discussions with a provincial WSA Authorization Specialist regarding potential wetland relocation are in progress.

A WSA Section 11 Notification authorization will be required for the proposed road crossing on the unnamed tributary. Engineered design including cross-sections and plan views, depth of fill and inlet / outlet armoring details will be required as part of the Notification submission. Minimum culvert sizing is 600 mm.

The proposed parkland at the east end of the property associated with Knarston Creek contains the majority of environmentally sensitive features on the subject properties including steep ravine slopes and fisheries values. The proposed parklands will also provide an important wildlife corridor; an attribute that will likely increase greatly in significance in the future as surrounding areas are developed / redeveloped.

No rare species were documented during the field surveys. Rare species with moderate – high potential to utilize the subject properties that were not documented during the surveys include northern red-legged frog, band-tailed pigeon and wandering salamander. Since logging in 2018, the potential for northern red-legged frogs and wandering salamanders to utilize the subject properties has decreased. Most amphibians require seasonally wetted areas for breeding. The only potential amphibian breeding site on the subject properties is the isolated red-osier dogwood / sedge swamp wetland. As indicated previously, this wetland may represent an amphibian habitat sink.

Band-tailed pigeon numbers have drastically declined throughout southwestern BC, but are still present in low numbers during the breeding season in the Nanaimo area. It is listed as having a high dependence on the annual use of mineral sites and we have previously documented such a mineral site near the head of Nanoose Bay. Pigeons are terrible nest builders and we have found only two band-tailed pigeon nests in 32 years. Based on our observations we would postulate that this species may be an old growth dependent species that was reliant upon large diameter moss covered limbs and mistletoe for nesting platforms. Logging has decreased the potential for nesting use of the subject properties, but has likely increased the potential use of the subject properties for foraging due to increased berry crops.

The proposed development conserves an area that exceeds the SPEA setbacks required by the provincial RAPR on the unnamed tributary to Knarston Creek and on Knarston Creek.

The provincially red-listed (endangered) Douglas-fir / dull Oregon-grape (*Pseudotsuga menziesii / Mahonia nervosa*) ecological community previously identified on the property by the province was logged in 2018. We note that all of the terrestrial ecological communities occurring within the Coastal Douglas-fir moist maritime (CDFmm) biogeoclimatic zone are listed by the province as either endangered or threatened. Therefore all land clearing of forested lands along the east coast of Vancouver Island from roughly Victoria to Buckley Bay below 140 m elevation occurs within a *potential* threatened or endangered ecological community.

5.0 RECOMMENDATIONS

We recommend that the stormwater management plan for the development be designed to ensure that the contribution of surface flows to watercourses on the property following development does not vary significantly from pre-development hydrologic conditions.

Any trail networks within the proposed Knarston Creek parklands will need to be designed and located such that they do not create undue stress or disturbance to wildlife. Trails should avoid areas of dense bush to allow use of these areas by wildlife for security, thermal, or nesting cover. Trail building should not occur on slopes >3:1.

A tree / vegetation management plan, stormwater management plan, and construction environmental management plan should be developed prior to any physical development of the property.

In order to avoid conflict with Section 34 of the provincial *Wildlife Act* we recommend that land clearing activities be limited to August 1 – April 1 to avoid the breeding / nesting season for most bird species. If scheduling of land clearing is proposed during the nesting season, a survey should be conducted by a Qualified Environmental Professional prior to clearing to identify any active bird nests.

We recommend that landscaping plans for development of the property include a high percentage of native plant species. Suitable plant species are indicated in Table 5.

Table 3. Recommended native tree and shrub species

Common name	Scientific name	Mature height (m)	Best Growth conditions
Trees			
Black hawthorn*	*Crataegus douglasii*	to 10	d-m
Pacific crabapple *	*Malus fusca*	2-12	m-w
Cascara *	*Rhamnus purshiana*	to 10	m-w
Pacific willow	*Salix lucida ssp. lasiandra*	to 12	w
European mountain ash *	*Sorbus aucuparia*	to 18	m-d
Pacific dogwood*	*Cornus nutalli*	to 12	m-d
Shore pine	*Pinus contorta*	to 18	d
Shrubs			
Saskatoon *	*Amelanchier alnifolia*	1-4	d-m
Red-osier dogwood *	*Cornus stolonifera*	1-4	m-w
Beaked hazelnut *	*Corylus cornuta var. californica*	1-6	d-m
Oceanspray	*Holodiscus discolor*	to 4	d-m
Pacific ninebark	*Physocarpus capitatus*	to 4	m-w
Nootka rose *	*Rosa nutkana*	to 3	d-w
Thimbleberry *	*Rubus parviflorus*	0.5-3	m
Salmonberry *	*Rubus spectabilis*	to 4	m-w
Hooker's willow	*Salix hookeriana*	to 6	w
Scouler's willow	*Salix scouleriana*	2-12	d-m
Sitka willow	*Salix sitchensis*	1-8	m-w
Red elderberry *	*Sambucus racemosa*	to 6	m
Snowberry *	*Symphoricarpos albus*	0.5-2	d-m
Red huckleberry *	*Vaccinium parvifolium*	to 4	d-m
Red Flowering Currant	*Ribes sanguineum*	1-2	d
Common snowberry*	*Symphoricarpos albus*	0.5-1.5	d-m
Dull Oregon-grape*	*Mahonia nervosa*	0.5	d
Evergreen huckleberry*	*Vaccinium ovatum*	0.5-2	d-m
Osoberry*	*Oemleria cerasiformis*	1-3	m-w

d = dry, m = moist, w = wet, * = fruit-bearing species

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Riparian Areas Protection Regulation: Assessment Report

Please refer to submission instructions and assessment report guidelines when completing this report.

