



Additional Environmentally Significant Areas Mapping Project

Prepared for:

The Corporation of the District of Saanich

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1. INTRODUCTION

1.1. Background

The District of Saanich, with a rapid population increase and potential housing and other development projects on the rise, realized that it is important to have the most complete environmental information in order to protect remaining environmentally significant areas. The District of Saanich 2010 Strategic Plan contained the following initiative:

C4b. “Establish an Environmentally Significant Areas Development Permit Area to protect and enhance sensitive ecosystems, species at risk and the marine shoreline. Increasing development pressure adds to the need to protect natural ecosystems and the habitat of rare plants and animals at a level similar to the existing protection for riparian areas.”

A new Environmental Development Permit Area (EDPA) was adopted by Saanich Council on March 12, 2012. Five inventories or data sets are used to define the areas subject to the new EDPA:

- ✦ Sensitive Ecosystem Inventory (SEI), 2002 (Ministry of the Environment and Environment Canada);
- ✦ Red and Blue listed animals, plants and ecological communities (Conservation Data Centre, Ministry of the Environment);
- ✦ Wildlife Tree Stewardship Program (WITS) (Federation of BC Naturalists);
- ✦ Isolated wetlands and watercourses, 2010 (District of Saanich);
- ✦ Saanich Marine Inventory, 2000 (District of Saanich and the Veins of Life Watershed Society)

However, these inventories, and associated atlases, are not complete. In part, this is due to the fact that many important and smaller ESA's were not mapped during the Sensitive Ecosystems Inventory of East Vancouver Island and the Gulf Islands because of the large scale of the project (1:20,000). In addition, many areas with high ecological value such as habitat connecting corridors, buffers for sensitive areas, and urban forests were not considered by previous inventories.

Following the C4b Strategic Plan initiative, a project to map additional ESAs was developed by Saanich Environmental Services aided by a Specialists Working Group. The overall objective of the Saanich initiative is to identify and map remaining environmentally significant areas, including smaller sensitive, rare and endangered ecosystems, species at risk (SAR) sites, as well as buffers and linkages between these areas. The project is to be carried out in two phases:

- In Phase 1 new environmentally significant areas are to be identified and mapped through the evaluation of sites suggested by the general public or Saanich staff.
- In Phase 2, a complete aerial photo analysis of the District of Saanich will be carried out to investigate new potential ESA sites. The analysis will include potential SEI sites, buffers, ecosystem linkages and wildlife corridors. The consultant biologist will assess the new potential sites, prioritize, ground-truth, and recommend the inclusion of new sites in the ESA Atlas.

This report recounts the completion of Phase 1.



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1.2. Phase 1 Project Objectives

The overall objective of Phase 1 is to investigate and incorporate to the ESA Atlas unmapped environmentally significant areas within the District of Saanich, through suggestions by the public, or Saanich staff. The nominated sites are to be groundtruthed and their ecological value assessed by a consultant biologist, who will map and recommend the inclusion in the Atlas of those found of highest value for conservation.



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2. METHODS

2.1. ESA Mapping Technical Advisory Group

In November 2011, a group was formed to guide the ESA mapping project. Members are from the District of Saanich (Environmental Services, Planning, Parks, Engineering, and GIS), the Canadian Wildlife Service, the Conservation Data Centre, the Ministry of Forests, Lands and Resource Operations, and the Garry Oak Ecosystem Recovery Team. The Terms of Reference were to: determine priorities for ESA types, create priority criteria for ESA locations, and establish standards for data collection and presentation. Table 1 shows the priorities and criteria created by the advisory group.

2.2. Public Participation

A public and internal campaign was carried out during March 2012 to nominate areas for consideration as potential ESAs. The campaign was announced in the District of Saanich website as well as in the local paper Saanich News.

2.3. Air Photo Analysis

Nominated sites were examined with Saanich GIS Map Service to establish location, protection status, classification as SEI site or other important ecosystems, undeveloped Right-of-Ways, and their potential value as urban forests, buffers or linkage corridors. If the site was already identified as a SEI site or was in a Streamside Development Permit Areas, the adjacent landscape was examined for unidentified and potential ecologically important sites near the nominated area.

2.4. Site Selection

Each nominated site was assessed by its conservation and priority value, according to two sets of criteria: ecosystem type and site protection status as discussed with the Working Group and Adriane Pollard, Saanich Environmental Manager (Table 1). The high priority ecosystem types were assigned a score of 3 whereas low priority types were assigned a score of 1. The site's protection status was also ranked using a 3 to 1 score (highest for those sites not having protection and lowest for sites in Parks). CRD and Federal Parks were excluded from selection, as well as already identified SEI sites. Another consideration in the selection was to groundtruth a relatively equal proportion of sites within the urban containment area and the rural part of the District.

2.5. Field Surveys

Each selected site was to be inspected in the field. A pre-typed orthophoto print of each site was used to aid in the delineation of the ecological community and for future air photo interpretation reference. The objective of the field surveys was to:

- ✧ identify the ecological community,
- ✧ identify the SEI class and subclass, if applicable,
- ✧ describe characteristics of the site and species vegetation cover, and
- ✧ take note of the anthropogenic and natural disturbances affecting the site.



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TABLE 1 - Priority Criteria for Selection of Sites to be Groundtruthed

Priority in Terms of Ecosystems	
High – Score 3	Garry oak ecosystems, especially vernal pools; HT (Herbaceous terrestrial), CB (coastal cliffs)
	Wetlands
	Red-listed forested ecosystems (i.e. Arbutus; red alder / black cottonwood)
	Red-listed herbaceous communities
	SAR sites not in CDC database (mainly invertebrates)
Medium – Score 2	Areas with wildlife tree concentrations
	Garry oak tree groves without the rest of the ecosystem
	Urban forests; i.e. entire collection of trees or treed areas growing in the municipality, in particular distinct treed ecosystems such as Garry oak woodlands and Douglas fir forests.
	Areas with high restoration potential (natural soil still there)
Low – Score 1	Singular or significant individual native trees
	Areas with other values (local significance, hedgerows, old fields)
Priority in Terms of Site Location	
High - Score 3	Natural buffers to parks
	Undeveloped Right-of-Ways
	Lands not already protected
	Urban / rural balance
Medium - Score 2	Within Saanich Parks
	Areas that could be restored to an ESA
	Larger areas
	ALR
Low - Score 1	Already mapped areas, CRD and Federal Parks: exclude from selection

Each site was walked or examined before deciding a representative location for the plot. Notes were taken on disturbance, invasive species and wildlife observations. Tree, shrub, herbaceous and moss cover was estimated in 20 m diameter plots. If plot size varied, it was recorded in the FS1333 form. In some cases, the visit took place with the owner of the property, or interested local residents, who provided additional information.

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Through the field surveys, sufficient information on the type, condition (including disturbances) and location of the ecosystems was to be collected for the assessment and mapping of the site as a potential ESA. Two site forms were used: Site Visit Form FS 1333 and the CDC Conservation Evaluation Form (see appendix III).

Fields collected on the FS 1333 were: plot code and location (UTM coordinates), Biogeoclimatic Zone and Site Series, stand age and canopy composition (forested sites), signs of disturbance, and percent cover of trees, shrubs, herbs and mosses. The information was collected in a 20 m diameter plot. In some cases the shape or size of the plot was changed to adapt to narrow sites and recorded in the site form.

The Conservation Evaluation Form complemented the FS 1333 regarding the description and condition of the site, by including SEI classification, succession status, ownership or jurisdiction, presence of invasive species observed outside the plot, known threats, and amount of fragmentation.

The assignment of Sensitive Ecosystem classes and subclasses followed the SEI classification used in the Southern Vancouver Island and Gulf Islands Inventory. By using the same criteria, all sites identified under a certain code will be equivalent to the sites already mapped. Specifically in regards to Older Forests, which were identified as "conifer dominated forests with an average tree age of >100 yrs or greater" in the original inventory. On the other hand, the minimum area requirement of 0.5 ha for any of the classes (due to mapping constraints), and minimum 25 ha for Older Second Growth Forests has not been used in this project.

The principles that set the 25 ha minimum size for Older Second Growth Forests in the 2002 SEI, (recognizing the importance of a larger area for biodiversity and to support species with large home ranges in mapping a vast territory of 4,000 sq.km), apply at a lower scale in rural and urban areas; i.e. one or two hectares of Older Second Growth Forests in Saanich may have as much value for biodiversity and wildlife as 25 ha in wilderness areas. In addition, small patches of older second growth are important in maintaining connectivity with larger parcels of forests across the rural-urban landscape. Therefore, there was no minimum size set for any of the SEI classes in this project.

The characteristics of the sensitive ecosystems and other important ecosystems identified in this project are described in Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands 1993 - 1997 (Canadian Wildlife Service, 2000). The new Sensitive Ecosystem Codes Classes and subclasses are described in Standard for Mapping Ecosystems at Risk in British Columbia (B.C. Ministry of the Environment 2006).

2.6. GIS Mapping

First, the selected sites were located on the 2011 orthophotos, available through the Saanich GIS Map Service. The ecosystems of interest were then identified and delineated. In ArcGIS, a geodatabase was created following the standards provided by the District of Saanich. The geodatabase was populated by creating a number of layers containing the information redeemed necessary for the completion of the project. A polygon feature class was created containing the digitized site location as well as elevation, slope and aspect information for each site (this was calculated using Zonal Statistics tools). A point layer was created containing information on significant trees collected during field surveys. Finally a point feature class was created for each plot containing attribute information collected during the field survey. Additional tables are included in the geodatabase with detailed vegetation information for each plot. All plots and corresponding sites can be linked by the plot unique identifier. All features classes have detailed Metadata information following standards provided by the District of Saanich.

2.7. Evaluation of the Ecological Integrity

The ecological value of the sites was assessed through a modification of the procedure described in the manual "Standard for Mapping Ecosystems at Risk in British Columbia" (Sec. 4.4 and 4.5) (Ministry of



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Environment and RISC, 2006). The standard methodology is based on three criteria: landscape context, condition and size of the ecological community. The methodology, however, is designed primarily to assess the ecological integrity (chance of continuation in time) of ecosystems anywhere in BC; i.e. mostly wild areas.

In order to apply the method to an urban environment, where fragmentation and presence of invasive species are the norm, the standard criteria for "fragmentation of the landscape" and "pristine condition" (species composition) were lowered, and an additional criterion: "restoration potential", was added. Each site was rated according to these three criteria: landscape context, condition and restoration potential (Table 2).

Under each criterion, sites were classified into four categories:

- Excellent (score 4)
- Good (score 3)
- Fair (score 2)
- Poor (score 1)

The ranking of each site was derived from the sum of the three criteria scores: Condition (C), Landscape Context (L) and Restoration Potential (R). Two formulas were tried: the stair step weighted values and the even values method (Ministry of Environment and RISC, 2006).

In the first method, the criteria scores were weighted. In coniferous forests Landscape Context was weighted higher, to account for the matrix spatial pattern of Douglas fir ecosystems in the area, and the importance of the surrounding landscape. In all the other ecosystem types the higher weight was placed in Condition.

Coniferous forests stairstep Evaluation = $0.45 * L + 0.33 * C + 0.22 * R$

All sites (except coniferous forests) stair step Evaluation = $0.45 * C + 0.33 * L + 0.22 * R$

The second method was a plain sum of the three factors without weights.

Even Evaluation = $(C + L + R) / 3$

For the final assessment, other values were also considered, such as ecological community threatened status, presence of large snags or wildlife trees, function as a buffer zone, or linkage corridor to parks or protected areas.



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TABLE 2 - Criteria for Assessment of Ecological Integrity

Criteria applied to groundtruthed sites for assessment of ecological integrity.

Landscape context (L) (approx. 2,500 Ha)	
Excellent – Score 4	The surrounding landscape has <25% fragmentation due to roads, urban areas, and rural settlements, and no recent industrial activity. Site occurs within a larger landscape with some formal protection status or protected by conservation covenants.
Good – Score 3	Up to 50% of the surrounding landscape is fragmented. The larger landscape context provides some protection from anthropogenic disturbance, although changes to natural disturbance regimes exist (fire suppression; flooding control).
Fair – Score 2	More than 50% of the surrounding landscape is fragmented and affected by anthropogenic influences. Development may affect the ecosystem's existence.
Poor – Score 1	Less than 15% of the surrounding landscape consists of natural or semi-natural vegetation, or the ecosystem is completely isolated from natural areas and protected areas.
Condition (C)	
Excellent – Score 4	Minor cover of exotic species occur in the site (<10%). Forested ecological communities are climax vegetation. The community may have minor internal fragmentation (<5%). Wetland and riparian communities have natural hydrology regimes. No artificial structures occur at the site.
Good – Score 3	Some cover of exotic species (10 - 40%). Forested ecological communities may be late seral vegetation. Wetland and riparian communities have largely natural hydrology regimes. There could be moderate internal fragmentation (<25%).
Fair – Score 2	Significant cover of exotic species (40 - 75%). Forested ecological communities typically are young seral vegetation after anthropogenic disturbance. There may be significant alterations of hydrology regime in wetlands and riparian ecological communities. There is moderate internal fragmentation (<25%).
Poor – Score 1	Exotic species dominate a vegetation layer or may total >75%. Significant anthropogenic disturbance, such as removal of soil material or vegetation. There are significant alterations to the hydrology regime in wetlands and riparian ecosystems. High internal fragmentation (>25%), presence of artificial structures or barriers.
Restoration potential (R)	
Excellent – Score 4	The natural species, soils and disturbance regime are mostly intact, only a minor control of invasive species is needed.
Good – Score 3	The natural species, soils and disturbance regime are present, but sustained invasive species work is needed to achieve restoration.
Fair – Score 2	Alterations to the natural disturbance regime require major work. The removal of invasive species will leave major portions of exposed soil, requiring plantings. Many years of work will be needed, to achieve a complete natural appearance.
Poor – Score 1	Soils and vegetation were removed, and site is dominated by alien invasive species. Site may be affected permanently.



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3. RESULTS

3.1. Site Nominations

A total of 46 sites were suggested by 15 residents and the Victoria Natural History Society (VNHS) (Table 3). One of the sites (Maltby Lake) was nominated 10 times. Other sites were nominated more than once by different residents (Glendale Lands and Logan Park), while other nominations were within the same general area (Glendale Lands - Broadcast Hill - Viaduct Flats - Quick's Bottom). The VNHS made 26 nominations, most of them well known sites such as Parks, areas under covenants and sites in the Agricultural Land Reserve (ALR). A few nominations were in undeveloped Right-of-Ways and private properties. Some sites identified as *undeveloped* Right-of-Ways had already been classified as a Park or community green space, and many nominations in Parks were already identified as SEI sites.

As mentioned in the methodology (section 2.3), some suggested sites were already identified and mapped as an ESA. Because buffers to parks and natural areas were a high priority, some sites that were adjacent were selected instead. An example is Quicks Bottom.

