



TREE ISLAND
Wildlife Habitat Plots

- Legend**
- Wildlife Habitat Plot
 - Proposed Subdivision Lot
 - Parcel Boundary

* The locations of the Proposed Subdivision Lot and Parcel Boundary are approximate.



MAP SHOULD NOT BE USED FOR LEGAL OR NAVIGATIONAL PURPOSES

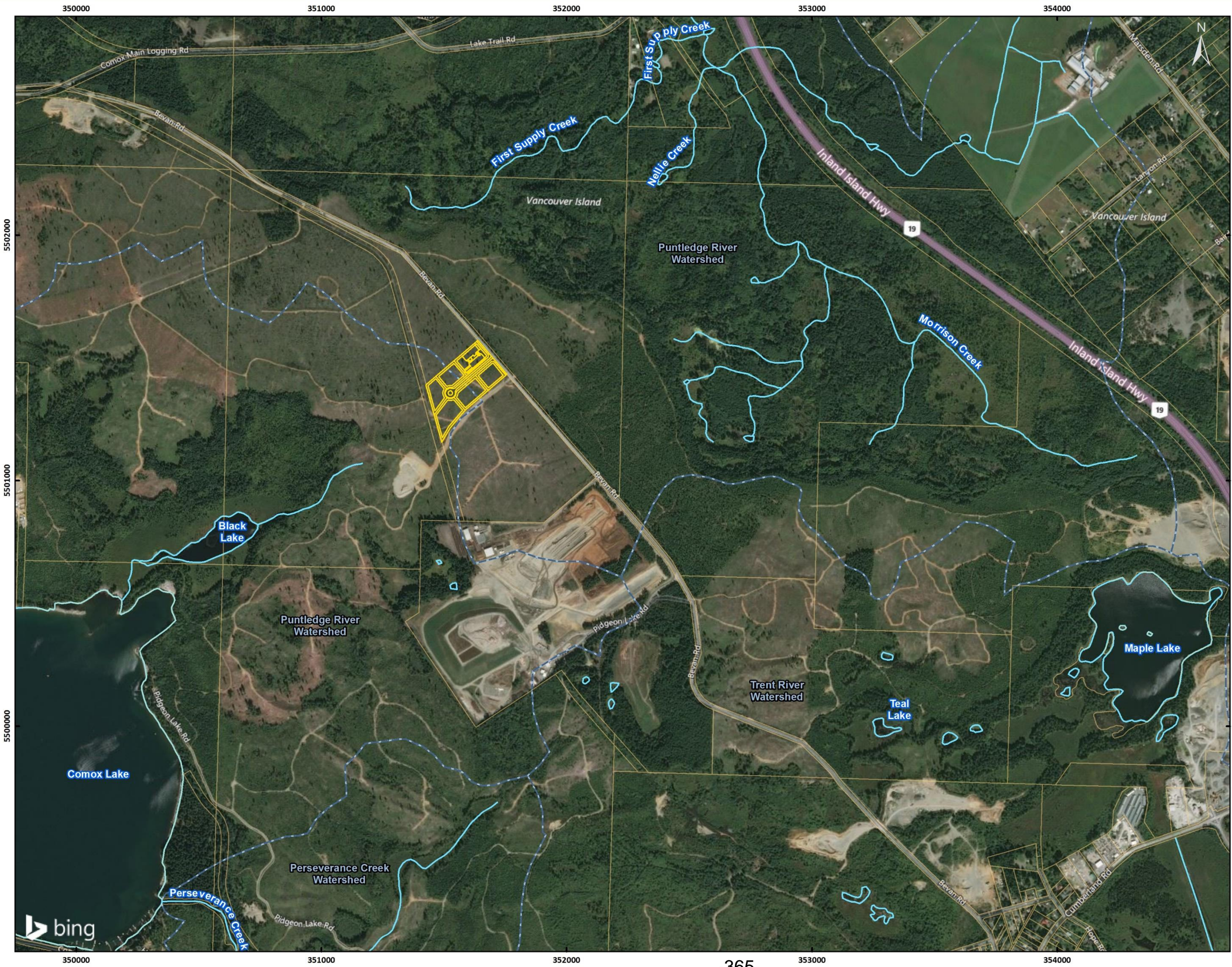
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4			
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Date Saved: 05/04/2019
Coordinate System: NAD 1983 UTM Zone 10N

Map 2





TREE ISLAND
**Watersheds and
Adjacent Waterbodies**

- Legend**
- Proposed Subdivision Lot
 - Parcel Boundary
 - Streams
 - Watersheds

* The locations of the Proposed Subdivision Lot and Parcel Boundary are approximate.