						Date	August 27, 2025	
Primary QEP Information								
First Name	Steve			Middle Name				
Last Name	Toth							
Designation	R.P.Bio		Company	Toth and Associates Environmental Services				
Registration #	1788			Email	stoth@shaw.ca			
Address	6821 Harwood Drive							
City	Lantzville	Postal/Zip	V0R-2H0	Phone #	250-390-7602			
Prov/state	BC		Country	Canada				
Secondary QEP Information (use Form 2 for other QEPs)								
First Name			Middle Name					
Last Name								
Designation			Company					
Registration #				Email				
Address								
City		Postal/Zip		Phone #				
Prov/state			Country					
Developer Information								
First Name	Darwin			Middle Name				
Last Name	Mahlum							
Company	Sincana Land Corp.							
Phone #	250-713-1223			Email	darwin@darwingroup.ca			
Address	1 - 3179 Barons Road							
City	Nanaimo	Postal/Zip	V9T 5W5					
Prov/state	BC	Country	Canada					
Development Information								
Development Type	Subdivision: > 6 lot Single Family							
Area of Development (ha)	9.37		Riparian Length (m)	15				
Lot Area (ha)	9.37		Nature of Development	NA				
Proposed Start Date	NA		Proposed End Date	NA				
Location of Proposed Development								
Street Address (or nearest town)	7704 Superior Road							
Local Government	District of Lantzville			City	Lantzville			
Stream Name	Knarston Creek & Unnamed Tributary							
Legal Description (PID)	006-609-546			Region	Vancouver Island			
Stream/River Type	Stream			DFO Area	South Coast			
Watershed Code	920-419700							
Latitude	49	14	56	Longitude	124	06	16	

Completion of Database Information includes the Form 2 for the Additional QEPs, if needed. Insert that form immediately after this page.

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Section 1. Description of Fisheries Resources Values and a Description of the Development proposal

1.1 Introduction

Steve Toth, R.P.Bio. (Toth and Associates Environmental Services) conducted a detailed *Riparian Areas Regulation* (RAR) assessment of the 9.37 hectare (23.16 acre) property located at 7704 Superior Road in the District of Lantzville on March 11, 2014. The proposed development included subdivision of 7704 Superior Road (the subject property) and two adjacent properties (Lot 2 and Lot 3, D.L. 53, Nanoose District, Plan 2490) with a total area of 25.86 hectares (63.9 acres). The subdivision did not proceed and the RAR report was not submitted.

On November 1, 2019 the former RAR was repealed and replaced with the current *Riparian Areas Protection Regulation* (RAPR). Toth and Associates conducted additional field assessments of the properties on March 15 and April 19, 2018, and January 23, 2025.

1.2 Water Features

Knarston Creek (Figure 1) flows south – north along the east side of the subject property. Knarston Creek reportedly supports small populations of coho and chum salmon, as well as anadromous (sea-run) and resident cutthroat trout. Although the provincial Habitat Wizard and Fisheries Information Data Queries sites indicate that the culvert at Highway 19 is a barrier to upstream fish migration, the information contained in the records reference a "falls" as the barrier to fish passage. A waterfall located approximately 110 m upstream of Highway 19 on the subject property (Photograph 1) appears to represent an impassable barrier to upstream fish migration and although we have previously (1996) documented resident cutthroat trout distribution to upstream of the BC Hydro transmission corridor crossing located approximately 1.5 km upstream of the falls we could not find any documents referencing fish presence upstream of Highway 19.

Knarston Creek through most of the subject property is contained within a steep sided ravine. The ravine feature is most pronounced from the waterfall, downstream to the E&N Railway culvert (Photograph 2). The ravine gradually diminishes upstream of the waterfall to the Superior Road crossing (Photograph 3). The ravine is forested with mixed young forest comprised of red alder, western redcedar, big leaf maple and Douglas-fir. The understory is comprised primarily of sword fern and salmonberry.

Stream gradient on the section of Knarston Creek through the subject property averages 8.0%. Channel widths vary from 3.3 m – 8.5 m with an average width of 5.1 m. The stream channel morphology is Cascade-Pool. Based on these measurements Knarston Creek would receive Streamside Protection and Enhancement Area (SPEA) setbacks of 15.3 m from high water mark. However, the proposed development plan includes a 15 m setback from top of ravine bank (Figures 2 - 4), which will exceed the SPEA setbacks required by the RAPR by approximately 0.24 ha on the west side of the ravine. The setbacks will be contained within the proposed 1.84 ha parklands.

An unnamed tributary to Knarston Creek flows south – north through the central portion of the subject property. The tributary originates as drainage from an approximately 550 m long run of ditching and side street / driveway ditches along the south side of Superior Road that has been directed onto the subject property from a culvert at Superior Road (Photograph 4), as well as minor amounts of ditch drainage originating on the subject property. The ditch drainage has been directed to a shallow gully on the subject property. The channel downstream of the ditch network (Photographs 5 & 6) is poorly defined in some

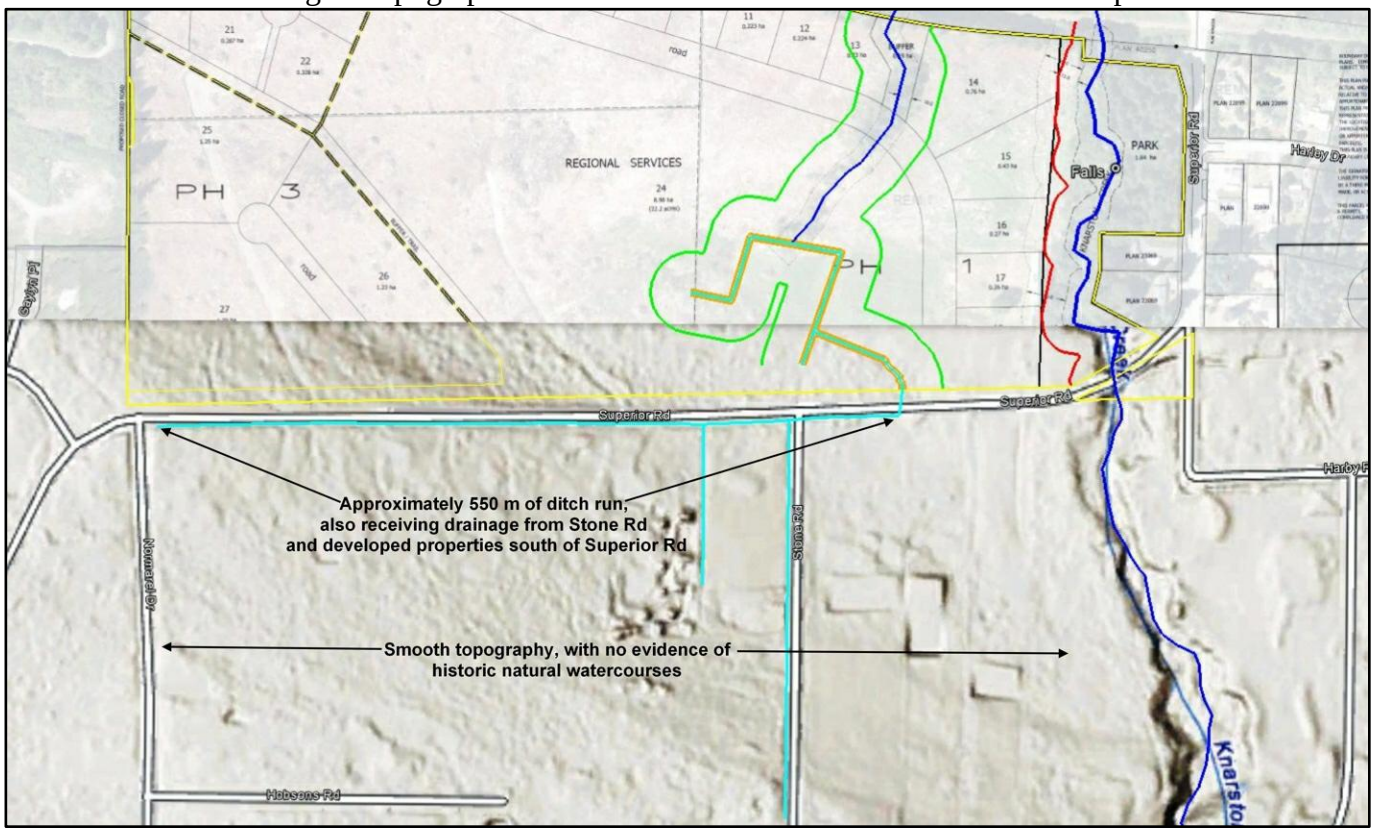
places. Channel substrates consist of fines and gravels. Average stream gradient is 8.1% and the channel width varies from 0.8 – 4.0 m with an average width of 1.9 m. The stream channel morphology is Step – Pool. The unnamed tributary would receive 10.0 m SPEA setbacks (Figures 2 - 4).