TABLE 3 - List of nominated sites

#	Site Name	#	Site Name
1	Arbutus Cove	24	Ten Mile Point Ecol. Reserve
2	Broadcast Hill	25	Todd Creek Flats
3	Cedar Hill Golf Course	26	Trevlac Pond
4	Colquitz Creek	27	Viaduct Flats
5	Courtland Flats	28	Haro Woods
6	Elk / Beaver Regional Parks	29	Finnerty Creek
7	Francis King Park	30	Queenswood Centre
8	Glencoe Cove Park	31	Guinevere Place undeveloped Right-of-Ways
9	Gorge Waterway	32	Sherwood Rd undeveloped Right-of-Ways
10	Haro Woods	33	Gibson / McColl Place
11	Hastings and Granville Flats	34	Konukson Park woodland
12	Kingsberry Crescent pond	35	Konukson Park wetland
13	Mount Douglas Park	36	Sea View Rd - Tudor Ave woodland
14	Mount Tolmie	37	Undeveloped Right-of -Ways Sea View Rd - Tudor Ave
15	Mystic Vale	38	Phyllis Park rocky shoreline
16	Observatory Hill	39	Undeveloped Right-of-Ways Bedford Rd
17	Panama Flats	40	Woodland near Logan Park
18	Portage Inlet	41	Garry oak woodlands Cyril Owen
19	Prospect Lake / Maltby Lake	42	Glendale Lands
20	Quick's Bottom	43	End of Portage Rd
21	Rithet's Bog	44	Undeveloped Right-of-Ways at end Woodley Road
22	Swan Lake	45	Wende Rd / Athlone Drive
23	Christmas Hill	46	Maltby Lake



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3.2. Site Selection and Groundtruthing

Application of the priority criteria (see Table 1) to the nominated sites resulted in 31 sites with a score of 5 or higher priority (Table 4). Any sites receiving a score of 5 or higher were considered a high priority for groundtruthing. The majority of sites were SEI sensitive potential types (64%), while the rest were SEI other important ecosystems, urban forest and community green space.

TABLE 4 - Selection of Sites to Groundtruth

U: Saanich urban containment zone; **R:** Saanich rural

SITE NAME	DESCRIPTION	PROTECTION STATUS	Priority Location (see Table 1)	Priority Ecosystem (see Table 1)	FINAL PRIORITY SCORE	U / R
Arbutus Cove	Steep cliff, sandy beach and rocky outcrops	Saanich Park at North end; SEI coastal cliff; and Marine beach shore unit (beach); CDC site	2	2	4	U
Broadcast Hill	Woodland with open spaces	Mostly a Saanich Park; SEI, and CDC	2	3	5	R
Cedar Hill golf course	Woodland, wetlands	Saanich Park, SEI, CDC	2	3	5	U
Colquitz Creek	Mouth of river	Mostly Saanich Park, marine backshore	2	1	3	U
Courtland Flats	Floodplain	SEI	3	1	4	R
Elk and Beaver Lake		CRD Park			X	
Francis King Park		CRD Park			X	
Glencoe Cove Park	Coastal cliff,	Saanich Park; SEI; Marine backshore, CDC	2	2	4	U
Gorge Waterway	Riparian, estuary	Saanich Park; Marine bank shore	2	1	3	U
Haro Woods	Urban Forest	Saanich, CRD and UVic	2	2	4	
Hasting / Granville Flats	Floodplain	SEI: FS and WD	3	1	4	R
Kingsbury Cres. pond	Wetland	Saanich Park	2	3	5	U
Mt Douglas Park	Older forest, Garry oaks, rocky outcrops, riparian, coastal bluff	Saanich Park, SEI, CDC	2	3	5	U
Mt Tolmie Park	Garry oaks, rocky outcrops	Saanich Park, SEI, CDC	2	3	5	U



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SITE NAME	DESCRIPTION	PROTECTION STATUS	Priority Location (see Table 1)	Priority Ecosystem (see Table 1)	FINAL PRIORITY SCORE	U / R
Mystic Vale	Older forest,	SEI, wildlife tree area	3	3	6	U
Observatory Hill	Older forest, woodland, rocky outcrops	SEI, CDC	3	3	6	R
Panama Flats	Flooded fields	Mostly Saanich owns, SEI, CDC	2	1	3	U
Portage Inlet	Tidal estuary	Marine backshore	3	1	3	R
Prospect Lake	Lake and surrounding areas	Riparian 30 m (25%) and 15 m (75%); Saanich Whitehead and South Prospect Lake parks (20%)	2	2	4	R
Maltby Lake	Lake and surrounding areas	Riparian setback 30 m (40%), 15 m (60%)	3	3	6	R
Quick's Bottom	Wetland and surrounding area	Mostly Saanich Park; CDC whole area larger than park, SEI wetland	2	3	5	R
Rithet's Bog	Open water wetland bog, forest and herbaceous FS	Saanich Rithet's Conservation Area Park; and Shadywood Park; SEI wetland and FS; CDC 7 records; Riparian setback 30 m and 15 m (50% ea.)	1	3	4	U
Swan Lake	Lake and marsh	Swan Lake Park; SEI wetland and FS; CDC six records	1	3	4	U
Christmas Hill	Garry oak woods and rocky outcrop	Christmas Hill Nature Sanctuary Park, SEI woodlands and herbaceous and rock outcrops, CDC three records	2	3	5	U
10 Mile Point	Coastal bluff, and older forest	10 Mile Point Ecological Reserve, Marine backshore unit, Konukson Park, SEI units, wildlife tree area	3	3	6	U



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SITE NAME	DESCRIPTION	PROTECTION STATUS	Priority Location (see Table 1)	Priority Ecosystem (see Table 1)	FINAL PRIORITY SCORE	U / R
Tod Creek Flats	Creek, wetlands and floodplain	SEI floodplain (FS), CDC one record, riparian setback 15 (80%) and 30 m (20%)	3	2	5	R
Trevlac Pond	Wetland and surrounding forested area	Saanich Calvert Park; SEI wetland; CDC record	2	3	5	R
Viaduct Flats	Floodplain	Saanich covenant; SEI floodplain	3	2	5	R
End Portage Rd	Estuary's shoreline	Marine backshore unit, marine biodiversity area	3	3	6	U
Woodley Rd	Woodlands	None	3	3	6	U
Near Logan	Garry oak and arbutus woodlands	Possibly SEI woodland	3	3	6	R
Glendale Lands	Woodlands	Layritz Park, some covenants; SEI woodlands outside park; CDC record	2	3	5	R
Logan Park	Wetland, Viaduct Cr. and older forest	Saanich Park	2	3	5	R
Arbutus/ Finnerty Rd	Urban Forest remnant	Queen Alexandra Centre Children's Health	3	2	5	U
Finnerty Cr.	Creek	riparian setback 10 m; area owned by Saanich, CRD and UVic	2	3	5	U
Queenswood Centre	Forest	UVic	3	2	5	U
Queenswood Drive	Forest	None	3	2	5	U
Macdonald North Row	Forest	Undeveloped Right-of-Way	3	2	5	U
Gibson/McColl	Forest	Undeveloped Right-of-Way, partly a Park	2	2	4	U
Sea Point Dr East	Wetland / vernal pools	Saanich Konukson Park; SEI wetland; CDC record	2	3	5	U
Konukson Park	vernal	Saanich Park, SEI wetland, Wildlife tree area	2	3	5	U



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SITE NAME	DESCRIPTION	PROTECTION STATUS	Priority Location (see Table 1)	Priority Ecosystem (see Table 1)	FINAL PRIORITY SCORE	U / R
Sea View / Tudor Ave	Garry oak woodland	SEI terrestrial herbaceous; CDC record	3	3	6	U
Sea View / Tudor Row	Rocky outcrop	Undeveloped Right-of- Way	3	3	6	U
Below Phyllis Park lookout	Rocky outcrop	Saanich Phyllis Park; Marine shoreline	3	2	5	U
Bedford Rd extension	Rocky outcrop	Undeveloped Right-of-Way end Bedford Rd; Marine backshore unit	3	3	6	U
Wende Rd, Athlone Dr	Garry oak woodlands	None	3	3	6	U

The ground visits took place from April 6 to April 17th, 2012. All thirty-one sites were visited. A full ground visit was performed in 29 of the 31 sites. A visual inspection was done in two woodland sites:

- 1) in a private property adjacent to Konukson Park, and
- 2) in a *de facto* occupied undeveloped Right-of-Way at the end of Woodley Rd.

The most frequent ecosystem identified was older second growth coniferous forest (SG: co) (29%), followed by woodlands (WD) (19.3%), and herbaceous terrestrial (HT) (16.1%). Another 3.2 % of the sites were a combination of these two latter types (WD / HT). The detailed breakdown of the sites per ecosystem type is shown in Table 5.

TABLE 5 - Breakdown of Ecosystem Types

A breakdown of SEI ecosystem types identified in the field

SEI Class: Subclass (original codes)	% of Sites
SG: co	19.3
SG: mx	9.7
WD	19.3
WD/HT	3.2
HT: ro	12.9
HT: sh	3.2
WN: sw	9.7
RI	6.5
OF	3.2
CB	3.2



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3.3. Evaluation of the Sites

The assessment of the sites by the two formulas provided similar results, and in most cases an equal score. Sites with different scores by each method, only differed by a maximum of 0.2. In those cases, the average between the two methods was used.

Each site was assessed for viability, or its ability to maintain ecological integrity over time. Five sites scored high (>3) indicating **excellent viability potential**:

- Site 12MG012: rocky outcrop in Observatory Hill,
- Site 12MG013: riparian wetland in Logan Park,
- Site 12MG017: older forest in Maltby Lake,
- Site 12TM005: older second growth coniferous forest in Glendale Lands, and
- Site 12TM013: woodland near Logan Park.

Another five sites scored medium to high (2.5 -3.0) indicating **good viability potential**:

- Site 12MG004: Douglas fir - Arbutus older second growth forest in Konukson Park,
- Site 12MG015: rock outcrop meadow in Konukson Park,
- Site 12MG016: woodland rocky outcrop in Cyril Owen
- Site 12MG014: coastal bluff south of Guinevere beach, and
- Site 12TM010: series of naturalized wetlands in Madrona farm.

Another twelve sites ranked higher than Fair (>2): five older second growth forests, two woodlands, one herbaceous terrestrial with woodland, two urban forest patches and two naturalized wetlands (Appendix I).

Two sites showed a borderline score: a section of Mystic Vale adjacent to University of Victoria student residences (12TM003), and a mature second growth Douglas fir/Arbutus/western Red cedar forest at Queen Alexandra Hospital's grounds (12TM002). Both these sites had a dense cover of English ivy (*Hedera helix*) in the understory (>75%), as well as abundant English holly (*Ilex aquifolium*), and some spurge laurel (also known as Daphne-laurel) (*Daphne laureola*). Although the restoration potential exists, it would require a large and persistent effort. In addition, both sites had storm water ditches dug through the site, and in Mystic Vale there was much trampling and disturbance (trails, garbage). At the Queen Alexandra Hospital site, a large area was denuded of vegetation except for a large old broadleaf maple (*Acer macrophyllum*). The reason for the disturbance is not known. A larger proportion of western Red Cedar (*Thuja plicata*) was noticed at this site compared to Haro Woods, across the road, but many cedars had dried tops. Deer trails were abundant.

3.4. Description of Environmentally Significant Areas

During this phase of the project we identified 19 sites belonging to SEI sensitive ecosystem types, 4 isolated wetlands and watercourses, one wildlife tree and a concentration of wildlife trees.

3.4.1 Sites with SEI Sensitive Ecosystem types

Of the 19 SEI sensitive ecosystem sites identified, only fifteen achieved a viability score from fair to excellent condition (Table 5) (14 new and one existing SEI site).

The four sites with higher ecological viability scores are briefly described, followed by the four sites with the lowest scores:

Site 12MG012. The site at Observatory Hill is a small rocky outcrop opening surrounded by a Douglas fir (*Pseudotsuga menziesii*) / Arbutus (*Arbutus menziesii*) / Garry Oak (*Quercus garryana*) forest. The rocks were covered by a thick and diverse mantle of mosses: long rock-moss (*Racomitrium elongatum*), roadside rock-moss (*Racomitrium canescens*), Juniper moss (*Polytrichum juniperinum*), broom moss (*Dicranium scoparium*), Lanky moss (*Rhytidiadelphus loreus*) and apple moss (*Bartramia pomiformis*). Flowers such as



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Monkey flower (*Mimulus alsinoides*) were found on the rock ledges; camas (*Camasia* spp.) and small-flowered blue-eyed Mary (*Collinsia parviflora*) were widespread in the meadow. Restoration and research projects are taking place at the site. Asphalt tiles were placed on the ground to monitor the presence of sharp-tailed snake (*Contia tenuis*) (a red listed species), and Scotch broom (*Cytisus scoparius*) is removed every year. There was, however, abundant regeneration of Scotch broom around the site. A dark-eyed junco (*Junco hyemalis*), a Wilson's warbler (*Wilsonia pusilla*) and vultures (*Cathartes aura*) were observed during the survey.

Site 12MG013. The riparian site in Logan Park includes the headwaters of Viaduct Creek. The canopy is largely mature broad-leaf maples and red alders (*Alnus rubra*), and a few young western red cedars. The understory has a dense cover of sword fern (*Polystichum munitum*) and false lily-of-the-valley (*Maianthemum dilatatum*). There is also red columbine (*Aquilegia formosa*), foamflower (*Tiarella trifoliata*), lady fern (*Athyrium filix-femina*), common horsetail (*Equisetum arvense*) and sedges (*Carex* spp.). Only two exotic species were noted: dandelion (*Taraxacum officinale*) and catnip (*Nepeta cataria*); both had a sparse distribution. Near the site there is a high concentration of grand fir (*Abies grandis*) snags used by woodpeckers. A northern flicker (*Colaptes auratus*) was seen drilling a hole, and two mallards (*Anas platyrhynchos*) were secretively feeding in a small pond, and flew away with our presence. Road kill Rough-skinned newts (*Taricha granulosa*) have been found immediately adjacent to this riparian site. Logan Park is also home to the blue grey tail-dropper slug (*Prophysaon coeruleum*), a red listed species. Pileated woodpeckers (*Dryocopus pileatus*) and Great-horned owls (*Ardea herodias*) inhabit the park (K. Ovaska pers. comm.). The larger forested ecosystem in Logan Park should likely be identified as a Sensitive Ecosystem in the next phase of the project.

Site 12MG017. The Maltby Lake property is a complex landscape with a rich variety of red listed and blue listed species and ecosystems. The forest surrounding the lake is an older coniferous forest dominated by Douglas fir, mixed with Arbutus on the north and west sides of the lake. There are many significant trees larger than 1.5 m diameter. The coordinates of six of these very large trees and clumps of trees were located with GPS and included in the GIS files. Parts of the property in the north side were logged in 1915 and again in 1972. The south side was logged in 1990. The last forest fire occurred in the early 1900's (W. Thompson personal comm.). Woodlands seem to occur mostly on the south side.