**MAP SHOULD NOT BE USED FOR LEGAL
OR NAVIGATIONAL PURPOSES**

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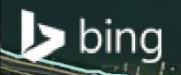
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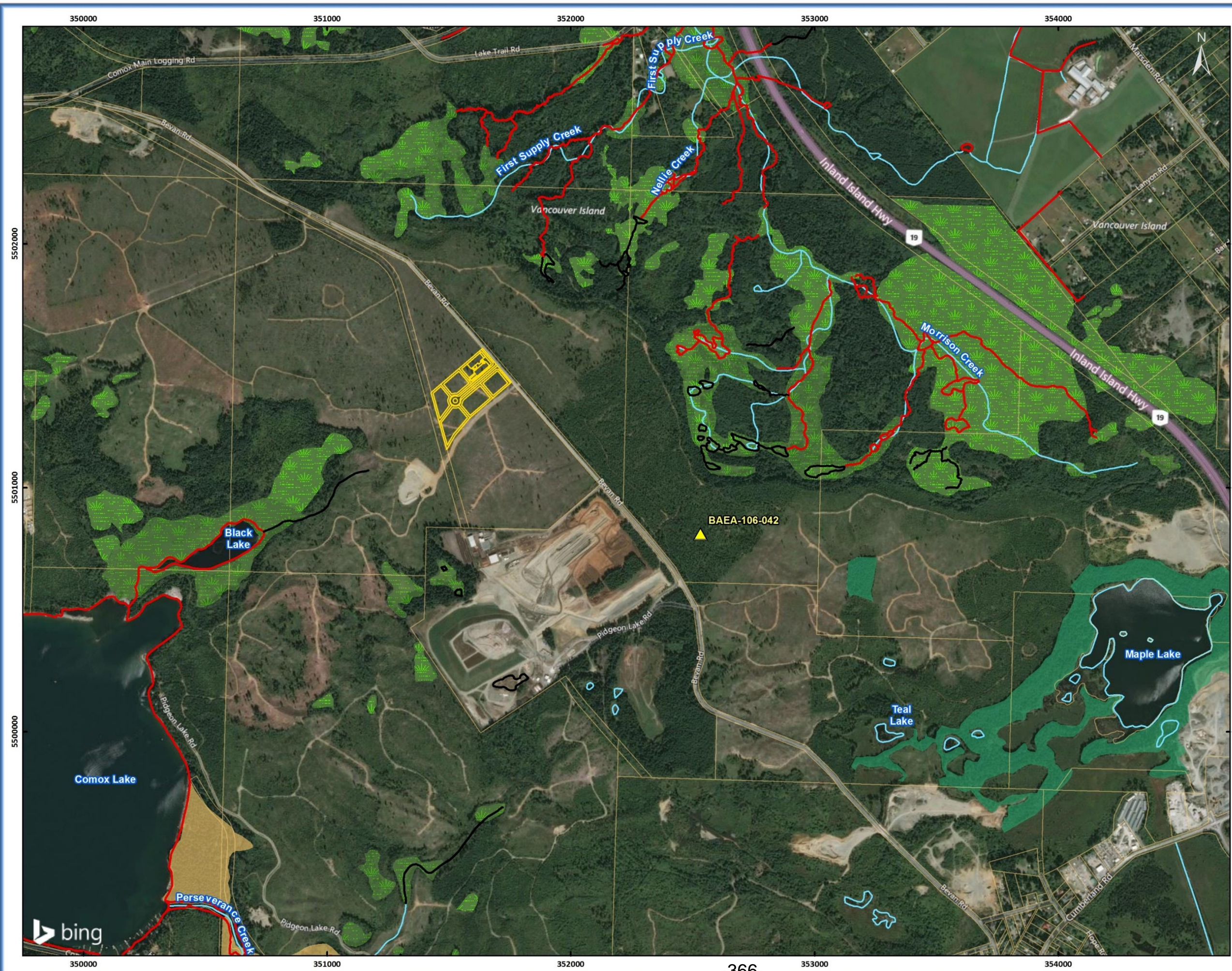
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4			
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Date Saved: 04/04/2019
Coordinate System: NAD 1983 UTM Zone 10N



Map 3





TREE ISLAND

Terrestrial and Aquatic Features

- Legend**
- ▬ Proposed Subdivision Lot
 - ▲ Bald Eagle Nest
 - Confirmed and Unknown Fish Presence**
 - ▬ Fish presence
 - ▬ Unknown Fish Presence
 - Sensitive Ecosystem Inventory**
 - Wetland
 - Riparian
 - Older Second Growth Forest
 - ▬ Streams
 - ▬ Parcel Boundary



MAP SHOULD NOT BE USED FOR LEGAL OR NAVIGATIONAL PURPOSES

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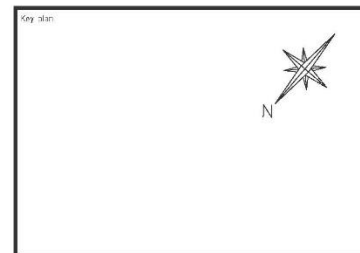
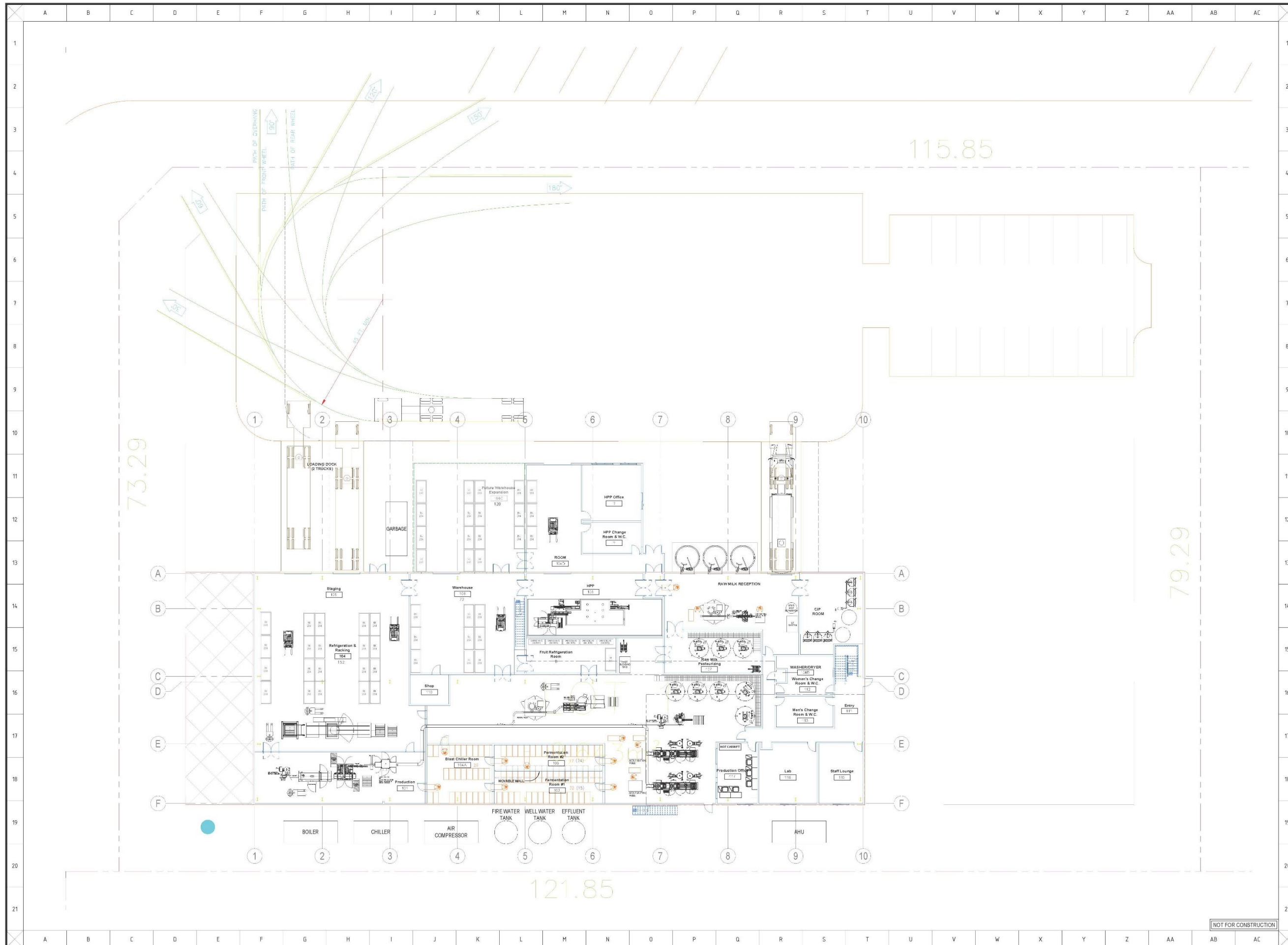
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2			
3			
4			
5			