At the upstream end of the gully the stream diverges into two different old drainage ditches constructed to receive the drainage from the culvert at Superior Road and drain old pasture lands located between the south end of the gully and Superior Road. The ditches have not been maintained in many years, and as a result during the wet season the drainage from the Superior Road culvert spreads across the old pasture in undefined sheet flow.

The tributary is inaccessible to fish from Knarston Creek due to steep gradient below the tributary's culvert crossing at Highway 19.

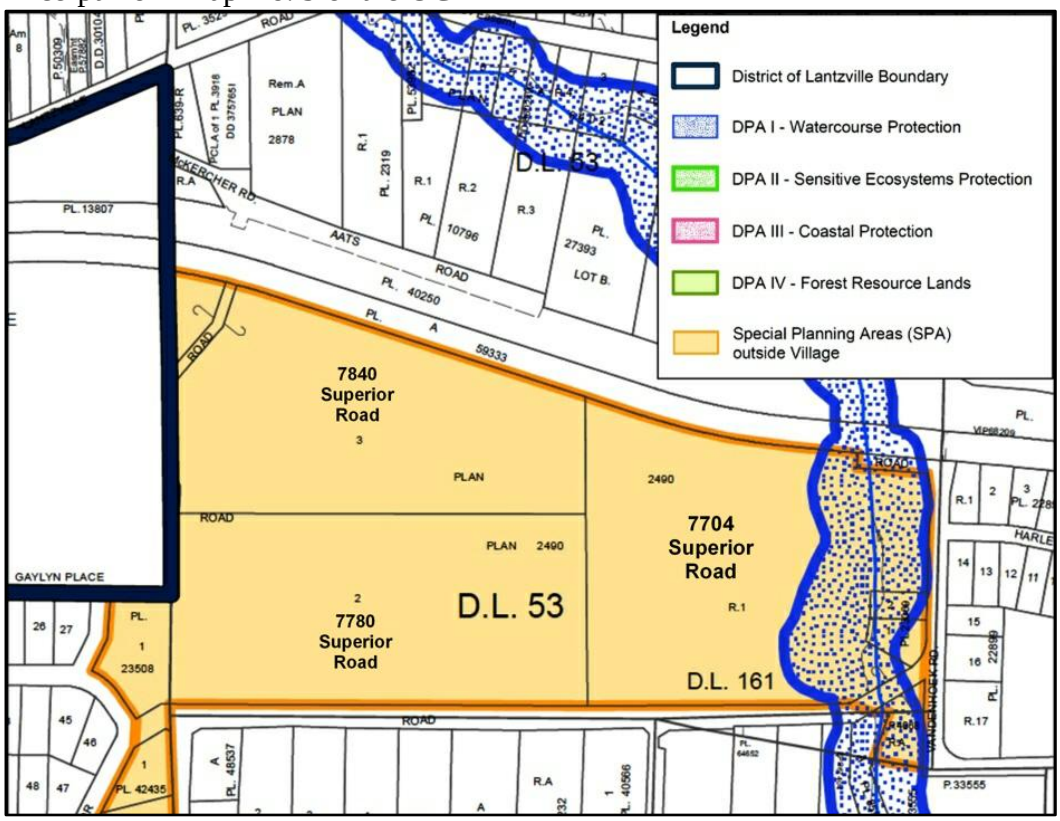
Our review of the air photo record indicates that discharge of ditch drainage from Superior Road to the subject property and the present ditch network on the subject property was already in place in 1968. Our review of the LIDAR derived DEM Hillshade mapping (excerpt included below) indicates that there is no evidence of any relic sections of natural gully / ravine areas upslope of Superior Road and therefore we interpret the upper part of this drainage system to represent entirely man-made drainage.

DEM Hillshade showing no topographic evidence of a natural watercourse south of Superior Rd



Map No. 9 (excerpt included below) of the District of Lantzville's Official Community Plan (OCP Bylaw No. 150, 2019) identifies Knarston Creek along the east side of 7704 Superior Road, but does not identify the unnamed tributary on the property.

Excerpt from Map No. 9 of the OCP



1.3 Proposed Development

Sincana Land Corporation's subdivision plan (Figure 2) includes development of 27 lots, as well as 1.84 ha of parkland dedication, and two 10 m wide trailway corridors. The Knarston Creek ravine will be within the area dedicated as parklands. None of the proposed lots (i.e. Lots 14 – 18) backing onto the parkland area will intrude within the 15 m setback from top of ravine bank of Knarston Creek.

The proposed buffer associated with the unnamed tributary exceeds the 10 m SPEA setback requirements at the north end of the subject property adjacent to the E&N Railway.