The plot site was done at a floodplain, at the mouth of small creek flowing into the lake on the north side. At the time of the visit no flowing water reached the lake, and the only evidence of the creek was a wet channel that disappeared in the floodplain. western red cedar was the dominant species forming a closed canopy. The understory was dominated by sword fern, with some lady fern and red cedar seedlings. The shrub layer was sparse with English holly as the dominant species, a low cover of salal (*Gaultheria shallon*), traces of red huckleberry (*Vaccinium parvifolium*), dull Oregon grape (*Mahonia nervosa*), and trailing blackberry (*Rubus ursinus*). One sprout of spurge laurel was observed at the site.

Great blue heron, red-tailed hawk (*Buteo jamaicensis*), a beaver house and beaver activity were observed during the survey. The endangered and red listed western Painted Turtle (*Chrysemys picta bellii*) has been documented from Maltby Lake. Also, according to the report by ENKON Environmental Ltd. (2002), there is a red-tailed hawk nest, a great-horned owl active nest, and presence of purple martin (*Progne subis*) (blue listed), barred owl (*Strix varia*), red-legged frog (*Rana draytonii*) (blue listed), black-tailed deer (*Cervus canadensis*), river otter (*Lutra canadensis*), American mink (*Mustela vison*), and resident coastal cutthroat trout (*Oncorhynchus clarki*) (blue listed).

In the Maltby Lake property, several red and blue listed plant species and communities have been identified: two blue listed plants - California willow herb (*Epilobium foliosum*) and Humped bladderwort (*Utricularia gibba*); four red listed communities – Douglas fir/salal, Garry oak/Arbutus, Garry oak/California brome, Garry oak/ocean spray; and a rare fungi: *Amanita aprica*. Also three SEI wetlands (WN) and eight



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woodland areas (WD) exist in the property (ENKON Environmental Report, 2002, for Mr. Holmes). These at risk EO have not been documented yet by the CDC.

Site 12TM013. The private property examined on Viaduct Avenue, adjacent to Saanich's Logan Park, was one of the most intact ecological community visited. A series of rock outcrops rise behind the owner's home toward the southwest, and the outcrops are lightly forested with maturing Douglas fir and Arbutus, with a scattering of small Garry oaks. A dense layer of mosses cover the rocks, including Oregon beaked moss (*Kindbergia oregana*), electrified cat's tail moss (*Rhytidiadelphus triquetus*), and haircap moss (*Polytrichum commune*), with smaller coverage of golden short-capsuled moss (*Brachythecium frigidum*), broom moss, and step moss (*Hylocomium splendens*). Spring wildflowers were in abundance, including common camas, broad-leaved shooting star (*Dodecatheon hendersonii*), fawn lily (*Erythronium oregonum*), miner's lettuce (*Claytonia perfoliata*), and samples of seablush (*Plectritis congesta*), and large-leaved avens. There is a good cover of stonecrop on much of the rock ledges, mainly broad-leaved stonecrop (*Sedum spathulifolium*). Down slope of the rocky outcrops, in ravines closer to the house, were found dull Oregon grape, sword fern, and salal.

The only disturbance on site was in the form of scattered patches of Scotch broom. The owner indicated that he clears broom annually from the area, hence the sparse cover. Deer trails criss-crossed the grassy and mossy rock outcrops, but there was little other evidence of visitors to the hill side.

Four potential sensitive ecosystems were in poor condition:

12MG005. A potential woodland - rock outcrop next to Konukson Park turned to be severely altered by rock fill for a construction site. The rock was laid over few years ago since it looked weathered. Some native species characteristic of rocky outcrops surface in a few patches among the rock fill such as licorice fern (*Polypodium glycyrrhiza*). Garry oaks border the rock fill covered area. Himalayan blackberry (*Rubus discolor*) and other invasive species dominate the site (Photo 13).

12MG006. The undeveloped Right-of-Ways in Benson Rd crosses an SEI identified herbaceous terrestrial ecosystem in relatively good to fair condition, even though there is abundant presence of Scotch broom. However, the area adjacent to the walking path, approximately 4 m on either side, is covered with periwinkle (*Vinca major*), Himalayan blackberry, English bluebells (*Hyacinthoides hispanica*) and other exotic species. Garry oaks, both in the Right-of-Ways and in the adjacent private properties, show signs of drying out. A drain ditch along the path collects and delivers storm water down the hill, towards Cadboro Bay. The site is correctly classified as Herbaceous Terrestrial (HT), yet the Right-of-Way is contributing to altering this sensitive ecosystem by being a source of invasive exotic species and by altering the hydrology pattern.

12MG009. The undeveloped Right-of-Ways at the end of Woodley Rd turned out to be a Garry oak woodland being used *de facto* as part of the adjacent properties. In the south end it has been landscaped, and in the north end has been turned into a vegetable garden. The only components of the ecosystem remaining are four large Garry oaks, six younger ones, some camas and a small mossy rock outcrop. At this point, it is not recommended to include it as a sensitive ecosystem. If the District of Saanich were to exert its ownership over the Right-of-Ways area and restore it to a natural woodland site, that alone would be a very small site. A better solution would be to make an agreement with the property owners to restore the Right-of-Ways and part of their properties to a natural state, perhaps placing of a covenant, in exchange for some lease or use of the Right-of-Ways.

12TM007. A remnant Garry oak woodland in Hastings and Granville flats was examined. It is located on a property which has been actively farmed since 1893 (High Oak Farm). A plot was established in an agricultural field which has a sparse cover of old Garry oaks, some likely exceeding 100 years of age, on an easterly slope overlooking a seasonally flooded field which has designation by Saanich as an SE. Despite over 100 years of agricultural impacts, there still exists some remnant Garry oak understory shrub species interspersed among



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rocky outcrops overlooking the wet field below: tall Oregon grape (*Mahonia aquifolium*), Indian plum (*Oemlaria cerasiformis*), snowberry (*Symphoricarpos albus*) and Nootka rose (*Rosa nutkana*). On the rocky outcrops were found Siberian miner's lettuce (*Claytonia sibirica*) and several mosses – red-roof moss (*Ceratodon purpureus*) and red bryum (*Bryum miniatum*). Fawn lilies still bloom below the shrub layer among the rocks as well.

Due to the lengthy agricultural history, most of the meadow below the Garry oaks and away from the rocky outcrops is dominated by invasive agronomic grasses: orchard grass (*Dactylis glomerata*) and Kentucky bluegrass (*Poa pratensis*). Other invasive plants too numerous to mention are found on the disturbed ground along the meadow.

3. 4.2 Isolated wetlands and watercourses

Three isolated wetlands (WN: sw following the SEI classification) and one isolated water course were identified:

12TM010. A series of four naturalized wetlands was examined at Madrona Farm on Blenkinsop Road, adjacent to the border with Mount Douglas Park. The four wetlands were constructed on the farm by the grandfather of the present owner, in the early 1950's. The four ponds are connected hydrologically, i.e., water flows down slope from the topmost pond to the next pond, and in series via tile drainage and seepage, to the lower pond. Vegetation varies between ponds, ranging from only agricultural grasses and cattails at the upper pond, to red alder stands around the middle two ponds, and mature Douglas-fir and western red cedar adjacent to the lower ponds. Invasive species such as Reed canary grass (*Phalaris arundinacea*), cattail (*Typha latifolia*), Himalayan blackberry, and agronomic grasses have also populated the sides of the ponds. However, native shrub species are present in abundance, such as snowberry, Indian plum, and various willows.

The owners of Madrona Farm are actively practicing agriculture and managing the farm under restrictions imposed through a land covenant with The Land Conservancy (TLC). All farm practices are carried out with the intention of protecting the habitat values found on the property, including the shallow water ponds.

12MG002. Kingsberry Crescent's pond is a natural wetland occurring at the foot of Mount Tolmie, and within the Bowker Creek watershed. The wetland has been altered mostly on the west side because of the construction of an apartment building next to the pond. The riparian zone in the apartment grounds is formed by a birch tree (*Betula papyrifera*), a rock berm and adjacent lawn. However the shoreline around the rest of the wetland has several large native willows, black hawthorn (*Crataegus douglasii*) and Indian plum. Red alder and mature broadleaf maples form the tree canopy. The south portion of the pond belongs to Saanich Parks (Mount Tolmie Park), the northwest portion to the strata building and the northeast portion, where a large portion of the natural riparian zone lies, to the property at 3640 Iona Drive. This latter property is a large lot, approx. 4000 sq.m, and in the future it is likely that it may be subdivided. The pond is used by mallards, which are being fed by residents from the apartment building.

12MG010. A small creek flowing south through Cedar Hill Golf Course towards a wetland near the Recreation Centre. Sections of the creek are piped underground. It surfaces as open water by a small rock outcrop and a sedge clump (Photo 25). The channel runs through the greens, past a weeping willow, through a blackberry thicket, and into a pipe. The total length of the creek channel as surface water is less than 200 m. Downstream it surfaces again, and is identified as a water course with a 10 m set back protection.

The condition of the creek has little resemblance to what would be its natural riparian vegetation, therefore it cannot be classified as a *sensitive ecosystem*, but it should be included in the Atlas of isolated watercourses and wetlands.



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12MG018. Two naturalized wetlands, no longer in use, on the west slope of Todd Creek flats. In one of the wetlands, a clump of Red cedars and a dense shrub cover (Indian plum and H. blackberry) shade the water, while the other is more open and dominated by reed canary grass, under a canopy of young red alders, some of them cut down by beavers (Photo 37). Other species include common hawthorn (*Crataegus monogyna*), ocean spray (*Holodiscus discolor*), hardhack (*Spiraea douglasii*), Indian plum, Himalayan blackberry, spurge laurel and cattails.

3.4.3. SEI Older Second Growth Forest

Eleven forested ecosystems were groundtruthed. Under SEI, Older Forests are the only forested ecosystem recognized as *sensitive*. Second Growth Older Forests, less than 100 yrs old, are considered "Important ecosystems" but not sensitive ecosystems. Table 6 identifies significant specific values of the forested sites that were groundtruthed: two undeveloped Right-of-Ways and **nine older second growth forest patches**. The two older second growth sites with higher viability score were: Konukson Park coniferous forest (12MG004) and a remnant forest in Glendale lands (12TM005):

Site 12MG004. Konukson Park has a variety of ecosystems: herbaceous terrestrial, wetland, and coniferous forest. The forest is dominated by Douglas fir with a component of Arbutus and Grand fir. The age of the stand is about 80 yrs, but there are veteran trees disseminated throughout 150 yrs and older. Some should be catalogued as "significant trees" because of their outstanding size. The understory is well developed with ocean spray, snowberry, dull Oregon grape, salal and two species of honeysuckle (*Lonicera ciliosa* and *L. hispidula*) as major species. The Park has a community volunteer group that among other functions is looking after the removal of invasive species. English ivy and spurge laurel have been removed from large areas of the Park, which is an outstanding accomplishment, especially when compared with other forested sites in the vicinity with an understory dominated by English ivy. A large veteran tree had until four years ago an active Bald eagle nest. The site is home to barred owl, Great-horned owl, Pileated woodpecker, and brown creeper (*Certhia Americana*). The forested area of approximately 2.5 ha is the largest continuous forest in the Ten Mile Point peninsula. The closest large forest patches are Haro Woods at 2 km and Mystic Vale at 1.7 km. Connectivity between these areas is limited except for smaller pockets of forested areas around private residences.

Site 12TM005. At Camosun College Glendale Lands, a large second-growth coniferous woodland was examined adjacent to Interurban Road. The site is dominated by large Douglas-fir, with a scattering of broadleaf maple and western red cedar. The understory contains a healthy cover of Dull Oregon grape, topped by snowberry, and ocean spray. Herbs encountered include abundant large-leaved avens and cleavers (*Galium aparine*). Oregon beaked moss (*Kindberghia oregana*) and electrified cat's tail moss (*Rhytidiadelphus trequetrus*) underlie the above layers.

Disturbance at the woodland is minimal, mainly in the form of several bisecting trails for dog walkers. Invasive species such as Scotch broom and Himalayan blackberry were only present along the edges of the woodland and had not invaded the interior. A minor amount of spurge laurel was found in the interior of the woodland.

3.4.4 Wildlife trees

- ⤴ A large veteran Douglas fir (1.3 m diameter) in Konukson Park is being used to study spiders, because of the high number of spider species that inhabit the holes in its bark (Photo 12).
- ⤴ An active bald eagle nest was located near the undeveloped Right-of-Way site at Bedford Rd (site 12MG007), in a large Douglas fir tree on the yard of 2861 Tudor Ave (Photo 19).
- ⤴ A concentration of wildlife Grand firs (*Abies grandis*) was observed at the SE corner of Logan Park.



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3.4.5. Outstanding size Douglas firs

Six clumps of Douglas-fir trees => 1.6m diameter were mapped in the older forest at Maltby Lake.

TABLE 6 - Specific Values of Groundtruthed Forested Sites

Conservation status and other specific values of the forested sites examined. SG: older second growth

Site Code	Site Location	BGC Unit	Conservation Status	Ecological Assessment	Special Values
12TM001	Queenswood property	CDFmm/01	SG Red listed	Fair	Veterans and large diameter trees in south portion; mixed Fd-Ra at N and E of property; potential nesting of raptors (barred owl, screech owl, cooper's hawk).SG: co
12TM002	Queen Alexandra Hospital grounds	CDFmm/01	SG Red listed	Fair-Poor	A few large veteran firs; many deer trails; cedars with dead tops (snags). SG: mx.
12MG001	Haro Woods	CDFmm/01	SG Red listed	Fair	Large trees interspaced throughout (a tree 80 cm diameter was 120 yrs old. SG: co.
12TM003	Mystic Vale north side	CDFmm/01	SG Red listed	Fair-Poor	Veteran wildlife trees and snags (Mb, Fd and Cw); tree cover provides protection against erosion of steep slope to ravine. SG: mx
12MG003	Sherwood Rd, Right-of-Ways	CDFmm/01	Red listed	Fair	Undeveloped Right-of-Way: foot path through second growth conifer forest 50 yrs old.
12TM011	Near Mt Douglas Park	CDFmm/01	SG Red listed	Fair	Mature Douglas fir forest; many deer trails; 60 m from Mount Douglas Park. SG: co
12MG004	Konukson Park	CDFmm/01	SG Red listed	Good	Veteran Douglas firs >100 yrs old and >1 m diameter disseminated throughout. Douglas fir known as "spider tree" holds very high spider diversity. Bald eagle nest abandoned in 2008. SG: mx
12TM004	McColl Place Right-of-Ways	CDFmm/08	Blue listed	Fair	Undeveloped Right-of-Way next to Benson Park. Red alder patch next to swamp; alders up to 50 cm diameter. Woodpecker holes in red alders. Young maturing forest.
12TM005	Glendale Lands W	CDFmm/04	SG Red listed	Good	Maturing Douglas fir forest with even-aged stand of older trees. Part of forested corridor to Quick's bottom. SG: co
12TM006	Glendale Lands E	CDFmm/01	SG Red listed	Fair	Section of forested corridor to Quick's bottom from Glendale Lands. SG: co
12TM009	Quick's Bottom	CDFmm/01	SG Red listed	Fair	Forest corridor between Quick's Bottom and Colquitz Park and other forested areas in Glendale lands and Viaduct flats. SG: co



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3.5. Municipal Lands

A total of **six** undeveloped Right-of-Ways were investigated. One had recently been bulldozed and converted into an unpaved road (Guinevere Street) with a small creek culverted along the side. **Five** Right-of-Ways and one community green-space were investigated and mapped. Of the five undeveloped Right-of-Ways that were visited, two were forested: McColl Place (12TM004) and Sherwood Drive (12MG003); two had a mix of shrub and herbaceous cover (HT) with a few isolated trees: Benson Rd (12MG006) and Bedford Rd (12MG007); and Woodley Rd undeveloped Right-of-Ways (12MG009) was a landscaped and altered Garry oak woodland (Photo 20). All sites had an abundant to moderate presence of exotic invasive species.