Date Saved: 05/04/2019
 Coordinate System: NAD 1983 UTM Zone 10N

Map 4

DRAWINGS



Rev.	Date	Drawn by	Revised by	Checked by
A	2019-03-22	D.G.	FOR COMMENTS	A.R.

This drawing shall not be used for construction purposes unless approved below.

Approved: _____ Date: _____

Scale: _____

LAPORTE

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Project: TREE ISLAND YOGURT PLANT

Process & Mechanical EQUIPMENT SITE PLAN

Designed by: _____ Drawn by: D. Guerrero Checked by: A. Rose

Date: 2019-04-05 Scale: 1/16" = 1'-0" Size: ARCH-D

Project #: LH-TRI-01 Revision #: PEQ-4000 Revision: A

APPENDICES

Appendix A. Village of Cumberland Bylaw 990 requirements and how they are addressed in this report

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Table 1. Development Permit Area #1 Environmental Protection Guidelines – General Requirements.

OCP Section	DP Language	Addressed in this report	Status	
			Subdivision	Tree Island Yogurt Facility
10.1.5	DPA#1 EP Guidelines – General Requirements			
1	Biological site inventory (bio-inventory) according to the procedures described in Develop with Care 2012 - Environmental Guidelines for Urban and Rural Land Development in British Columbia, Appendix B and amendments hereto, prepared by the Ministry of Forest Lands and Natural Resource Operations.	Develop with Care (2012, 2014) was followed for the current study.	Complete	Complete
2	The bio-inventory should be prepared by a qualified professional biologist together with other professionals of different and relevant expertise, as the project warrants.	The report was prepared by qualified professional biologists, a professional forester and a professional geoscientist and reviewed by a senior professional biologist with expertise in wildlife and terrestrial ecology, hydrology, hydro-geology and geology, and construction environmental management.	Complete	Complete
	If wetlands and riparian areas exist within the development area, hydrologists and hydro-geologists should be consulted to ensure the proper hydrological function is maintained within these ecosystems.	No wetlands or riparian areas are present in or within 100 m of the property or development area.	N/A	N/A
	A professional geoscientist should be consulted if there is erosion potential or slope instability.	There is no erosion potential or slope instability, as determined by a geoscientist.	N/A	N/A
	The consultant or team of consultants should have an understanding of wildlife biology—especially for species at risk, geomorphology, environmental assessment, and development planning in British Columbia, specific expertise in the wildlife species, wildlife habitat, and ecosystems of the West Coast region is highly preferred.	The consultant team has an understanding of wildlife biology—including for species at risk, geomorphology, environmental assessment, and development planning in British Columbia, and specific expertise in the wildlife species, wildlife habitat, and ecosystems of the West Coast region.	Complete	Complete

¹Interpretation: 'Complete' means that the condition has been addressed and no further work is required, this may be because the work is complete and no further work is required or because any risk to potential ESA's/EVR's is low. 'N/A' means that the condition does not apply because the site conditions that the condition applies to are not present on site, '-' means that the condition does not require action or a commitment at this time; have been appropriately mitigated; 'Partial - future phase' means that bio-inventory requirement has been met for the current phase but needs to be reviewed in a future phase in consideration of detailed development design when sufficient design detail becomes available to fully address the condition; 'Future phase' means that the detailed development design is required to address the condition.

Table 1. Continued.

OCP Section	DP Language	Addressed in this report	Status	
			Subdivision	Tree Island Yogurt Facility
10.1.5	DPA#1 EP Guidelines – General Requirements			
3	The bio-inventory shall:			
a)	Be in accordance with Develop with Care 2012: Environmental Guidelines for Urban and Rural Land Development in British Columbia (DWC) or most current edition, and with reference to Appendix B: Bio-inventory Terms of Reference.	Develop with Care (2012, 2014) was followed for the current study.	Complete	Complete
b)	Locate the parcel relative to watershed area(s) and describe the hydrological features of the parcel—including water shedding, collecting and conveyance areas.	A map of the property relative to the watershed areas is provided with the Project Maps at the end of the report and the hydrological features of the property are described in Section 4.2.	Complete	Complete
c)	Examine the natural environmental features within the parcel—including rare and threatened plant communities, endangered species listed under the <i>Provincial Wildlife Act</i> and the Federal <i>Species At Risk Act</i> (SARA) and any identified critical habitats for those species, and other important habitat features.	The natural environmental features of the parcel are examined within the report.	Complete	Complete
d)	Provide a description and map(s) showing the boundaries of Environmentally Sensitive Areas—including 30.0 metres from the natural boundary of terrestrial areas, and 30.0 meters from the natural boundary of watercourses, wetlands and lakes, and 30.0 meters from the top of the bank of a watercourse, where a bank is within 15.0 meters of the natural boundary of the watercourse). Determine the restricted development and buffer zones on the parcel through an explanatory, reference or legal survey plan prepared by a BC Land Surveyor that shows these boundaries (refer to Section 4, Table 4.1 <u>Develop With Care</u> for recommended target buffer distances for biodiversity conservation).	No Environmentally Sensitive Areas were detected on the property, nor are any Terrestrial or Aquatic Ecosystem Areas identified in the OCP. Therefore, no restricted development or buffer zones are necessary to protect ESAs on the property.	N/A	N/A
e)	Examine the impact of the proposed development on the soils, vegetation, watercourses, wildlife, and hydrology in all restricted development and buffer zones; and provide development pattern and servicing recommendations to minimize these impacts.	No restricted development or buffer zones identified on the property.	N/A	N/A
f)	Examine pre-development water quality and quantity on the site and provide mitigation and enhancement strategies to maintain pre-development water quality and quantity for the restricted development zones and buffer areas.	No surface or groundwater (examined to 0.5 m depth) observed, nor are restricted development zones or buffers	N/A	N/A
g)	Examine the impact of the proposed development on the larger watershed area(s) including watercourses, habitat connectivity, water quality and quantity upstream and downstream, and possible cumulative hydrological impacts that may result; and provide development pattern and servicing recommendations to minimize them.	The potential impacts of the proposed development on the larger watershed are expected to be low. There are no immediate potential surface water impacts noted at this time. The potential impacts on groundwater recharge and/or watercourses > 100 m from the property as a result of impervious surfaces due to development are expected to be low. There are potential groundwater quality issues as a result of industrial development; however, these potential impacts are assessed to be low risk at this time. Wildlife may cross the property, however, the property and development area do not contain specific characteristics favorable for wildlife to use as a corridor as compared to the surrounding area. Impacts assessed and recommendations provided in Sections 5 and 6.	Complete	Complete
h)	Recommend appropriate timing of works associated with development in order to minimize impacts to wildlife during migration, breeding, birthing, and rearing seasons.	It is recommended that all work is completed outside of the breeding bird season (April 1- August 15) in order to minimize impacts to wildlife. Recommendations for appropriate timing of works, and associated mitigations, are provided in Sections 5 and 6.	Complete	Complete