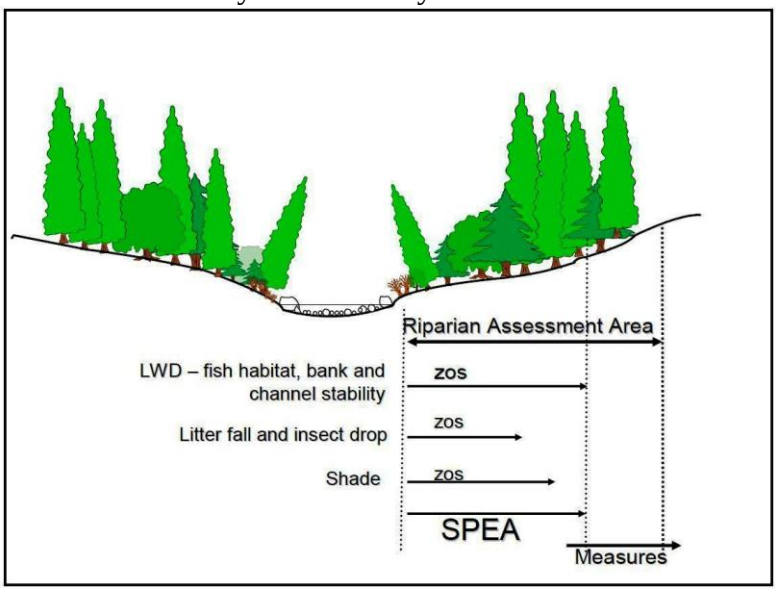
1.4 Watercourse Setbacks

Under the RAPR, the Detailed Assessment Methods rely upon determination of the "Zones of Sensitivity" by a Qualified Environmental Professional (QEP) for the features, functions and conditions that support fish life within the 30m Riparian Assessment Area. The SPEA width is then the largest "Zone of Sensitivity" (ZOS) resulting from the assessment as shown on the figure below. The five main features, functions and conditions that the assessment evaluates include:

1. Large Woody Debris (LWD) for fish habitat and the maintenance of channel morphology
2. Area for localized bank stability
3. Area for channel movement
4. Shade
5. Litter fall and insect drop

The QEP then provides "Measures" (Section 3.0 of this report) to protect the integrity of the SPEA setbacks.

Zones of Sensitivity and how they relate to SPEA setbacks



The resulting SPEA setbacks vary from a minimum of 2 m to a maximum of 30 m depending on stream type, average channel width, channel gradient and potential vegetation type.

Knarston Creek through the subject property would receive **15.3** m SPEA setbacks. Features of the subject property, proposed setback boundaries and configuration are shown on Figures 2 & 3.

The ditches collecting the drainage from the Superior Road ditch would receive 2 m SPEA setbacks, and the non-ditched section downstream of the ditches would receive 10 m SPEA setbacks.

Figure 1. Overview of Knarston Creek Drainage Network on September 2017 air photo