12MG003. The undeveloped Right-of-Way along Sherwood Road is a maturing coniferous stand well used by residents for walks. English ivy, English holly and periwinkle are abundant and extend into neighbouring properties. The nearest SEI site is a woodland 200 m to the east. **This is one of two municipal properties (outside of a park) that is recommended as a new ESA.**

12MG006. Benson Rd undeveloped Right-of-Way. The trail through this herbaceous terrestrial ecosystem site fills a social need for residents, who likely enjoy the flowers and the view while walking through the area. However, the sides of the path are covered with exotic species (English blue bells, periwinkle, grape hyacinth, daffodils) which may extend into the adjacent SEI terrestrial herbaceous (HT) meadows.

12MG007. The undeveloped Right-of-Way along Bedford Rd composed by a rocky meadow with a few Garry oaks has been identified as a new SEI site (HT). **This undeveloped Right-of-Way is recommended as a new ESA.**

12MG008. The site is a community green-space located along the Portage Inlet northern shoreline, and adjacent to the TransCanada Hwy. A paved path runs along the length of the site, and there are mowed and landscaped areas. A few Douglas fir, one Arbutus, and a grove of stunted Garry oaks form the tree cover. There is a patch of young Douglas fir (3 m ht) with a good growth, but invasive exotic species dominate the site (H. blackberries, Scotch broom, spurge laurel, and agronomic grasses).

12TM004. Undeveloped portion of Right-of-Way at end of McColl Place next to Benson Park. It is an interesting site with a healthy red alder grove next to a wet swamp with high bird use and a blue listed community. This site is a natural extension to Benson Park. It is recommended to extend the area of Benson Park to include this site.

3.6. GIS Coverage and Associated Data

A polygon feature class was created with ArcGIS v.10 containing information on altitude, slope, aspect, area and perimeter for each site. In addition a point feature class was created with information collected in the plots, including location, succession status, site series, other descriptive characteristics of the site, and tables containing species percent vegetation cover. These features were all included in a personal Geodatabase. Metadata was edited for each of the features following District of Saanich standards. Maps were created for each site included in the report.



4. RECOMMENDATIONS

The final objective of this project is to increase the available information regarding the environmentally significant areas that remain in the District of Saanich, thereby allowing the staff at the municipality to be able to make better informed decisions in dealing with potential development and conservation of endangered species and ecosystems within the District.

In general, environmentally significant areas are associated with SEI *sensitive ecosystem* types, water bodies, and their shorelines and riparian zones. However, other ecosystem types such as Older Second Growth forests may also be crucial in conservation efforts, particularly in an urban environment where the size of sensitive sites tends to be small. Smaller sites are more exposed to alteration from the adjacent landscape and border effects, which are greater than in larger areas (i.e. increased exposure to exotic invasive species, changes in micro-climatic conditions: isolation, temperature, etc.). In this situation, having buffer zones around sensitive sites may be of significant importance. Also ecosystems that once covered most of the landscape now survive in a maze of fragmented patches that need interconnection, such as Douglas fir forests.

For Saanich, to maintain connectivity and prevent isolation of ecosystem habitats requires conscious effort and planning. Urban forests and undeveloped areas (i.e. undeveloped Right-of-Ways), can serve as buffers to protected areas, contributing to maintain their ecological integrity, as well as maintaining connectivity between patches. In addition, non-sensitive ecosystems such as young and maturing urban forests will eventually become older second growth forests. The ecological value of urban forests and undeveloped sites therefore need to be considered individually, each site for their own merits, within a larger conservation plan. It should be noted, however, that these sites will play a positive contribution as long as they do not promote the spread of exotic invasive species. An overall exotic invasive control plan should be developed at different levels and in coordination between the various Saanich Departments, and with other municipalities, Provincial Government and agencies. Some of the municipal lands described in section 3.6 would benefit from invasive species control and/or a restoration plan, such as: 12MG006—the undeveloped Right-of-Way in Benson Rd; 12MG003 — the undeveloped Right-of-Way in Sherwood Drive, and 12MG008 — a community green-space located along the Portage Inlet northern shoreline.

It should also be noted that most site series in the Coastal Douglas fir moist maritime biogeoclimatic subzone (CDFmm) are classified as red and blue listed ecosystems in BC. Also many of the forested sites visited had large veteran trees scattered throughout, providing a structural complexity that second growth forests of more uniform age and with an even canopy do not have. In the urban and rural environment, they provide crucial habitat for many species of wildlife, such as raptors, woodpeckers and other forest nesting species (Great Blue Heron). Phase 2 should increase our knowledge of Coastal Douglas-fir sites in Saanich.

The sites at Queenwood property, Haro Woods, Queen Alexandra Hospital, Mystic Vale, and Konukson Park all have large veteran trees and snags, which make these forested areas of special value for biodiversity and wildlife within the urban landscape, although these sites are somewhat degraded by invasive plants. A special subclass of Older Second Growth forests with structural diversity may need to be considered as a sensitive ecosystem in the urban context.

In view of the values that Older Second Growth forests provide, particularly, in an urban and rural context, we recommend the inclusion of the nine sites identified as Older Second Growth SEI type with a viability score >2.

Table 7 shows the sites recommended as ESAs as part of the SEI inventory:



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TABLE 7. New Sites SEI Type in Fair or Better Condition

23 new sites SEI type identified in a Fair or better condition.

Site Code	SEI type	Site Location	Ecological Assessment
12MG017	OF	Maltby Lake	Excellent
12TM013	WD	Close to Logan Park	Excellent
12MG012	HT: ro	Observatory Hill	Excellent
12MG013	Ri: 6	Viaduct Creek headwaters - Logan Park	Excellent
12MG016	HT: ro	Cyril Owen	Good
12MG015	HT: ro	Konukson Park	Good
12TM010	WN: sw	Madrona Farm	Good
12MG014	CB	South of Guinevere Place beach	Good
12TM008	WD	Close to Quick's Bottom	Fair
12TM012	WD	Wende Ave and Athlone Dr.	Fair
12MG011	WD / HT	Cedar Hill Golf Course	Fair
12MG007	HT: ro	Bedford Rd undeveloped Right-of-Way	Fair
12MG002	WN: sw	Kingsberry Crescent pond	Fair
12MG018	WN: sw	Todd Creek flats (east facing slope)	Fair
12TM005	SG co	Glendale Lands Camosun College	Excellent
12MG004	SG mx	Konuckson Park	Good
12TM001	SG co	Queenswood property	Fair
12MG001	SG co	Haro Woods	Fair
12TM006	SG co	Glendale Lands Camosun College	Fair
12TM009	SG co	Adjacent to Quick's bottom	Fair
12TM011	SG co	Cordova Bay Rd near Mount Douglas Park	Fair
12TM002	SG mx	Queen Alexandra Hospital	Fair
12TM003	SG mx	Mystic Vale	Fair

The following sites are recommended as ESA's in the Wildlife Tree inventory (Table 8):

Table 8. New sites Wildlife Tree Inventory

Description	Location
Bald eagle nest	2861 Tudor Ave
Grand fir wildlife tree concentration	SE corner of Logan Park
Douglas fir veteran wildlife tree (spider tree)	Konukson Park



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The following site is recommended as an ESA in the Isolated Watercourses and Wetlands inventory:

Table 9. New Sites Isolated Watercourses and Wetlands Inventory

Code	Description
12MG010	Isolated watercourse Cedar Hill Golf Course

Maturing forest on Sherwood Road undeveloped Right-of-Way is also recommended as an ESA in account of its Red listed status and connectivity corridor values (Table 10).

Table 10. Undeveloped Municipal lands of ecological value

Code	Description
12MG003	Undeveloped Right-of-Way Sherwood Road

It is recommended that Phase 2 of the project proceed in order to identify new ESAs that are as yet unmapped but have been identified in other inventories or can be located by aerial photo interpretation.



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5. REFERENCES

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FIGURES



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List of Site Codes and Location

CODE	LOCATION
12MG001	Haro Woods
12MG002	Kingsberry Crescent pond
12MG003	Sherwood Drive undeveloped Right-of-Way
12MG004	Konukson Park
12MG005	2789 and 2795 Arbutus Rd
12MG006	Benson Rd undeveloped Right-of-Way
12MG007	Bedford Rd undeveloped Right-of-Way
12MG008	End of Portage Rd
12MG009	Woodley Rd undeveloped Right-of-Way
12MG010	Small creek Cedar Hill Golf Course
12MG011	Garry oak woodland Cedar Hill Golf Course
12MG012	Rock outcrop opening Observatory Hill
12MG013	Viaduct creek Logan Park
12MG014	Coastal bluff Guinevere Place
12MG015	Garry oak meadow Konukson Park
12MG016	Rock outcrop 312 and 336 Cyril Owen Place
12MG017	Maltby Lake - 4434 Prospect Lake Rd
12MG018	Naturalized pond - 5445 Spotts Close
12TM001	Queenswood property - 2474 Arbutus Rd
12TM002	Queen Alexandra Hospital
12TM003	Mystic Vale - 3774 Hobbs St
12TM004	McColl Place undeveloped Right-of-Way
12TM005	Camosun College - 4591 Interurban Rd
12TM006	Camosun College - 4591 Interurban Rd
12TM007	High Oak Farm - 4091 Granville Ave
12TM008	Quick's Bottom - 4551 Markham Rd
12TM009	Glendale Lands - 4461 Markham Rd
12TM010	Madrona Farm - 4317 Blenkinshop Rd
12TM011	4626 Cordova Bay Road
12TM012	1439 Wende Ave
12TM013	West of Logan Park - 305 Viaduct Ave