Table 1. Continued.

OCP Section	DP Language	Addressed in this report	Status	
			Subdivision	Tree Island Yogurt Facility
10.1.5	DPA#1 EP Guidelines – General Requirements			
4	The detailed bio-inventory is used to create the site plan. The site plan and development design must include:			
	a) Detailed drawings or plans clearly describing the proposed structures and the materials and type of construction to be employed, including a cross section of the proposed structure and its layout on the ground;	The detailed drawings of the subdivision and Tree Island facility are included in the 'Drawings' section of the bio-inventory.	Complete	Complete
	b) A detailed description of existing structures near the proposed structure or area of work;	No structures are currently present on or in the vicinity of the property. The closest structure is the waste management facility, located approximately 500 m to the southwest of the property.	N/A	N/A
	c) A detailed drawing or plan clearly describing any area of the removal of rock, gravel, or soil;	No ground works are required for the subdivision. Soil will be removed for the footprint of the facility on Lot 1.	N/A	Complete
	d) The reason and purpose of the work;	The purpose of work is to subdivide the land and build the Tree Island Yogurt facility as described in Section 1 of the bio-inventory.	Complete	Complete
	e) The name of the contractor, if any, who will do the work;	No contractor is required for the subdivision.	N/A	To be completed
	f) Time required for completion in calendar days;	This condition is relative to the construction of the Tree Island Yogurt facility only.	N/A	To be completed
	g) Any further information required by the Village to ensure compliance with this bylaw, including construction design or structural details of any part of the proposed works;	Sufficient design drawings for the subdivision are provided in the 'Drawings' section of the bio-inventory. Detailed design drawings for the Tree Island Yogurt facility are provided. Unknown if further requirements requested.	To be completed	To be completed
	h) A description of how environmental protection DPA requirements will be met, and how any issues identified in the bio-inventory will be mitigated, and how recommended mitigation measures will be achieved;	Provided in Sections 5 and 6 of the bio-inventory and in this table.	Complete	Complete for this phase. Review in future phase in consideration of detailed development design.
	i) Any replanting prescription for vegetation in disturbed areas that is prescribed by the bio-inventory report;	No vegetation will be removed for subdivision, therefore no replanting is necessary. The site plan may include replanting prescriptions for temporarily disturbed areas associated with construction of the Tree Island Yogurt facility.	N/A	N/A
	j) A copy of any applicable federal and provincial approvals.	No federal or provincial approvals are expected to be required for subdivision. No federal or provincial approvals relevant to the contents of this bio-inventory are expected to be required.	N/A	N/A
5	As a condition of the development permit and in accordance with the bio-inventory for the project, the Village may require monitoring of the development by a qualified professional such as a professional engineer or biologist.	At a minimum, is recommended that a qualified environmental professional conduct surveys for active bird nests and other wildlife with low motility (i.e., amphibians and reptiles) prior to any vegetation removal or grubbing in the breeding bird season as per Sections 5 and 6 of the bio-inventory. No development will occur during the subdivision phase.	N/A	Complete

Table 1. Continued.

OCP Section	DP Language	Addressed in this report	Status	
			Subdivision	Tree Island Yogurt Facility
10.1.5 DPA#1 EP Guidelines – General Requirements				
6	Should damage occur to an environmentally sensitive area during development, the Village shall require, at the developer’s cost:			
	a) A Professional assessment and report on the damage incurred along with recommended mitigations;	-	-	-
	b) Full mitigation and rehabilitation of the impacted ESA.	-	-	-
7	Development design must reflect the objectives and guidelines of the <u>Standards and Best Practices for Instream Works, Land Development Guidelines for the Protection of Aquatic Habitat, Stormwater Management: A Guidebook for British Columbia</u> , <u>Develop with Care Environmental Guidelines for Urban and Rural Land Development in British Columbia</u> (Section 3 - Guidelines for Ecosystems and Species Protection and Section 4), <u>Access Near Aquatic Areas: A Guide to Sensitive Planning, Design and Management</u> and other best management practices guides produced by the provincial government.	Subdivision will not require development. It is recommended that subdivision follow the BMPs and reflect the objectives and guidelines of Stormwater Management: A Guidebook for British Columbia and Develop with Care Environmental Guidelines for Urban and Rural Land Development in British Columbia (Section 3 - Guidelines for Ecosystems and Species Protection and Section 4). No aquatic ecosystem areas or features occur on the property thus the remaining listed guidance does not apply.	N/A	Complete for this phase. Review in future phase in consideration of detailed development design.
8	Plan, design, and implement land development and subdivision in a manner that:			
	a) Supports the maintenance and restoration of natural system functions including watercourse, and groundwater recharge; hydrology	The subdivision has a low impact on natural system function as per Section 4 of the bio-inventory.	Complete	Partial - future phase
	b) Preserves natural features including soil, watercourses, groundwater, and native shrubs, groundcover and tree cover;	The subdivision has a low impact on natural features as per Section 4 of the bio-inventory.	Complete	Partial - future phase
	c) Maintains connectivity and linkages with adjacent sensitive ecosystems and other habitat areas and minimizes fragmentation;	No sensitive ecosystems or known important habitat areas occur on or immediately adjacent to the property as per Section 4 of the bio-inventory.	Complete	Complete
	d) Protects endangered, threatened, or vulnerable species or plant communities by avoiding disturbance to sites where rare plants are growing and where rare natural plant communities occur;	No mature natural communities or rare plants are expected to occur on the property as per Section 4 of the bio-inventory.	Complete	Complete
	e) Maintains critical habitat structures such as old trees, snags, trees with cavities, and ephemeral wetlands.	No critical habitat structures were identified on the property as per Section 4 of the bio-inventory.	Complete	Complete
9	Retain mature vegetation wherever possible and incorporate it into the design of the project.	No mature vegetation occurs on the property as per Section 4. No vegetation will be disturbed during subdivision. The Tree Island Yogurt facility plans include maintenance of areas of natural vegetation along the northern property boundary. It is recommended that young trees that were left after the property was last logged are left standing where possible as per Section 6.	Complete	Partial - future phase