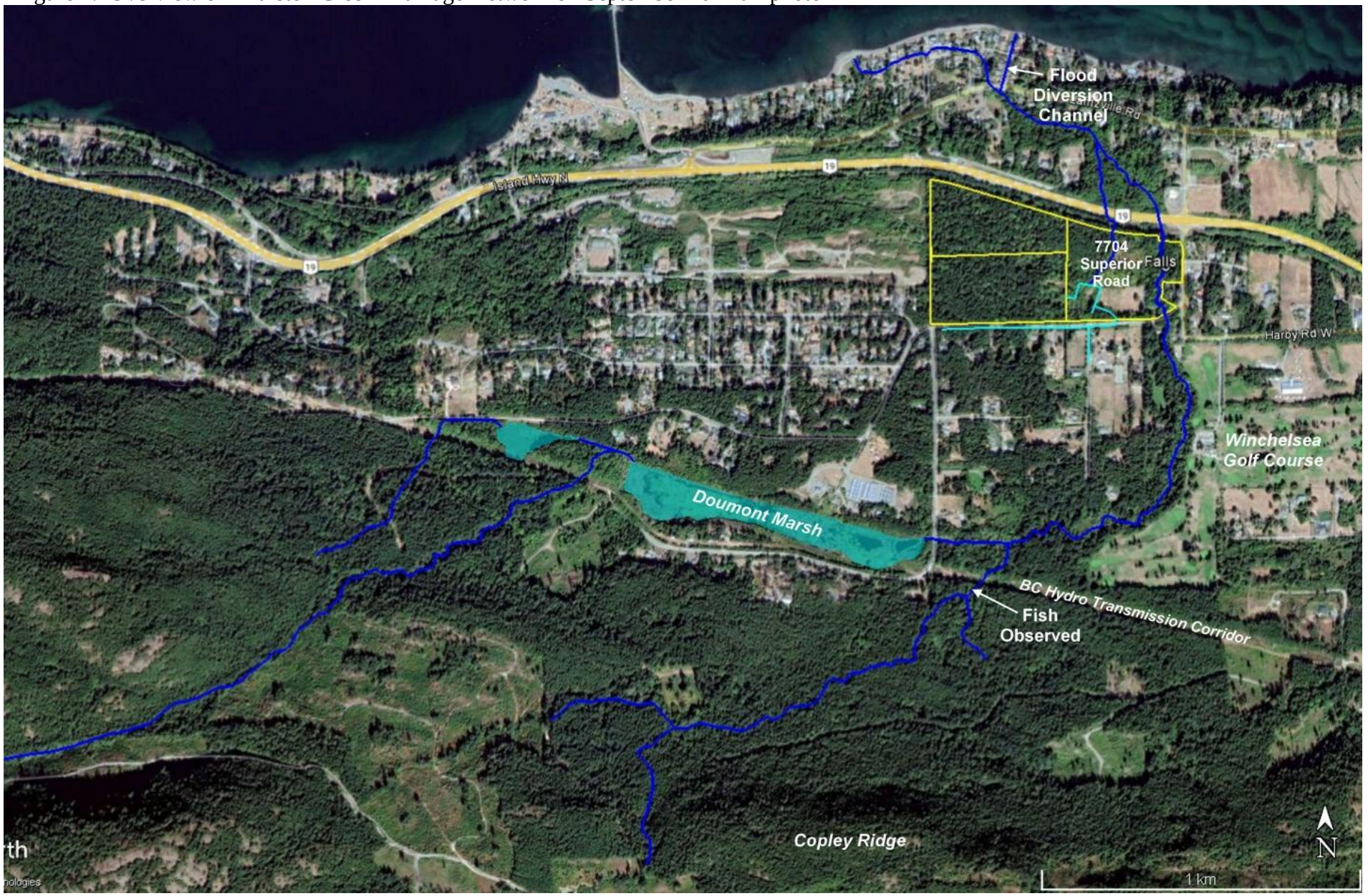


Figure 2. Proposed Subdivision Site Plan

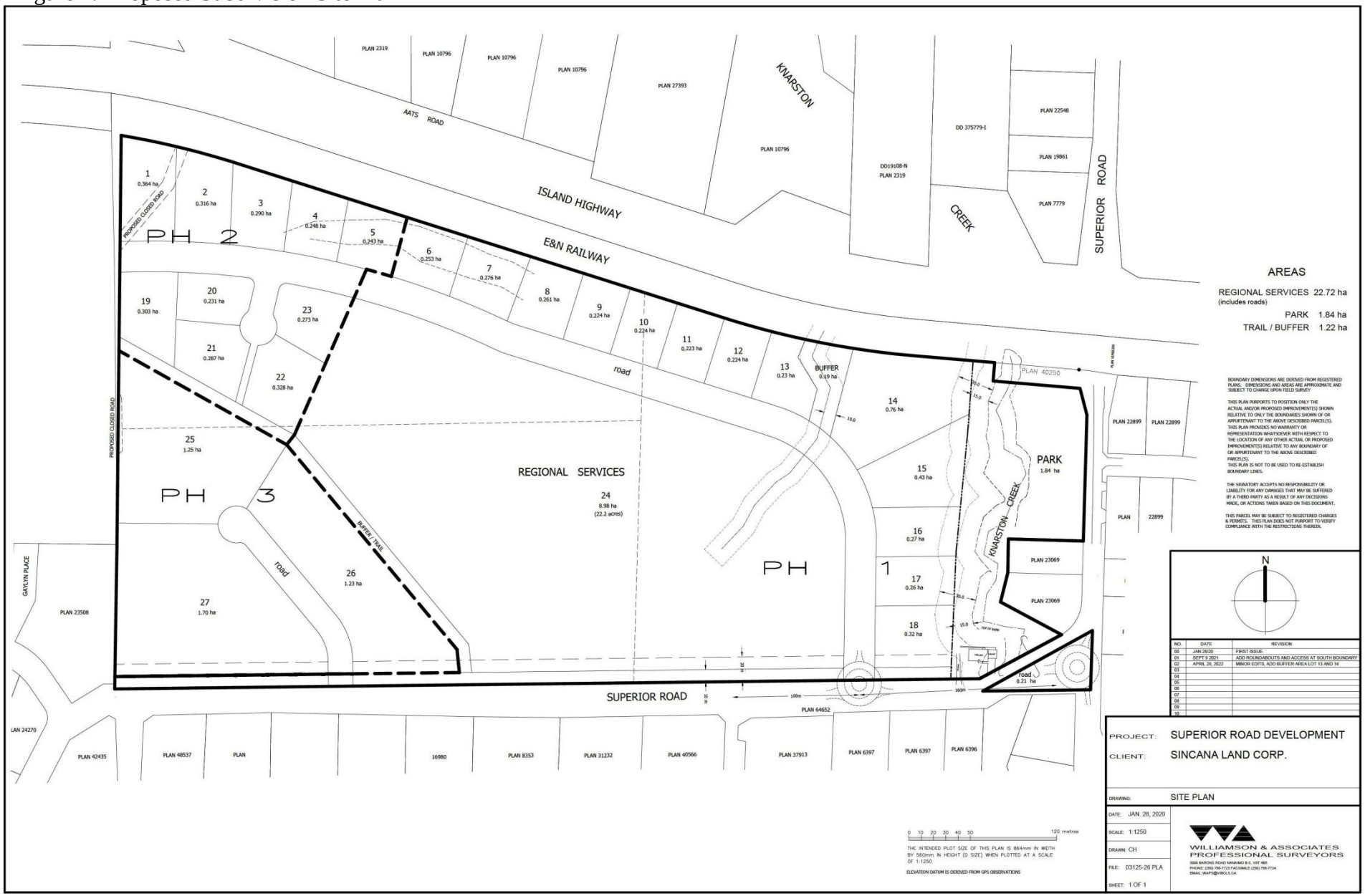


Figure 3. Stream setbacks, proposed road and lot lines on 2024 air photo

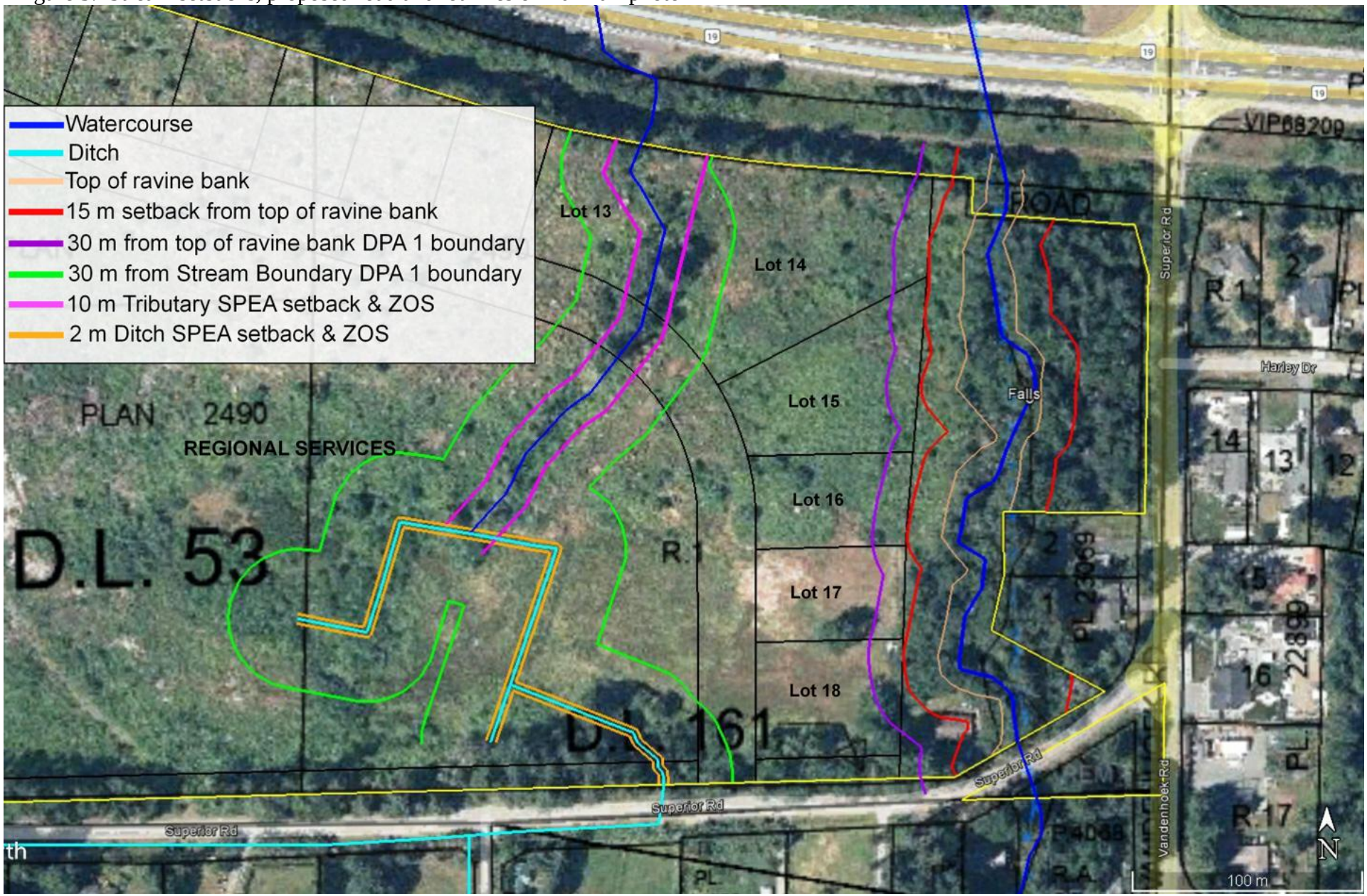
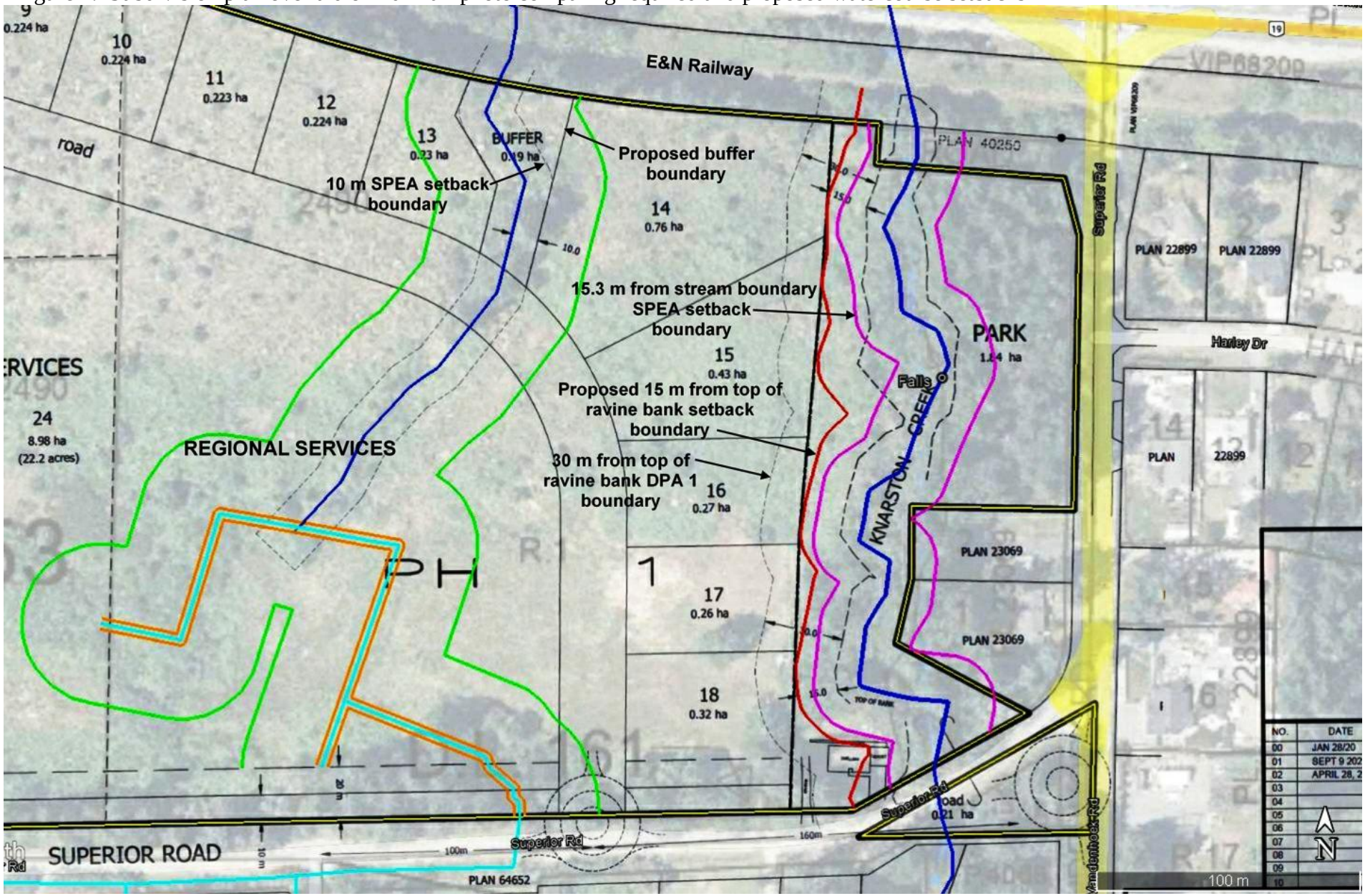


Figure 4. Subdivision plan overlaid on 2024 air photo comparing required and proposed watercourse setbacks



Section 2. Results of Detailed Riparian Assessment

Refer to Section 3 of Technical Manual

Date: August 27, 2025

Description of Water bodies involved (number, type): Knarston Creek

Stream: X

Number of reaches: 1

Reach #: 1

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

	Channel Width(m)		Gradient (%)
starting point	5.5		8.0
upstream	4.3		
	4.8		
	4.1		
	5.7		
downstream	3.3		
	4.9		
	6.2		
	5.6		
	8.5		
	4.4		8.0
Total: minus high /low	45.5		16.0
mean	5.1		8.0
	R/P	C/P	S/P
Channel Type		X	

I, Steve Toth (*name of qualified environmental professional*), hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Sincana Land Corp (*name of developer*);
c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.