FIGURE 1
Site 12MG001 – Haro Woods
Site 12TM002 – Queen Alexandra Hospital

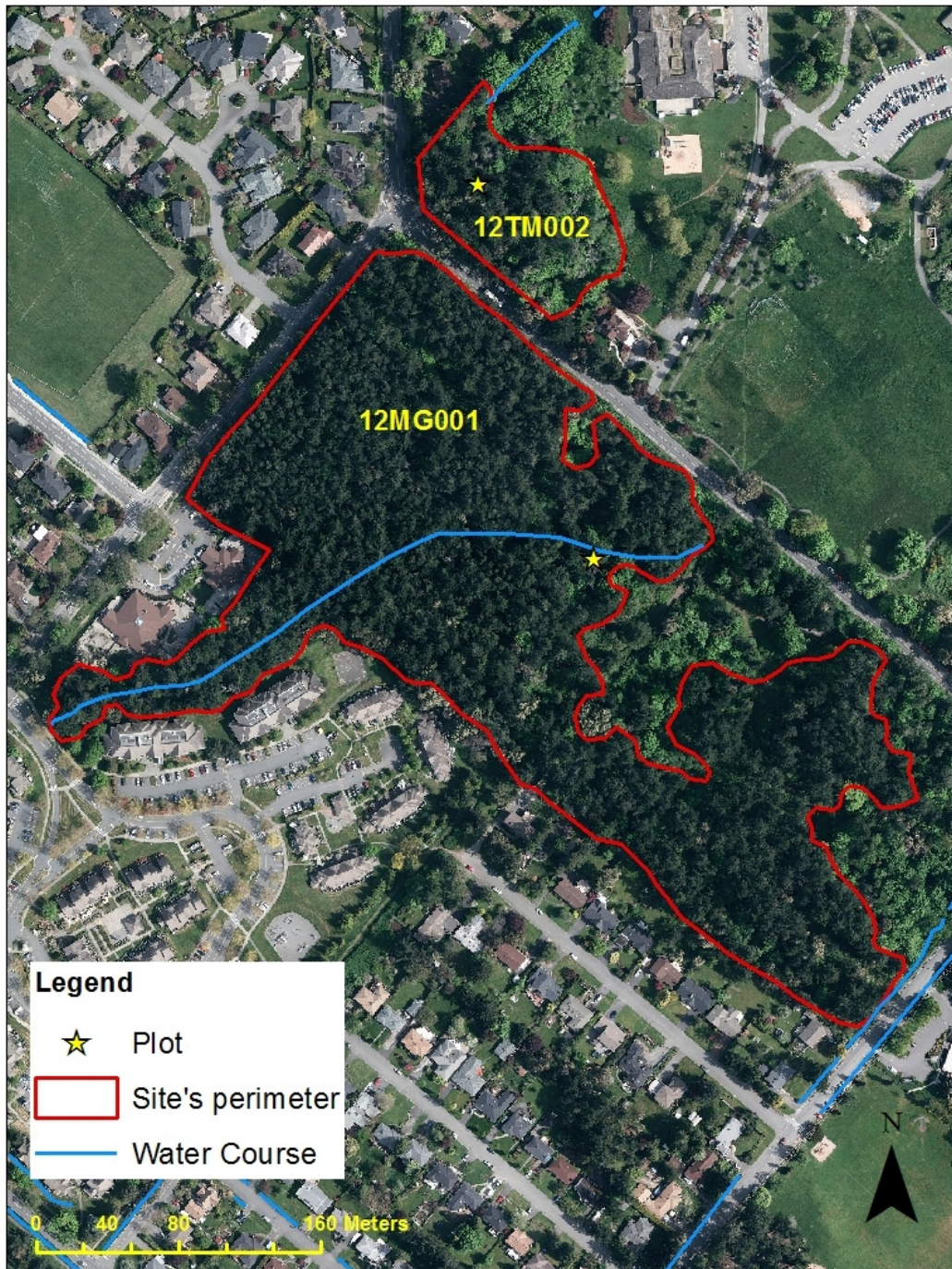


FIGURE 2
Site 12MG002 – Kingsberry Crescent Pond

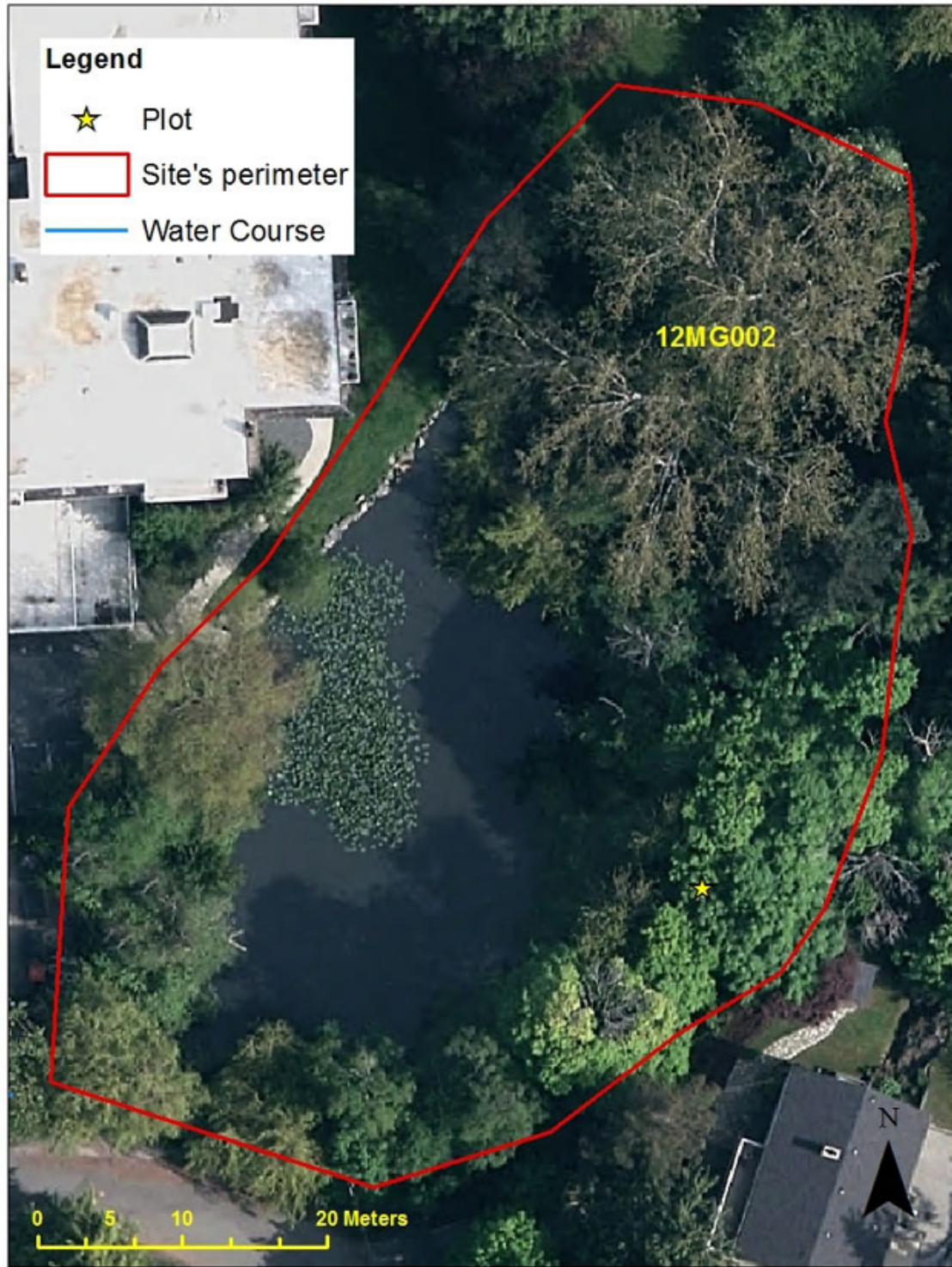


FIGURE 3
Site 12MG003 – Undeveloped Right-of-Way Sherwood Dr.