Table 1. Continued.

OCP Section	DP Language	Addressed in this report	Status	
			Subdivision	Tree Island Yogurt Facility
10.1.5 DPA#1 EP Guidelines – General Requirements				
10	Demonstrate that a diligent effort has been made in site design to: a) Preserve both the natural vegetation and tree cover; or b) Restore historical forest densities and hydrological function.	No vegetation will be disturbed during subdivision. The Tree Island Yogurt facility plans include maintenance of areas of natural vegetation along the northern property boundary. Historical forest densities and hydrological function are not expected to be restored as the property is zoned for and planned to be an industrial area. However, BMPs for stormwater management are recommended to be followed to maintain hydrological function to the extent possible as per Section 6.	Complete Complete	Complete Complete
11	Prevent disturbance of nesting sites and breeding areas. Animals must have access to the habitat that supports their reproduction in order to ensure future generations.	No specific nesting sites or breeding areas were identified on or immediately adjacent to the property as per Section 4. Nevertheless, it is recommended that a qualified environmental professional conduct surveys for active bird nests and other wildlife with low motility (i.e., amphibians and reptiles) prior to any vegetation removal or grubbing in the breeding bird season as per Sections 5 and 6 of the bio-inventory.	Complete	Complete
12	Schedule work during times when impacts to wildlife will be minimal, including: a) Outside of known wildlife migration seasons. b) Outside of breeding, birthing, and rearing seasons (refer to Section 4 of 2012 Develop with Care Manual for breeding season least risk windows).	The property is not expected to provide high or moderate value migration habitat as per Section 4. It is recommended that all work is completed outside of the breeding bird season (March 15- August 15) in order to minimize impacts to wildlife. Mitigations are provided if work is to be conducted outside of least risk windows. Recommendations for appropriate timing of works, and associated mitigations, are provided in Sections 5 and 6.	Complete Complete	Complete Complete
13	Preserve existing and potential connections to adjacent Terrestrial, Aquatic and Connectivity Areas by maintaining native shrub, groundcover and tree cover between habitats.	There are no Terrestrial or Aquatic Ecosystem areas adjacent to the property as per Section 4. The northern property boundary is designed to maintain native groundcover as per the drawing provided.	Complete	Complete
14	Prevent foreign material from entering into any restricted development areas, including—without limitation—greases, oils, gasoline, sediments, and other contaminants during and after the construction phase of the proposed development.	No restricted development or buffer zones identified on or adjacent to the Property.	N/A	N/A
15	Design lighting on developments to provide the minimum necessary for safety purposes and to avoid light intrusion throughout the parcel.	No lighting will be installed for the subdivision. Lighting for the Tree Island Yogurt facility will be designed to minimize impacts to wildlife.	Complete	Complete
16	Any fencing should be designed according to the guidelines described in A Landowners Guide to Wildlife Friendly Fences: How to Build Fence with Wildlife in Mind , Montana Fish Wildlife and Parks.	No fencing will be installed for the subdivision. Any fencing installed for the facility will either be designed to allow wildlife passage or exclude wildlife.	Complete	Complete

Table 1. Continued.

OCP Section	DP Language	Addressed in this report	Status	
			Subdivision	Tree Island Yogurt Facility
10.1.5	DPA#1 EP Guidelines – General Requirements			
17	Manage rainwater in accordance with the Water Balance Model or the most recent integrated watershed management or rainwater policy and design manual. This includes managing rainwater on site and maintaining pre-development drainage flows.	It is recommended that the site design follows BMPs for rainwater management.	Complete	Complete
18	Encroachment into the DPA by all development activities will not exceed that indicated in the site plan approved in the development permit. All development activities will avoid or minimize disturbance in the DPA beyond the building footprint. This may mean adjusting conventional practices with respect to locating machinery and stockpiles relative to excavations, use of hand labour as opposed to machinery, etc.	-	-	-
19	Prior to any development activity, the boundaries of restricted development and buffer zones identified in the bio-inventory will be clearly marked with a bright orange or other highly visible temporary fence with a minimum height of 1.2 meters and supported by poles a maximum distance of 2.5 meters from one another. This fence will remain in place throughout clearing, site preparation, construction, or any other form of disturbance.	No restricted development or buffer zones identified on the property.	N/A	N/A
20	Ensure that the roots of trees are protected during construction. The roots of mature trees typically extend from 1–3 times the height of the tree from the tree’s trunk and are found within 30.5–38.1 centimeters of the soil surface. Damage to these roots (especially in mature trees) can impede the tree’s ability to obtain water and nutrition and can cause it to fall or blow over. Communicate tree protection plans to everyone involved in the project.	No trees will be damaged during subdivision. Trees that will not be removed for the facility will be protected from construction activities.	Complete	Complete
21	Any trail or pathway development must: a) Minimize the impacts of recreational use on restricted development zones and adjacent natural areas and systems; b) Adhere to the Village’s trail and pathway design and construction practices for ESADP Areas; c) Be designed to prevent motorized vehicle use to the maximum extent possible.	The area is not designed to have recreational use. There will be no trails or pathways other than those that directly connect parking areas to the facility. The subdivision will not require motorized vehicle use. The Tree Island Yogurt Facility is an industrial facility that relies on transport vehicles and workers commuting to site.	N/A N/A Complete	N/A N/A Complete
22	When establishing watercourse and riparian buffer zones, consider the needs of all species and not just fish. For example, SPEAs established using the Riparian Areas Regulation methodology focus on the needs of salmon and trout and may not adequately protect other species such as amphibians, birds, and small mammals.	No watercourse or riparian buffer zones occur on the property.	N/A	N/A

Table 2. Development Permit Area #1 Environmental Protection Guidelines – Connectivity Areas.