Site Potential Vegetation Type (SPVT)

	Yes	No	
SPVT Polygons		X	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes

I, Steve Toth, hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
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c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.

Polygon No: 1

Method employed if other than TR

	LC	SH	TR
SPVT Type			X

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No: 1 — If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

LWD, Bank and Channel Stability ZOS (m)	10.2				
Litter fall and insect drop ZOS (m)	15.0				
Shade ZOS (m) max	15.3	South bank	Yes	X	No
Ditch — Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)					
Ditch Fish Bearing	Yes		No		If non-fish bearing insert no fish bearing status report
SPEA maximum	**15.3***	(For ditch use table3-7)			

Segment No: 2 — If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

LWD, Bank and Channel Stability ZOS (m)	10.2				
Litter fall and insect drop ZOS (m)	15.0				
Shade ZOS (m) max	NA	South bank	Yes		No
SPEA maximum	**15.3**	(For ditch use table3-7)			

I, Steve Toth , hereby certify that:
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***Note: As the proposed 15 m from top of ravine bank setbacks exceed the SPEA setbacks by a considerable margin, all Zones of Sensitivity will be contained within the proposed setbacks.**

Refer to Section 3 of Technical Manual

Date: August 27, 2025

Description of Water bodies involved (number, type): Unnamed Tributary to Knarston Creek

Stream	X
Number of reaches	1
Reach #	1

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

	Channel Width(m)		Gradient (%)
starting point	2.0		
upstream	1.4		
	1.1		
	0.8		
	1.3		
downstream	**5.0**		8.1
	3.0		
	1.9		
	2.4		
	2.9		
	1.2		
Total: minus high /low	17.2		8.1
mean	1.9		8.1
	R/P	C/P	S/P
Channel Type			X

I, Steve Toth (*name of qualified environmental professional*), hereby certify that:
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c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.

Site Potential Vegetation Type (SPVT)

	Yes	No	
SPVT Polygons		X	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes

I, Steve Toth, hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
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d) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.

Polygon No: 1

Method employed if other than TR

	LC	SH	TR
SPVT Type			X

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No: 1 — If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

LWD, Bank and Channel Stability ZOS (m)	10.0
Litter fall and insect drop ZOS (m)	10.0
Shade ZOS (m) max	5.7

South bank: Yes | X | No |

Ditch — Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)

Ditch Fish Bearing	Yes		No		If non-fish bearing insert no fish bearing status report	

SPEA maximum | **10.0** | (For ditch use table3-7)

Segment No:	2	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

LWD, Bank and Channel Stability ZOS (m)	10.0						
Litter fall and insect drop ZOS (m)	10.0						
Shade ZOS (m) max	NA	South bank	Yes		No	X	

SPEA maximum | **10.0** | (For ditch use table3-7)

I, Steve Toth , hereby certify that:
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c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation

Refer to Section 3 of Technical Manual

Date: August 27, 2025

Description of Water bodies involved (number, type): Ditches draining to Unnamed Tributary to Knarston Creek

Stream	X
Number of reaches	1
Reach #	1

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

	Channel Width(m)	Gradient (%)
starting point	1.3	
upstream	0.5	
	0.8	
	0.8	
	0.8	
downstream	0.8	1.0
	0.8	
	0.8	
	0.8	
	0.8	
	0.8	
Total: minus high /low	7.2	1.0
mean	0.8	1.0

I, Steve Toth (*name of qualified environmental professional*), hereby certify that:
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d) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.

	R/P	C/P	S/P
Channel Type			

Site Potential Vegetation Type (SPVT)

	Yes	No	
SPVT Polygons		X	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes

I, Steve Toth, hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
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c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.

Polygon No:	1			Method employed if other than TR
	LC	SH	TR	
SPVT Type			X	

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No:	1	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons						
LWD, Bank and Channel Stability ZOS (m)	2.0							
Litter fall and insect drop ZOS (m)	2.0							
Shade ZOS (m) max	2.0	South bank	Yes	X	No			
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)					As described in Section 1.2, the ditches receive drainage directed onto the property from the Superior Rd ditch network.		
Ditch Fish Bearing	Yes		No	X	If non-fish bearing insert no fish bearing status report	No fish access to this stream due to barriers at the Highway 19 crossing.		
SPEA maximum	**2.0**	(For ditch use table3-7)						

Segment No:	2	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons						
LWD, Bank and Channel Stability ZOS (m)	2.0							
Litter fall and insect drop ZOS (m)	2.0							
Shade ZOS (m) max	NA	South bank	Yes		No	X		
SPEA maximum	**2.0**	(For ditch use table3-7)						

I, Steve Toth , hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
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d) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation

Section 3. Measures to Protect and Maintain the SPEA

1. Danger Trees	There were no danger trees noted within the riparian assessment area during the field survey.

I, Steve Toth, hereby certify that:
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2. Windthrow	There was no windthrow noted within the riparian assessment area during the survey. As the SPEA setbacks will be buffered by a larger parkland area the proposed development is not likely to result in increased windthrow potential.

I, Steve Toth, hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
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3. Slope Stability	There were no signs of slope instability noted within the riparian assessment area.

I, Steve Toth, hereby certify that:
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4. Protection of Trees	The proposed subdivision will not require tree removal.

I, Steve Toth, hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Sincana Land Corp; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.	
5. Encroachment	The boundary of the watercourse setbacks must be marked on the ground prior to any physical disturbance occurring within the Riparian Assessment Area. We recommend a wooden split-rail or post and two-rail fence be installed along the west side of the parkland boundary and the east side of Lot 13 / west side of Lot 14.
I, Steve Toth, hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Sincana Land Corp; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.	
6. Sediment and Erosion Control	A sediment and erosion control plan will be required at future physical development stages.
I, Steve Toth, hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Sincana Land Corp; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.	
7. Stormwater Management	A stormwater management plan will be required at future physical development stages.
I, Steve Toth, hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Sincana Land Corp; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.	
8. Floodplain Concerns (highly mobile channel)	Knarston Creek is confined within a ravine, with minimal potential for lateral channel movement. Ditches draining to the unnamed tributary are in need of maintenance.
I, Steve Toth, hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Sincana Land Corp; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.	

Section 5. Environmental Monitoring

A monitoring plan is not required for subdivisions.

Section 6. Photos

Photograph 1. March 11, 2014. View of waterfall on Knarston Creek.

Photograph 2. March 11, 2014. View downstream on Knarston Creek to E&N Railway culvert.