FIGURE 4
Sites 12MG004 and 12MG015 - Konukson Park

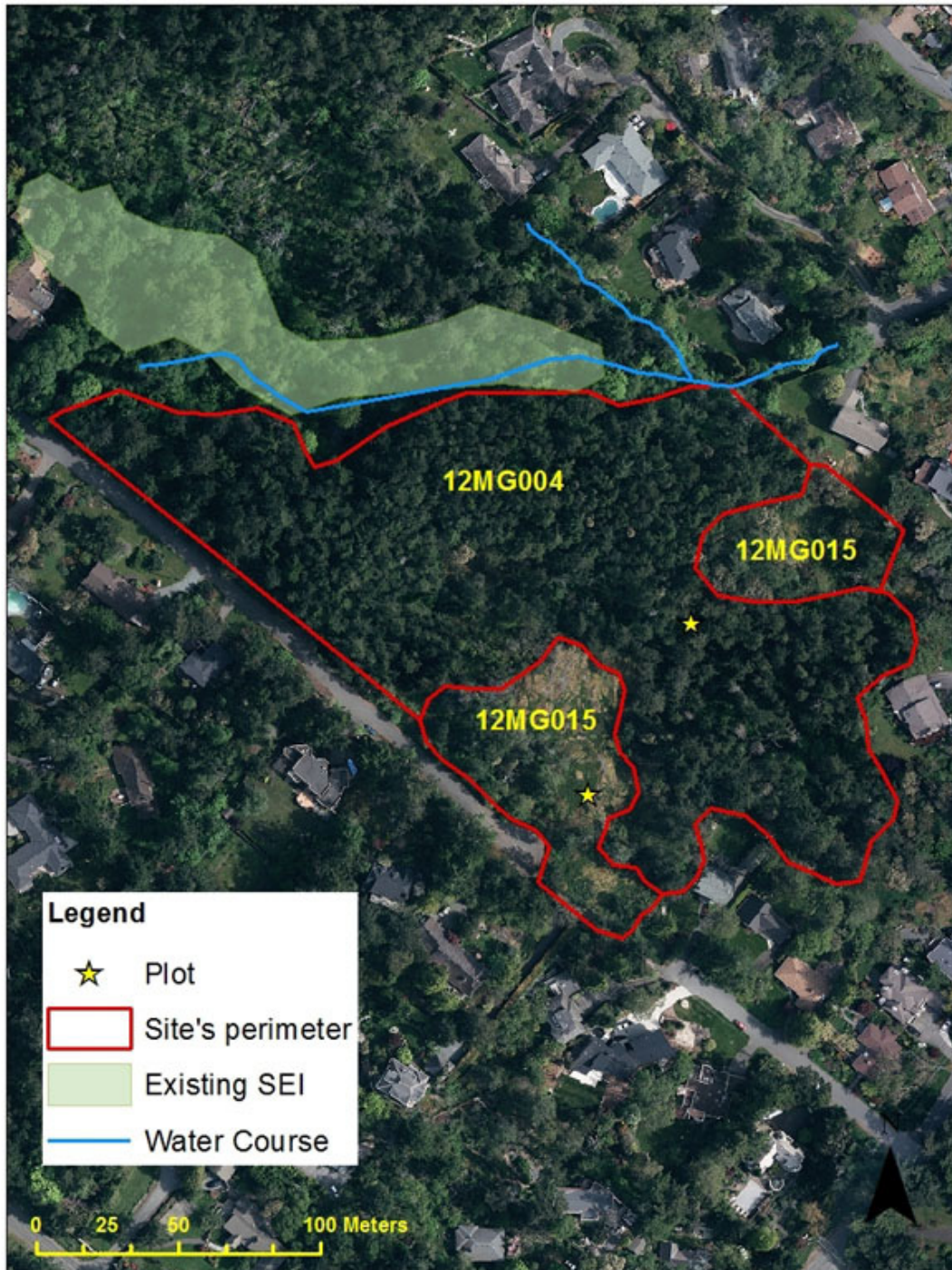


FIGURE 5
Site 12MG005 - 2789 and 2795 Arbutus Rd



FIGURE 6

Site 12MG006 – Benson Rd undeveloped Right-of-Way

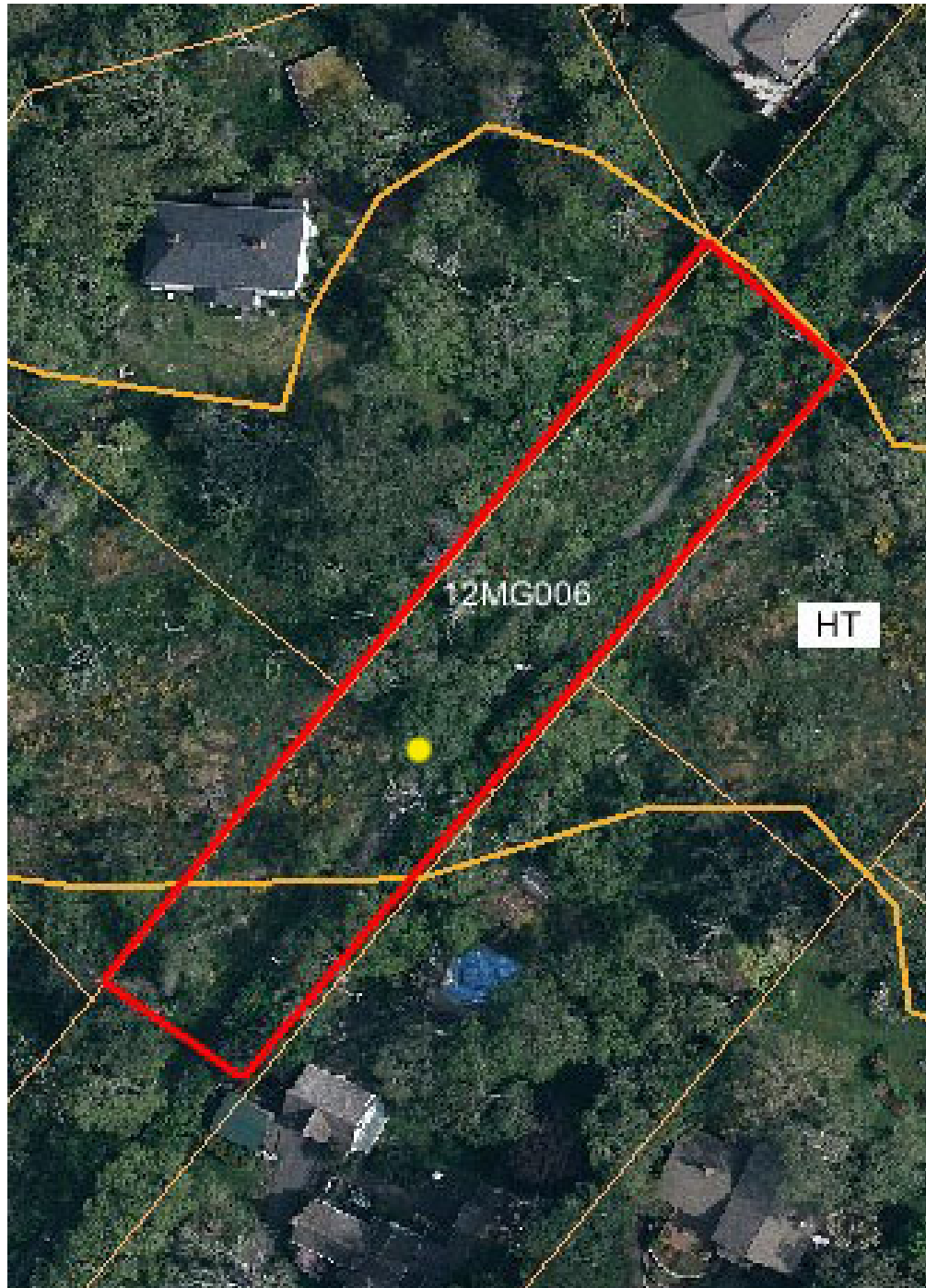


FIGURE 7
Site 12MG007- Bedford Rd undeveloped Right-of-Way



FIGURE 8
Site 12MG008 – End of Portage Rd



FIGURE 9
Site 12MG009 – Woodley Rd undeveloped Right-of-Way



FIGURE 10
Site 12MG010 – Cedar Hill Golf Course

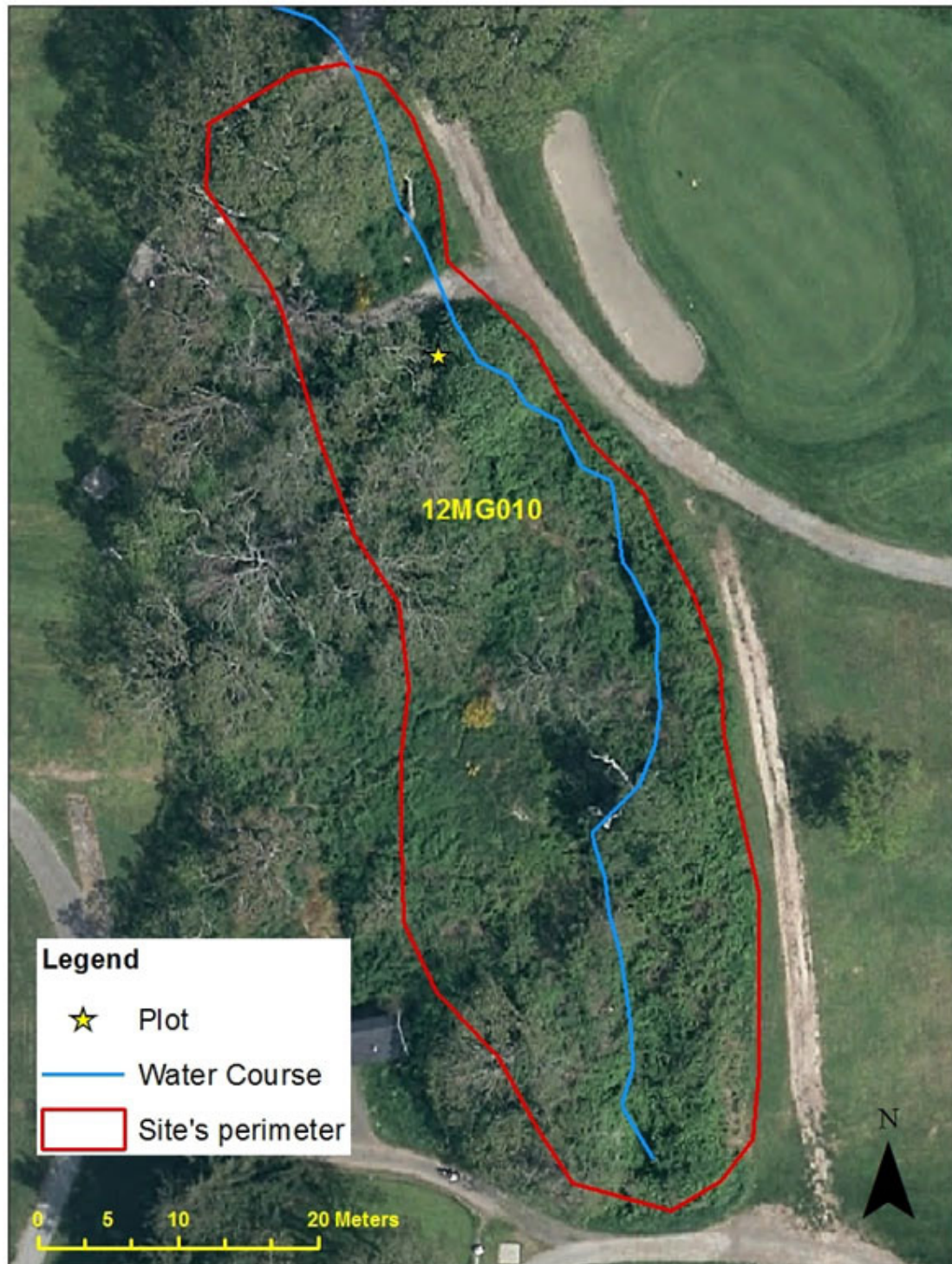


FIGURE 11
Site 12MG011 – Cedar Hill Golf Course



FIGURE 12
Site 12MG012 – Observatory Hill