OCP Section	DP Language	Addressed in this report	Status	
			Subdivision	Tree Island Yogurt Facility
10.1.6.3 DPA#1 EP Supplemental Guidelines – Connectivity Areas				
1	The following requirements apply to all development permit applications in all Connectivity Areas.			
	a) Locate development within the parcel where it will cause the least impact to natural habitat and the movement of native fauna between adjacent areas	The property location, subdivision and proposed Tree Island Yogurt facility make use of existing disturbance. The facility will cover the majority of Lot 1.	Complete	Complete
	b) New road development within Connectivity Areas should be avoided to the maximum extent possible	No road development will occur during subdivision. Roads have been minimized to the extent possible.	Complete	Complete
	c) If new road development cannot be avoided, the length and width of road development must be minimized and:	No road development will occur during subdivision.	Complete	Complete
	i) Appropriate wildlife crossing infrastructure as determined by the mitigation measures described in the bio-inventory must be designed and installed, using best practices for mitigating the effects of roads on local species	No wildlife crossing infrastructure is recommended in the bio-inventory.	Complete	Complete
	ii) Establish Wildlife Traffic Zones with appropriate traffic warning signage and reduced speeds to mitigate dangers to the public and wildlife mortality threats	No traffic on property for subdivision. Appropriate speed limits will be posted to mitigate dangers to humans and wildlife.	Complete	Complete
	d) The location of recreational trails and pathways shall be in accordance with current Best Management Practices in British Columbia, including but not limited to <u>Develop with Care 2012–Environmental Guidelines for Urban and Rural Land Developments in British Columbia</u> and <u>Environmental Best Management Practices for Urban and Rural land Development</u> (Section 3 Site Development and Management and Fact Sheet #5-Parks).	No recreational trails or pathways are part of the development design.	N/A	N/A
	e) To the maximum extent possible, the distribution and intensity of native vegetation and cover should be maintained throughout the property.	No vegetation disturbance will occur during subdivision. Design drawings plan to maintain some vegetation on the northern property boundary.	Complete	Complete
	f) Conserve trees in communities (groups of trees along with their associated understory) rather than isolating individual specimens. Groups of trees form a larger intact ecosystem and are more likely to maintain the important characteristics of the ecosystem over time than a few scattered trees. However, some ecosystems are characterized by or may contain some isolated trees and their conservation as well is important.	No vegetation disturbance will occur during subdivision. Design drawings plan to maintain some vegetation on the northern property boundary.	Complete	Complete

¹Interpretation: 'Complete' means that the condition has been addressed and no further work is required, this may be because the work is complete and no further work is required or because any risk to potential ESA's/EVR's is low. 'N/A' means that the condition does not apply because the site conditions that the condition applies to are not present on site, '-' means that the condition does not require action or a commitment at this time; have been appropriately mitigated; 'Partial - future phase' means that bio-inventory requirement has been met for the current phase but needs to be reviewed in a future phase in consideration of detailed development design when sufficient design detail becomes available to fully address the condition; 'Future phase' means that the detailed development design is required to address the condition.

Appendix B. Wildlife Habitat Plot Survey Data

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Table 1. Site description data.

Site	Site Series	Meso Slope Position	Structural Stage	Seral Stage	Estimated Age (years)	Canopy Closure	Slope (%)	Exposure	Micro-topography	Elevation (masl)
TRI-WHP01	01	Level	Low Shrub	Establishment	4	+ (<1%)	1	full sun	smooth	164
TRI-WHP02	01	Level	Tall Shrub	Establishment	7	+ (<1%)	1	full sun	smooth	164
TRI-WHP03	01	Level	Low Shrub	Establishment	5	+ (<1%)	1	full sun	smooth	164

Table 2. Ground cover data.

Site	Ground Cover					
	Rock	Water	Organic Matter	Bedrock	Mineral Soil	Decaying Wood
TRI-WHP01	Trace	Nil	Nil	Nil	Dominant	Subdominant
TRI-WHP02	Nil	Nil	Trace	Nil	Dominant	Subdominant
TRI-WHP03	Nil	Nil	Trace	Subdominant	Dominant	Nil

Table 3. Soil characteristics data.

Site	Soil Moisture	Soil Nutrient	Soil Texture	Coarse Fragment	Soil Colour ¹	Humus Form	Comment
TRI-WHP01	submesic	medium	silt loam	65-85%	medium (soil color 7.5 3/4)	Lignomodor	The humus form is ~2 cm FH that is loose, friable and has low mycelia content. The soil was slightly moist, at time of survey but is very well drained due to abundance of coarse fragments up to 7 cm diameter.
TRI-WHP02	mesic	medium	silt loam	10-35%	medium	Lignomodor	Organic layers comprised of a 8 cm LFH, mostly comprised of FH, that was friable and wood with some charcoal. Mineral soils create a stronger cast than other sites, the site has higher sand content than other sites and more deeper fine roots than TRI-WHP01.
TRI-WHP03	submesic	medium	silt loam	35-65%	medium (soil color 7.5 3/4)	Lignomodor	Soils very similar to TRI-WHP01, with an approximately 2 cm very friable FH overlaying a B layer. Small gravels present.

¹Soil color is the Munsell soil colour hue value and chroma.

Table 4. Vegetation composition data.