Photograph 3. March 11, 2014. View of Knarston Creek upstream of falls.

Photograph 4. January 23, 2025. View of culvert discharging ditch flows from Superior Road onto the subject property.

Photograph 5. March 11, 2014. View downstream on unnamed tributary to E&N Railway culvert.

Photograph 6. January 23, 2025. Approximate same view as Photo 5.

Section 7. Professional Opinion

Qualified Environmental Professional opinion on the development proposal's riparian assessment.

Date August 27, 2025

1. I/We **Steve Toth**
(Please list name(s) of qualified environmental professional(s) and their professional designation that are involved in assessment.)
hereby certify that:

a) I am/We are qualified environmental professional(s), as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
b) I am/We are qualified to carry out the assessment of the proposal made by the developer **Sincana Land Corp.**, which proposal is described in section 3 of this Assessment Report (the "development proposal"),
c) I have/We have carried out an assessment of the development proposal and my/our assessment is set out in this Assessment Report; and
d) In carrying out my/our assessment of the development proposal, I have/We have followed the specifications of the Riparian Areas Protection Regulation and assessment methodology set out in the minister's manual; AND

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

a) [N/A] the site of the proposed development is subject to undue hardship, (**if applicable, indicate N/A otherwise**) and
b) [X] the proposed development will meet the **riparian protection standard** if the development proceeds as proposed in the report and complies with the measures, if any, recommended in the report.

[NOTE: "Qualified Environmental Professional" means an individual as described in section 21 of the Riparian Areas Protection Regulation.]

Appendix A: Riparian Assessment Assurance Statement – Qualified Environmental Professional

Note: This Statement is to be read and completed in conjunction with the *Professional Practice Guidelines – Legislated Riparian Assessments* and the Riparian Areas Regulation 2004 OIC 837 and is to be provided for *riparian assessments* (not landslides, floods or flood controls) for the purposes of the Riparian Areas Protection Regulation. Italicized words are defined in the guidelines.

To: The *Approving Authority*: District of Lantzville Jurisdiction: District of Lantzville Address: 7192 Lantzville Road, P.O.Box 100 Lantzville, BC V0R 2H0	Date: August 27, 2025

With reference to the Riparian Areas Protection Regulation Assessment for the subject property:

Legal description or PID: 006-609-546	Civic address: 7704 Superior Road

The undersigned hereby gives assurance that he/she is a *Qualified Environmental Professional:*

Name of *Qualified Environmental Professional:* Steve Toth Professional designation: R.P.Bio	Professional association: College of Applied Biology of British Columbia Association of Professional Biology

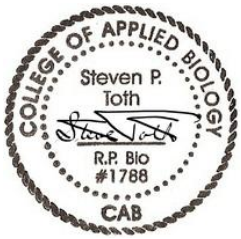
I have signed, sealed and dated, and thereby certified, the attached riparian assessment report on the property in accordance with the *Professional Practice Guidelines – Legislated Riparian Assessments* and with the *assessment methods.* That report must be read in conjunction with this statement. In preparing that report I have:

1. ☒ Collected and reviewed appropriate background information
2. ☒ Reviewed the *development proposal* on the property
3. ☒ Conducted field work on and, if required, beyond the property
4. ☒ Reported on the results of the field work on and, if required, beyond the property
5. ☒ Incorporated recommendations or assessment results from other *specialists*
6. ☒ Prescribed *measures* to protect and maintain the integrity of the streamside protection and enhancement area
7. ☒ Prescribed *measures* to avoid the occurrence of a *HADD**
8. ☒ Reported on the requirements for *field reviews* or *environmental monitoring* of the property during or following site works for the proposed *development* and recommended who should conduct those *field reviews* or *environmental monitoring*
9. ☒ Reviewed the *riparian assessment* report with the *client* and explained the content and the *measures* required to be implemented.

**HADD – harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes*

Steve Toth, R.P.Bio.

Toth and Associates Environmental Services



Appendix B: Qualified Environmental Professional (QEP) - Statement of Qualifications

Name of Primary QEP: Steve Toth
Professional designation: R.P.Bio
Registration Number: 1788

Professional associations:
College of Applied Biology of British Columbia
Association of Professional Biology

Training in Riparian Areas Regulation assessment methods	
Organization or agency delivering training:	Vancouver Island University
Name of trainer:	Angela Cameron / Lora Tryon
Date of training session:	December 3 – 6, 2024
Organization or agency delivering training:	Ministry of Forests, Lands and Natural Resource Operations
Name of trainer:	Andrew Appleton
Date of training session:	October 2019
Organization or agency delivering training:	Ministry of Forests, Lands and Natural Resource Operations
Name of trainer:	Margaret Henigman, Andrew Appleton, Stacey Wilkerson
Date of training session:	November 2015
Organization or agency delivering training:	Ministry of Forests, Lands and Natural Resource Operations
Name of trainer:	Margaret Henigman / Marlene Caskey, Michele Jones
Date of training session:	February 2012
Organization or agency delivering training:	Ministry of Environment
Name of trainer:	Margaret Henigman / Marlene Caskey, Peter Law
Date of training session:	March 2010

Other relevant education, training or experience:

Mr. Steven Toth, R.P.Bio is the owner and operator of Toth and Associates Environmental Services. Mr. Toth has 32 years of experience in the environmental consulting industry as a Registered Professional Biologist and Applied Science Technologist. Work experience consists of a diverse range of projects including environmental impact assessments, wildlife and ecological inventories, riparian area assessments, urban / sub-urban biophysical inventories, detailed fish habitat assessments, fisheries inventories, stream, lake and wetland classifications, fisheries research and population assessments, hydro-acoustics, forestry audits, tree inventories, water quality and environmental monitoring. Project experience includes:

- ~300 provincial *Riparian Areas (Protection) Regulation* Assessments as primary QEP;
- ~1000 biophysical inventories for various land development projects;
- ~24 Wildlife EIAs for run-of-river hydropower developments employing RISC Standards;
- >150 raptor and heron nest tree assessments;
- 4 Watershed Restoration Program Overview and Level 1 Fish Habitat Assessments, along with numerous other fisheries related projects;
- >100 environmental and water quality monitoring projects;
- >150 tree surveys for tree removal permit applications
- 5 Watershed Level 1:20,000 Forest Renewal B.C. Fish and Fish Habitat Inventories; and,
- >180 lake surveys conducted according to RISC standards and DFO's juvenile sockeye assessment methodologies.

Steve Toth, R.P.Bio.

Toth and Associates Environmental Services