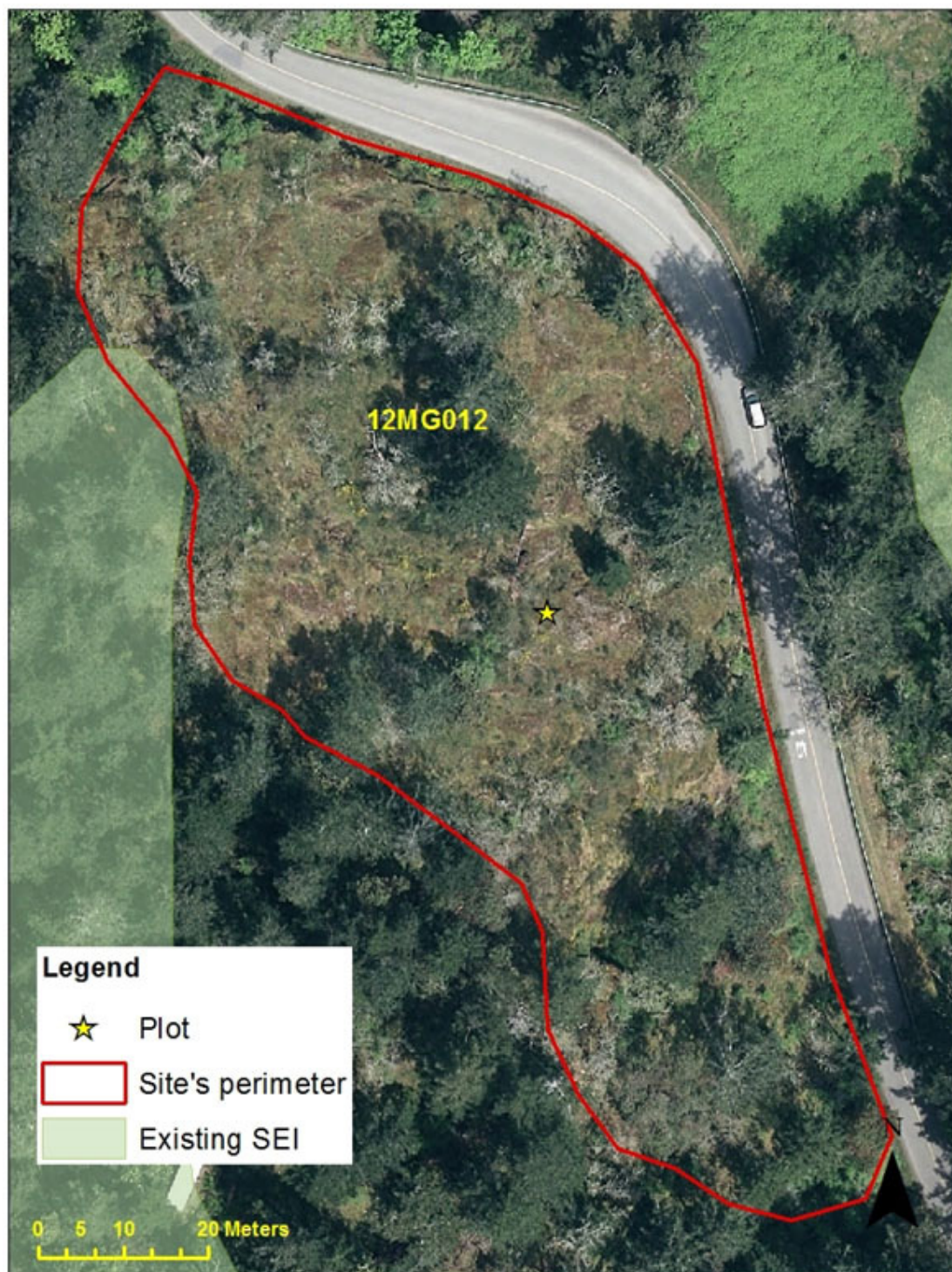


FIGURE 13
Site 12MG013 – Viaduct Creek NE corner Logan Park

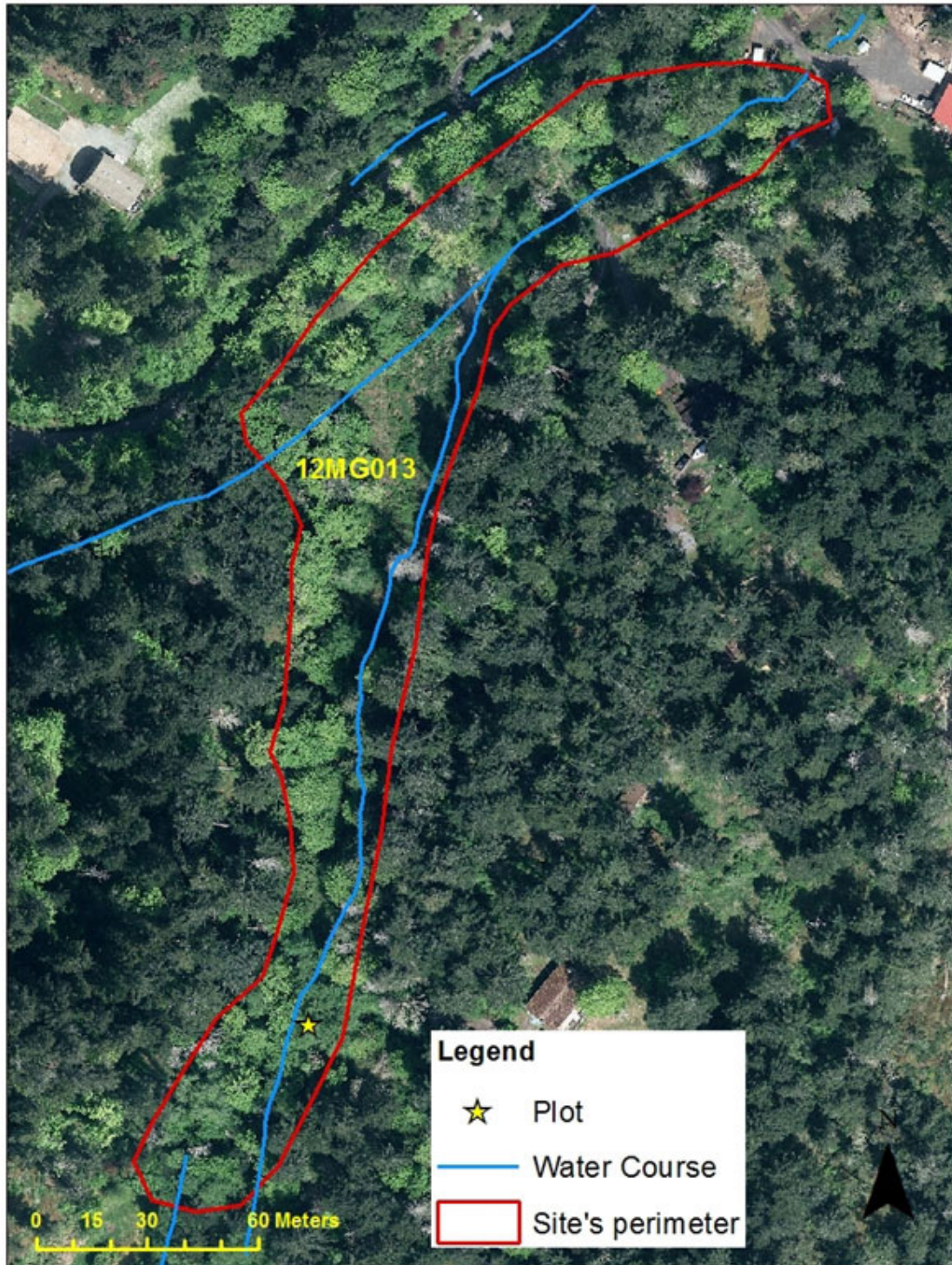


FIGURE 14
Site 12MG014 – Coastal Bluff South of Guinevere beach

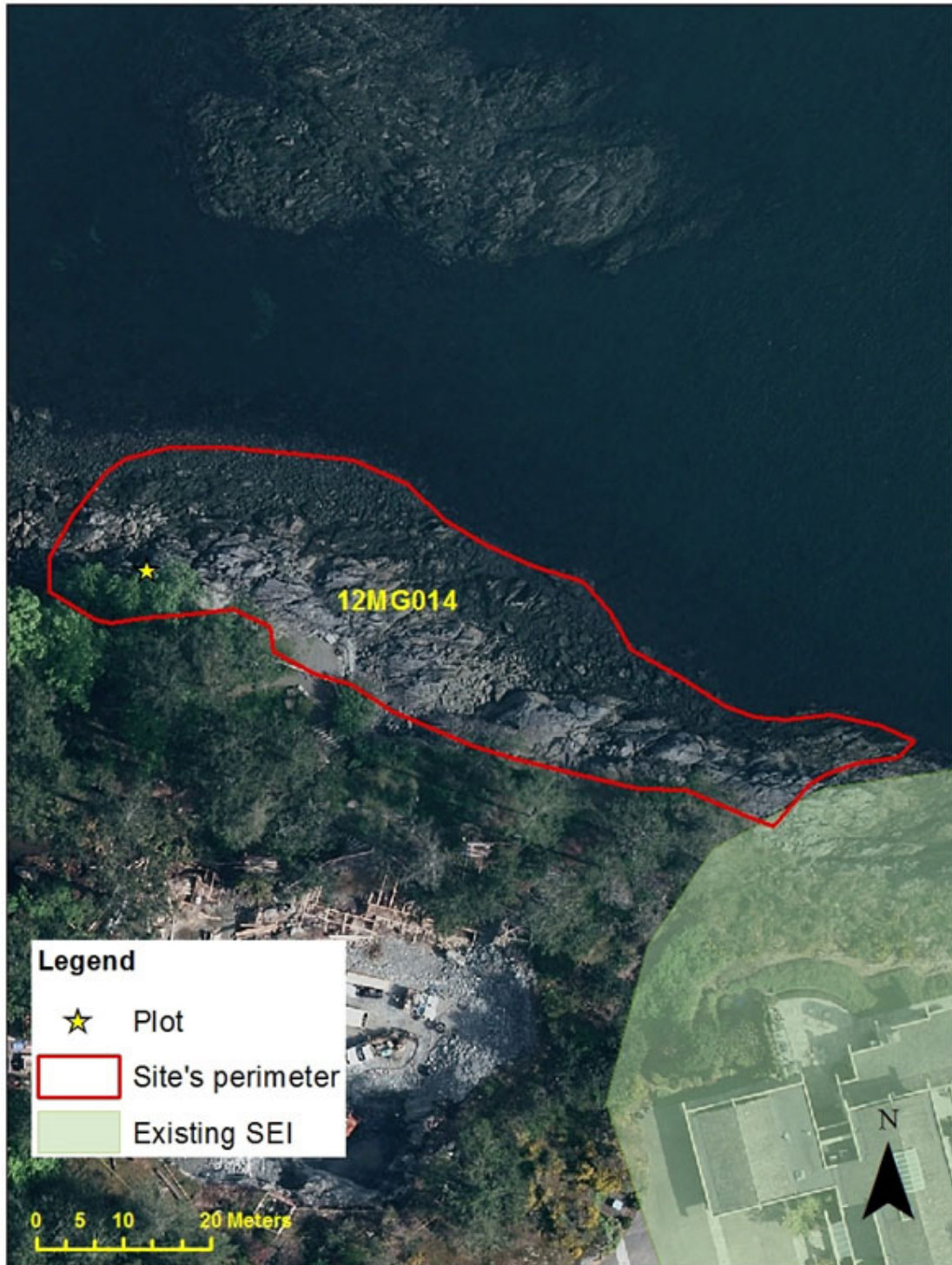


FIGURE 15
Site 12MG016 – 312 and 336 Cyril Owen Place

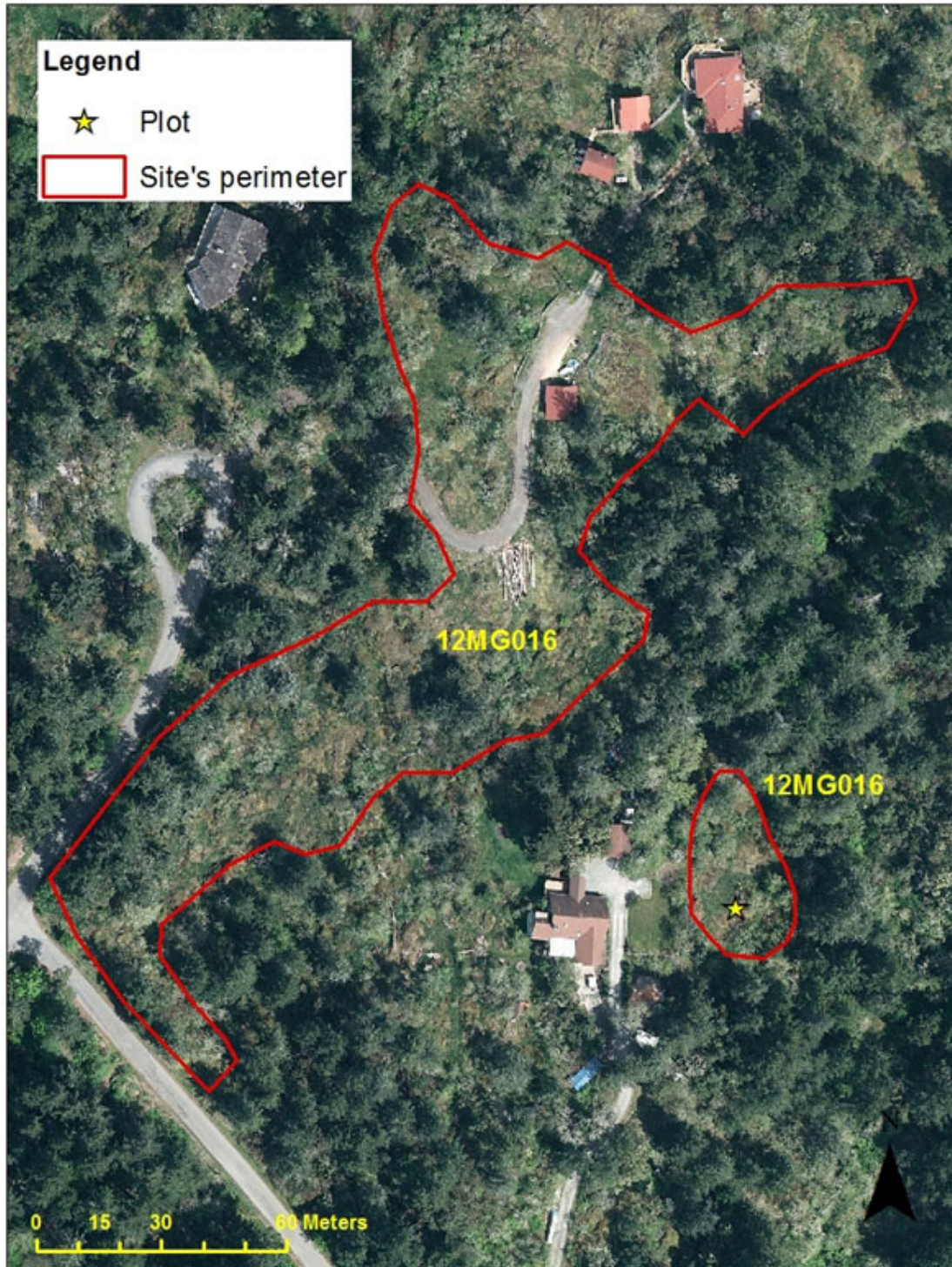


FIGURE 16
Site 12MG017 – Maltby Lake

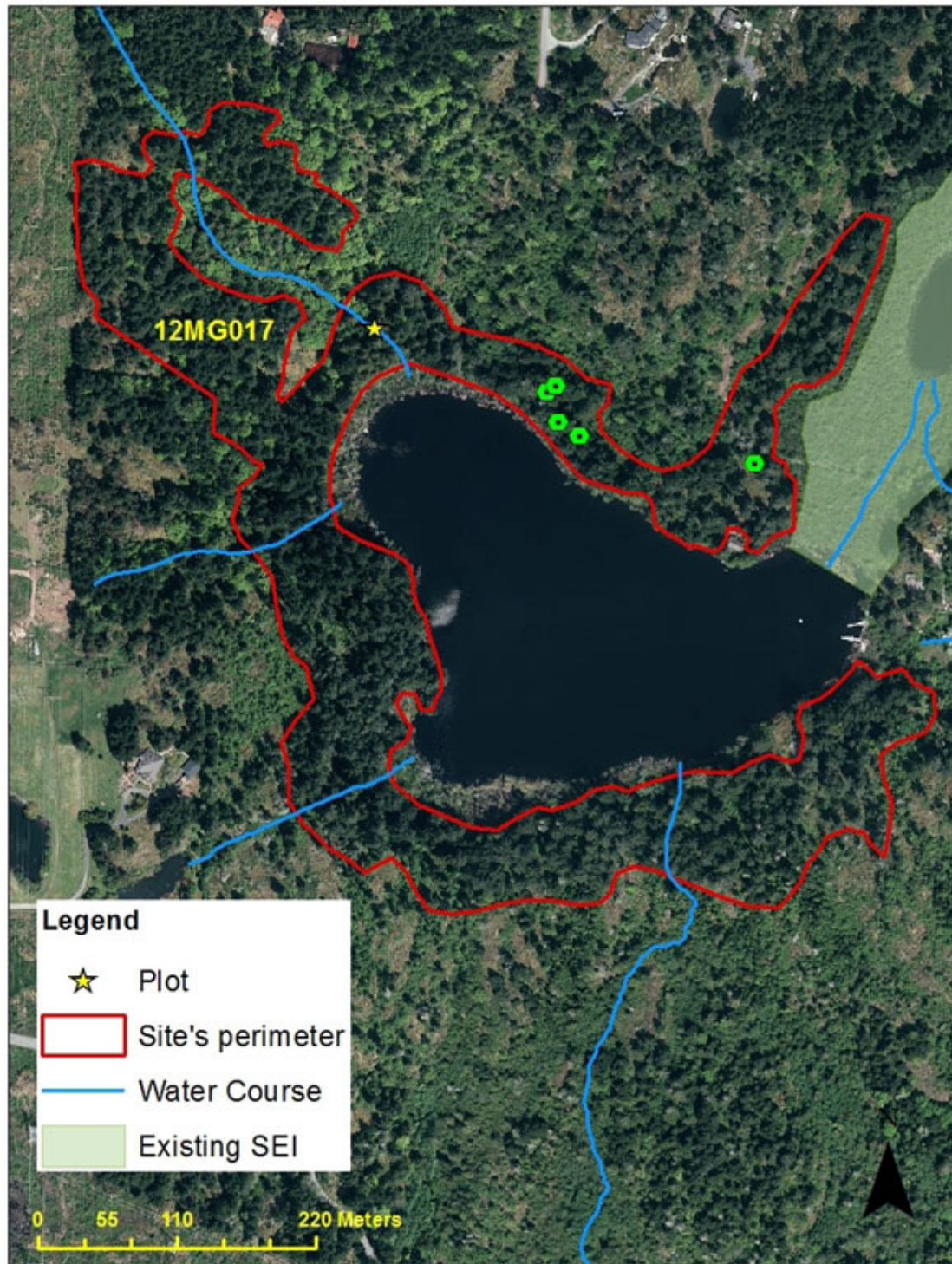


FIGURE 17
Site 12MG018 – Naturalized ponds 5445 Spotts Close



FIGURE 18
Site 12TM001 – Queenswood property

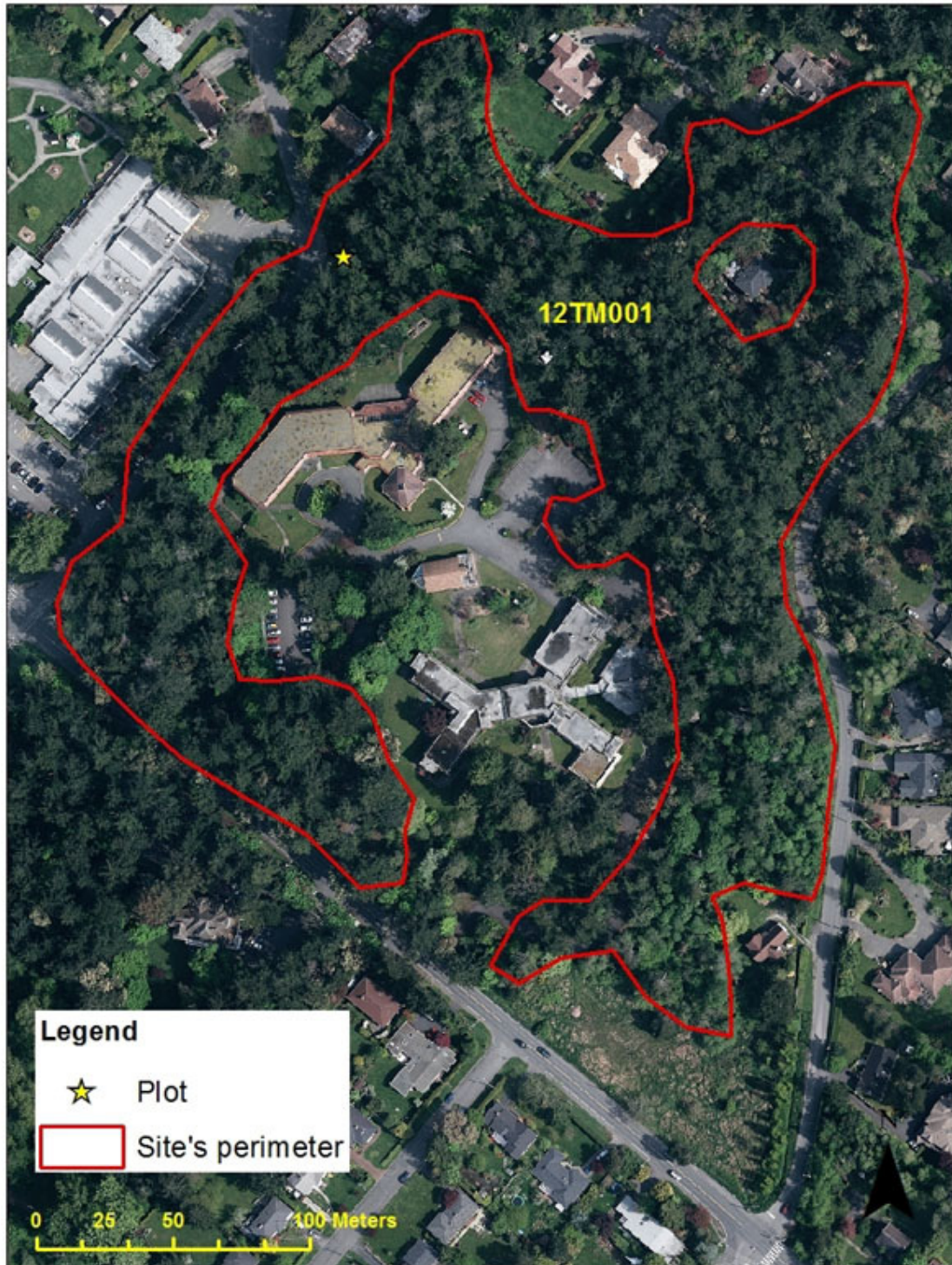


FIGURE 19
Site 12TM003 – Mystic Vale