Site	Trees		Tall Shrubs		Short Shrubs		Herbs		Mosses and Lichens	
	Coverage (%)	Dominant Species	Coverage (%)	Dominant Species	Coverage (%)	Dominant Species	Coverage (%)	Dominant Species	Coverage (%)	Dominant Species
TRI-WHP01	1-5%	sparse residual white pine ~40 years old	1-5%	western redcedar understory retention; dead conifers (not included in cover estimate)	25-50%	salal, Oregon grape, blackcap raspberry, red huckleberry	5-25%	trailing blackberry, grasses and small sedges, twinflower, fireweeds	5-25%	step moss, others
TRI-WHP02	1-5%	white pine	5-25%	Douglas-fir, western hemlock, western redcedar; dead woody shrubs (not included in cover estimates)	25-50%	salal, red huckleberry, Douglas-fir, Oregon grape	5-25%	bracken fern	25-50%	step moss, others
TRI-WHP03	1-5%	western redcedar, white pine	0%	-	25-50%	salal, red huckleberry, Oregon grape, Douglas-fir, western hemlock, white pine	5-25%	-	25-50%	step moss, others

Appendix C. Site Photos

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1. TRI-WHP01

Figure 1. View north from plot centre, March 26, 2019.



Figure 2. View southwest from plot centre, March 26, 2019.



Figure 3. View of soils, March 26, 2019.



2. TRI-WHP02

Figure 4. View north from plot centre, March 26, 2019.



Figure 5. View south from plot centre, March 26, 2019.



Figure 6. View of B-layer soils, March 26, 2019.



Figure 7. View of organic soil layers, March 26, 2019.



3. TRI-WHP03

Figure 8. View north from plot centre, March 26, 2019.



Figure 9. View of soils, March 26, 2019.



Figure 10. Largest tree on property, with evidence of woodpecker feeding and droppings indicating it has been used for avian perching, March 26, 2019.



Appendix D. At-risk wildlife and plant species considered

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Table 1. Avian species at risk within the CWH Biogeoclimatic Zone and Comox Valley Regional District (CDC 2019).

Common Name	Scientific Name	Pre-field Likelihood of Occurrence ¹	Likelihood of Interaction by Season ¹			Federal Designation		Provincial Designation	
			Breeding Period	Overwintering Period	Other (e.g., migrating, foraging)	COSEWIC Status	SARA Status	BC List	Identified Wildlife ²
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	Moderate	Low	-	Low	SC (Nov 2008)	1-SC (Feb 2011)	Blue	
Barn Owl	<i>Tyto alba</i>	Low	Low	-	Low	T (Nov 2010)	1-T (Jun 2018)	Red	
Barn Swallow	<i>Hirundo rustica</i>	Moderate	Low	-	Low	T (May 2011)	1-T (Nov 2017)	Blue	
Black Swift	<i>Cypseloides niger</i>	Low	Low	-	Low	E (May 2015)		Blue	
Caspian Tern	<i>Hydroprogne caspia</i>	Negligible	Negligible	Negligible	Negligible	NAR (May 1999)		Blue	
Common Nighthawk	<i>Chordeiles minor</i>	Moderate	High	-	High	SC (May 2018)	1-T (Feb 2010)	Yellow	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Negligible	Negligible	Negligible	Negligible	NAR (May 1978)		Blue	
Evening Grosbeak	<i>Coccythraustes vespertinus</i>	High	Moderate			SC (Nov 2016)		Yellow	
Great Blue Heron, <i>fannini</i> subspecies	<i>Ardea herodias fannini</i>	Low	Negligible	Negligible	Negligible	SC (Mar 2008)	1-SC (Feb 2010)	Blue	Y (May 2004)
Green Heron	<i>Butorides virescens</i>	Low	Negligible	Negligible	Negligible			Blue	
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Low	Negligible	Negligible	Negligible	T (May 2012)	1-T (Jun 2003)	Blue	Y (May 2004)
Northern Goshawk, <i>laingi</i> subspecies	<i>Accipiter gentilis laingi</i>	Moderate	Negligible	Low	Low	T (Apr 2013)	1-T (Jun 2003)	Red	Y (May 2004)
Northern Pygmy-Owl, <i>swarthi</i> subspecies	<i>Glaucidium gnoma swarthi</i>	High	Negligible	Low	Low			Blue	Y (Jun 2006)
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Moderate	Low	Low	Low	SC (May 2018)	1-T (Feb 2010)	Blue	
Peregrine Falcon, <i>pealei</i> subspecies	<i>Falco peregrinus pealei</i>	Low	Negligible	Low	Low	SC (Dec 2017)	1-SC (Jun 2003)	Blue	
Purple Martin	<i>Progne subis</i>	Low	Negligible					Blue	
Short-eared Owl	<i>Asio flammeus</i>	Low	Low	Low	Low	SC (Mar 2008)	1-SC (Jul 2012)	Blue	Y (May 2004)
Western Screech-Owl, <i>kennicottii</i> subspecies	<i>Megascops kennicottii kennicottii</i>	High	Negligible	Low	Low	SC (Mar 2012)	1-T	Blue	

¹ **Confirmed** - The species has been detected within the Project area. Species presence information was recorded during the field surveys and/or gleaned from the background review. **High** - The current range and distribution of the species overlap the Project area. Highly suitable habitat is present within the Project area; however, the species has not been detected. **Moderate** - The current range and distribution of the species overlap the Project area. Sufficiently suitable habitat may be present within the Project area; however, the species has not been detected. **Low** - The current range and distribution of the species may overlap or border the Project area; however, it is unlikely that sufficiently suitable habitat is present. The species has not been detected. **Negligible** - The species is likely to occur within the Comox

² Identified under the Identified Wildlife Management Strategy.

Table 2. Herpetofauna and mammal species at risk within the CWH Biogeoclimatic Zone and Comox Valley Regional District (CDC 2019).

Common Name	Scientific Name	Pre-field Likelihood of Occurrence ¹	Likelihood of Interaction by Season ¹			Federal Designation		Provincial Designation	
			Breeding Period	Overwintering Period	Other (e.g., migrating, foraging)	COSEWIC Status	SARA Status	BC List	Identified Wildlife ²
Northern Red-legged Frog	<i>Rana aurora</i>	Moderate	Low		Moderate	SC (May 2015)	1-SC (Jan 2005)	Blue	Y (May 2004)
Wandering Salamander	<i>Aneides vagrans</i>	Low-Moderate	Low	Low	Low	SC (May 2014)	1-SC (Feb 2018)	Blue	
Western Toad	<i>Anaxyrus boreas</i>	Moderate	Low	Moderate	Moderate	SC (Nov 2012)	1-SC (Jun 2018)	Yellow	
Western Painted Turtle, Pacific coast population	<i>Chrysemis picta</i>	Low	Negligible	Negligible	Low	T (2016)	1-E (2007)	Red	
American (Common) Water Shrew, <i>brooksi</i> subspecies	<i>Sorex palustris brooksi</i>	Moderate	Low	Low	Low			Red	Y (Jun 2006)
Ermine, <i>anguinae</i> subspecies	<i>Mustela erminea anguinae</i>	Moderate	Moderate		Low			Blue	
Keen's (Long-eared) Myotis	<i>Myotis keenii</i>	Moderate	Low		Moderate	DD (Nov 2003)	3 (Mar 2005)	Blue	Y (May 2004)
Little Brown Myotis	<i>Myotis lucifugus</i>	High	Low		Moderate	E (Nov 2013)	1-E (Dec 2014)	Yellow	
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	Moderate	Low		Moderate			Blue	
Roosevelt Elk	<i>Cervus elaphus roosevelti</i>	Moderate	Low	Low	Moderate				
Vancouver Island Marmot	<i>Marmota vancouverensis</i>	Negligible	Negligible	Negligible	Negligible				
Wolverine, <i>vancouverensis</i> subspecies	<i>Gulo gulo vancouverensis</i>	Negligible	Negligible	Negligible	Negligible	SC (May 2014)	1-SC (Jun 2018)	Red	Y (May 2004)

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² Identified under the Identified Wildlife Management Strategy.

Table 3. Invertebrate species at risk within the CWH Biogeoclimatic Zone and Comox Valley Regional District (CDC 2019).

Common Name	Scientific Name	Likelihood of Occurrence ¹	Federal Designation		Provincial Designation	
			COSEWIC Status	SARA Status	BC List	Identified Wildlife ²
Threaded Vertigo	<i>Nearctula rowellii</i>	Low	SC (Apr 2010)	1-SC (Jul 2012)	Blue	
Western Thorn	<i>Carychium occidentale</i>	Low			Blue	
Evening Fieldslug	<i>Deroceras hesperium</i>	Low	DD (Nov 2003)		Red	
Prairie Fossaria	<i>Galba bulimoides</i>	Negligible			Blue	
Sunset Physa	<i>Physella virginea</i>	Negligible			Blue	
Broadwhorl Tightcoil	<i>Pristiloma johnsoni</i>	Low			Blue	
Wrinkled Marshsnail	<i>Stagnicola caperata</i>	Negligible			Blue	
Alkali Bluet	<i>Enallagma clausum</i>	Negligible			Blue	
Blue Dasher	<i>Pachydiplax longipennis</i>	Negligible			Blue	
Autumn Meadowhawk	<i>Sympetrum vicinum</i>	Negligible			Blue	
Western Pine Elfin, sheltonensis	<i>Callophrys eryphon sheltonensis</i>	Low			Blue	
Common Wood-nymph, incana subspecies	<i>Ceryonis pegala incana</i>	Moderate			Red	
Common Ringlet, insulana subspecies	<i>Coenonympha tullia insulana</i>	Low			Red	
Sand-verbena Moth	<i>Copablepharon fuscum</i>	Negligible	E (Nov 2013)	1-E (Jul 2005)	Red	
Properthus Duskywing	<i>Erynnis properthus</i>	Negligible			Red	
Edith's Checkerspot, taylori subspecies	<i>Euphydryas editha taylori</i>	Negligible	E (May 2011)	1-E (Jun 2003)	Red	
Dun Skipper	<i>Euphyes vestris</i>	Low	T (Apr 2013)	1-T (Jun 2003)	Red	
Western Branded Skipper, oregonia	<i>Hesperia colorado oregonia</i>	Low	E (Nov 2013)		Red	
Clodius Parnassian, claudianus subspecies	<i>Parnassius clodius claudianus</i>	Low			Blue	
Rocky Mountain Parnassian, olympiannus	<i>Parnassius smintheus olympiannus</i>	Low			Blue	
Greenish Blue, insulanus subspecies	<i>Plebejus saepiolus insulanus</i>	Low	E (May 2012)	1-E (Jun 2003)	Red	

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Table 4. Plant species at risk within the CWH Biogeoclimatic Zone and Comox Valley Regional District (CDC 2019).

English Name	Scientific Name	Likelihood of Occurrence	Provincial Designation		Federal Designation	
			BC List		COSEWIC	SARA
banded cord-moss	<i>Entosthodon fascicularis</i>	Negligible	Blue		SC (May	1-SC (Aug 2006)
black knotweed	<i>Polygonum paronychia</i>	Negligible	Blue			
Henderson's checker-mallow	<i>Sidalcea hendersonii</i>	Negligible	Blue			
heterocodon	<i>Heterocodon rariflorus</i>	Low	Blue			
Macoun's meadow-foam	<i>Limnanthes macounii</i>	Low	Red		T (Nov 2004)	1-T (Aug 2006)
Nuttall's quillwort	<i>Isoetes nuttallii</i>	Low	Blue			
poverty clover	<i>Trifolium depauperatum</i> var.	Low	Blue			
purple sanicle	<i>Sanicula bipinnatifida</i>	Low	Red		T (May 2001)	1-T (Jun 2003)
slimleaf onion	<i>Allium amplexans</i>	Low	Blue			
Vancouver Island beggarticks	<i>Bidens amplissima</i>	Negligible	Blue		SC (Nov	1-SC (Jun 2003)
western cowbane	<i>Oxypolis occidentalis</i>	Low	Blue			
western wahoo	<i>Euonymus occidentalis</i> var.	Low	Red			
white-top aster	<i>Sericocarpus rigidus</i>	Moderate	Blue		SC (Apr	1-SC (Jun 2003)
yellow montane violet	<i>Viola praemorsa</i> var.	Low	Red		E (Nov 2007)	1-E (Jun 2003)
yellow sand-verbena	<i>Abronia latifolia</i>	Negligible	Blue			
curve-leaved cow-hair moss	<i>Ditrichum schimperi</i>	Moderate	Blue			
long-beaked water feathermoss	<i>Platyhypnidium riparioides</i>	Negligible	Blue			