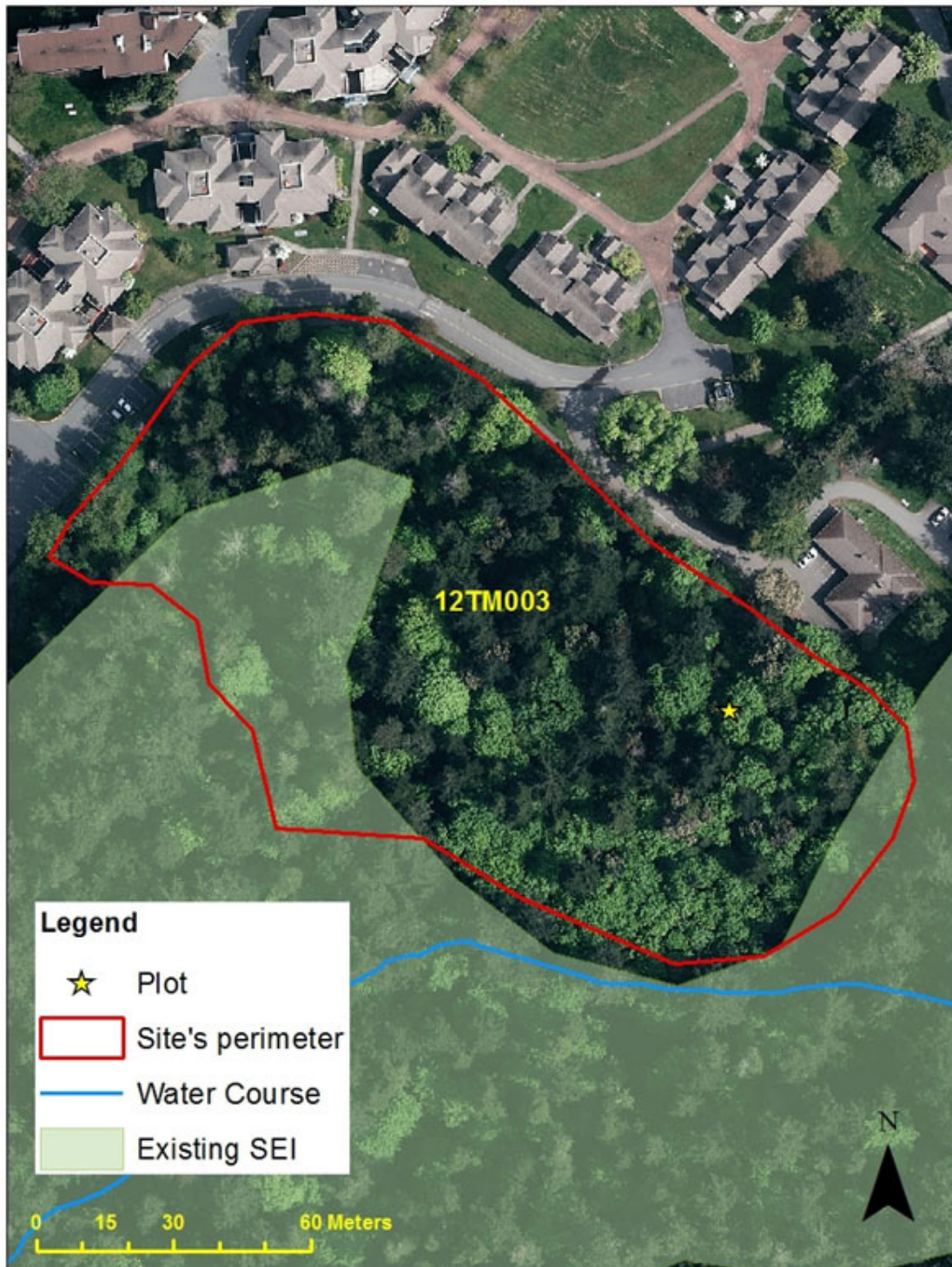


FIGURE 20
Site 12TM004 – McColls Place undeveloped Right-of-Way



FIGURE 21
Site 12TM005 – Camosun College Glendale Lands

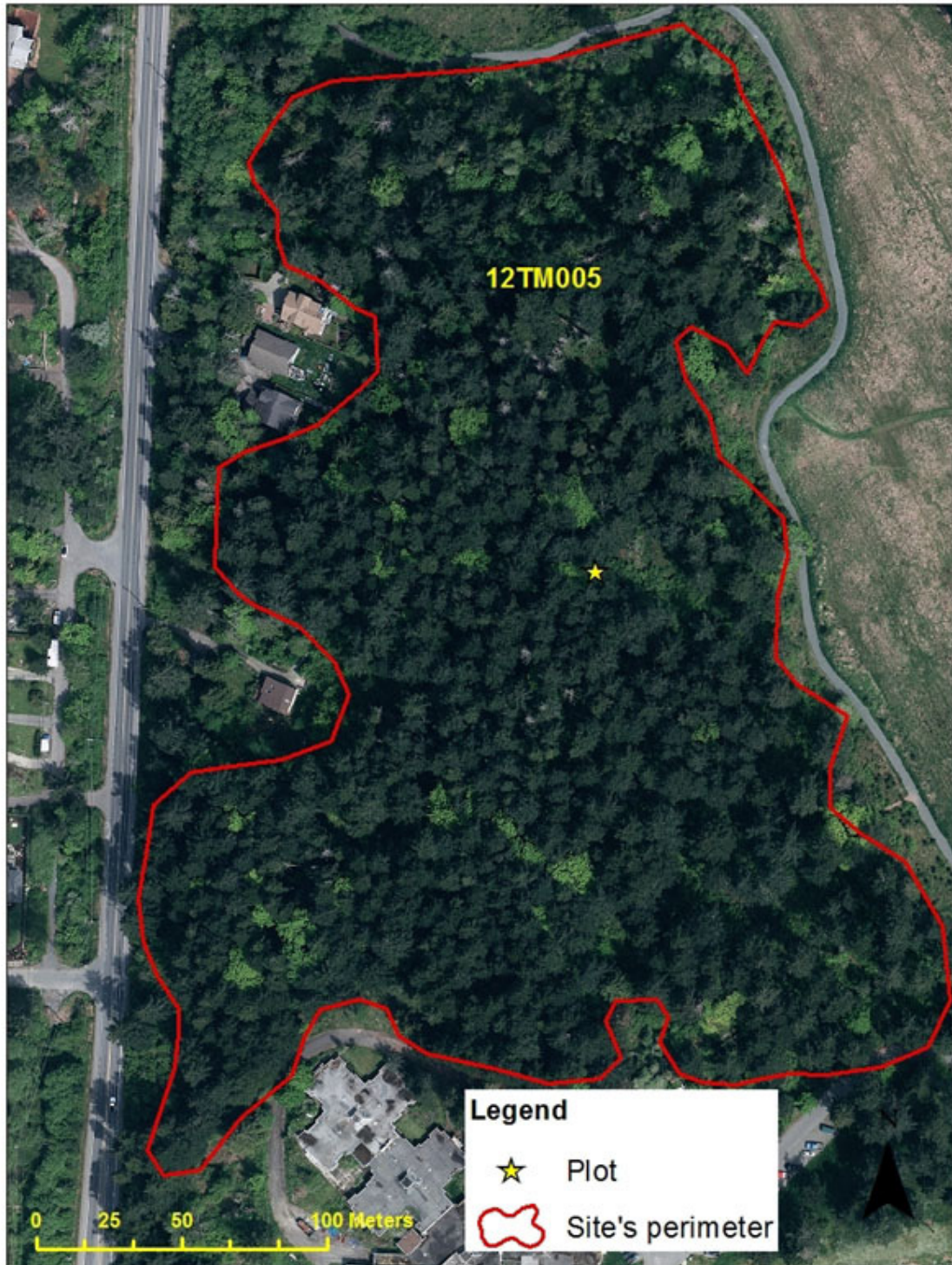


FIGURE 22
Site 12TM006 – Camosun College Glendale Lands

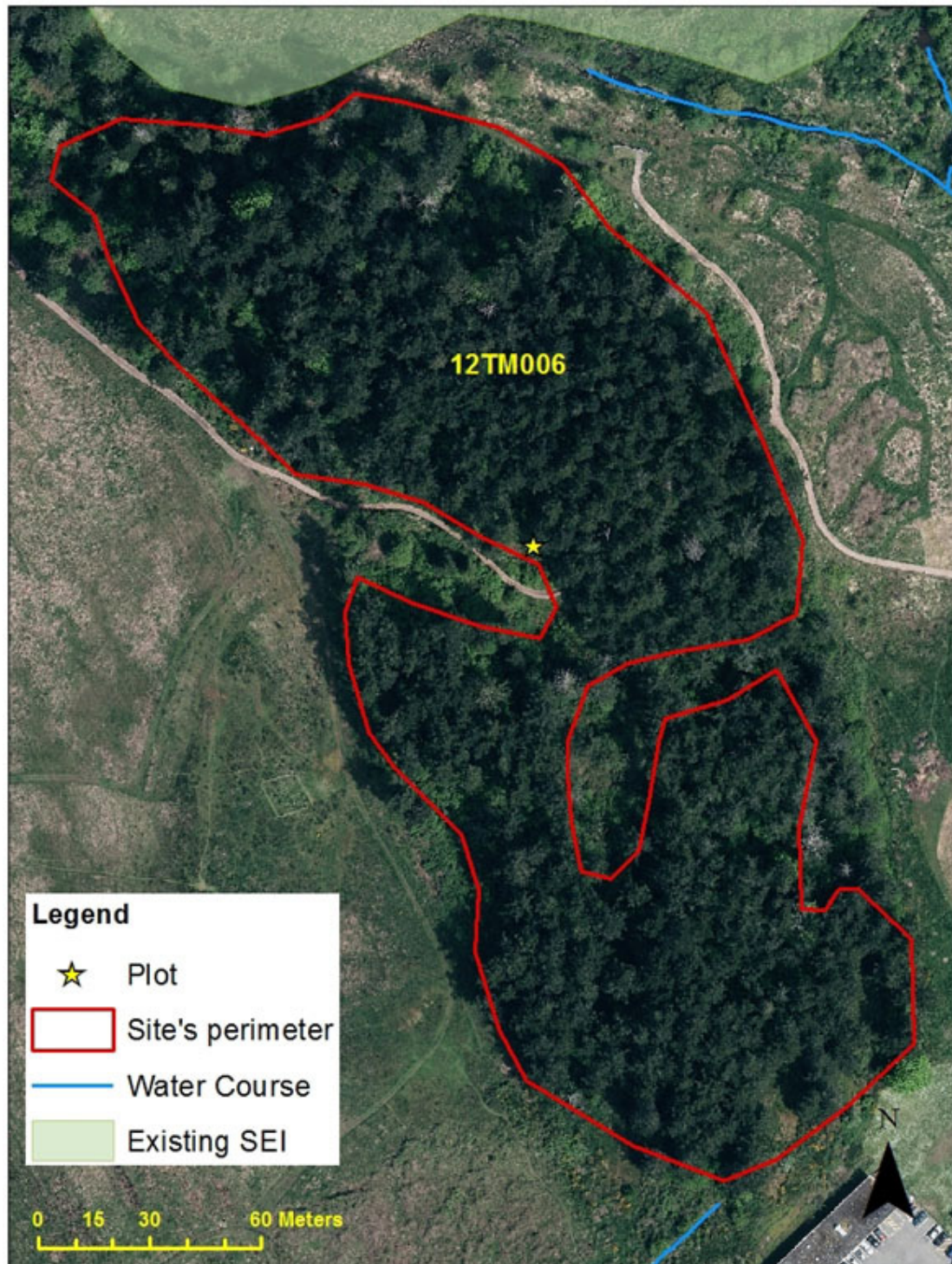


FIGURE 23
Site 12TM007 – High Oak farm 4091 Granville Ave

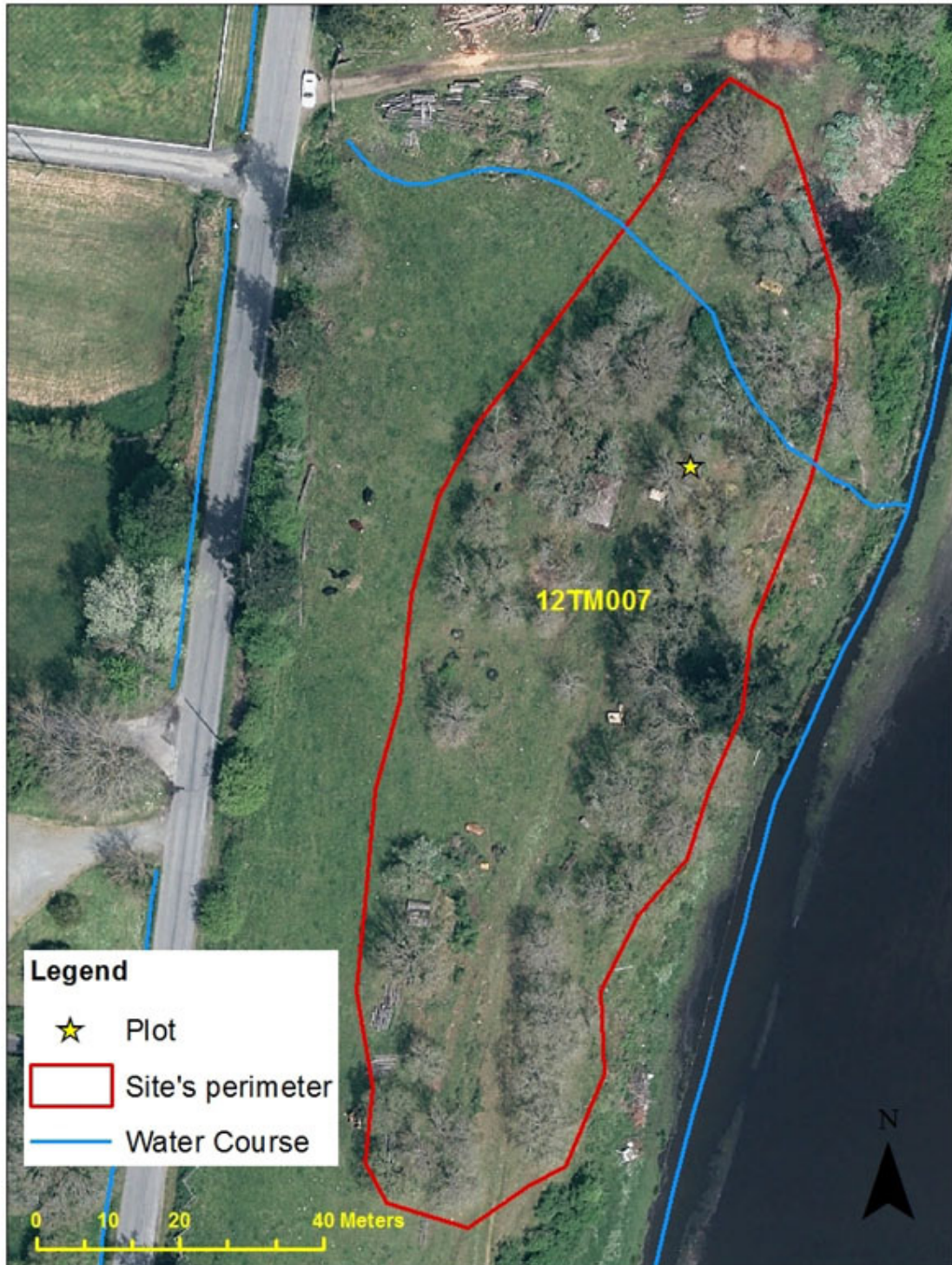


FIGURE 24
Site 12TM008 – Quick's Bottom - 4551 Markham Rd



FIGURE 25
Site 12TM009 – Glendale Lands 4461 Markham Rd

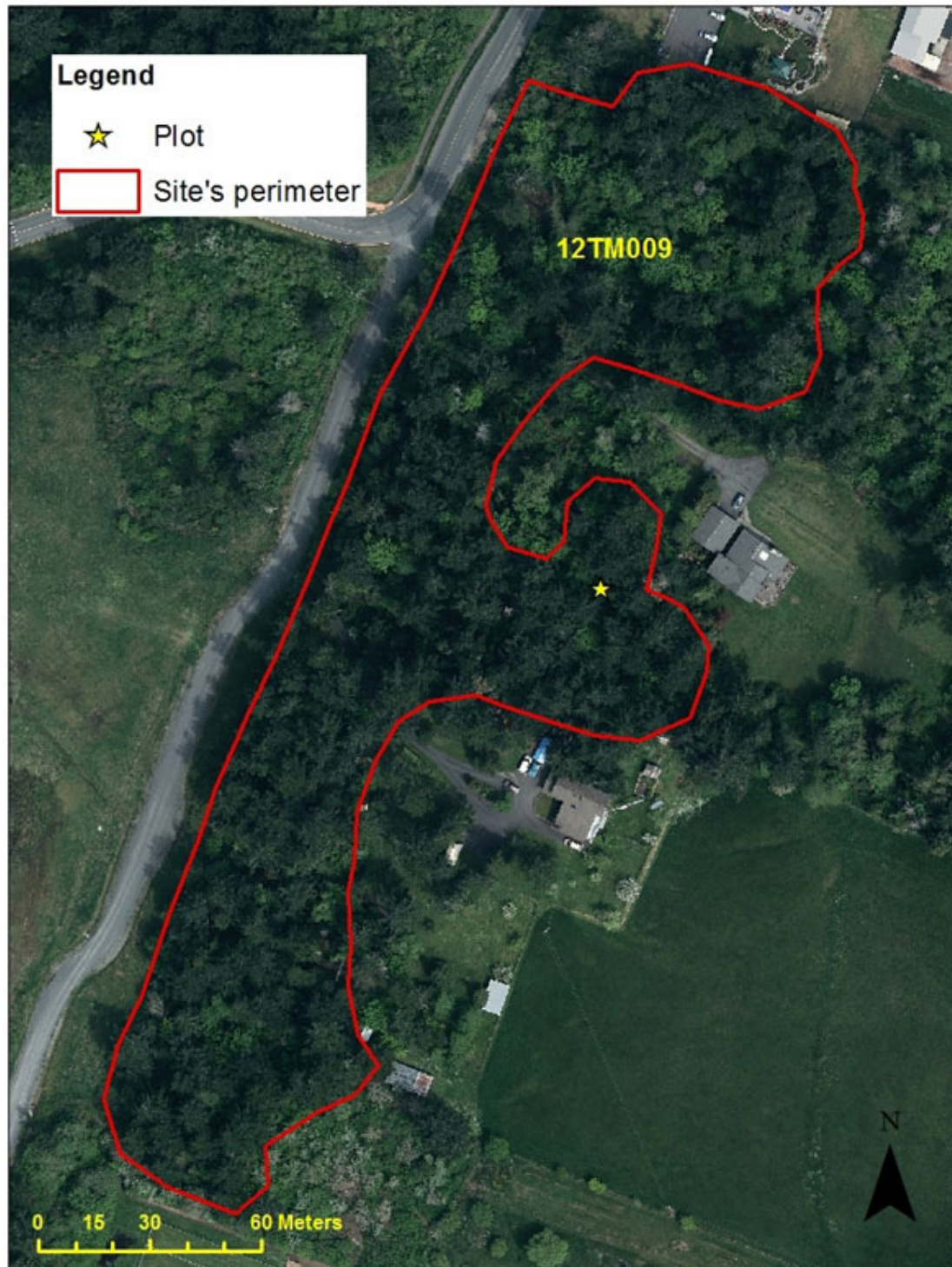


FIGURE 26
Site 12TM010 – Madrona Farm West of Mount Douglas Park

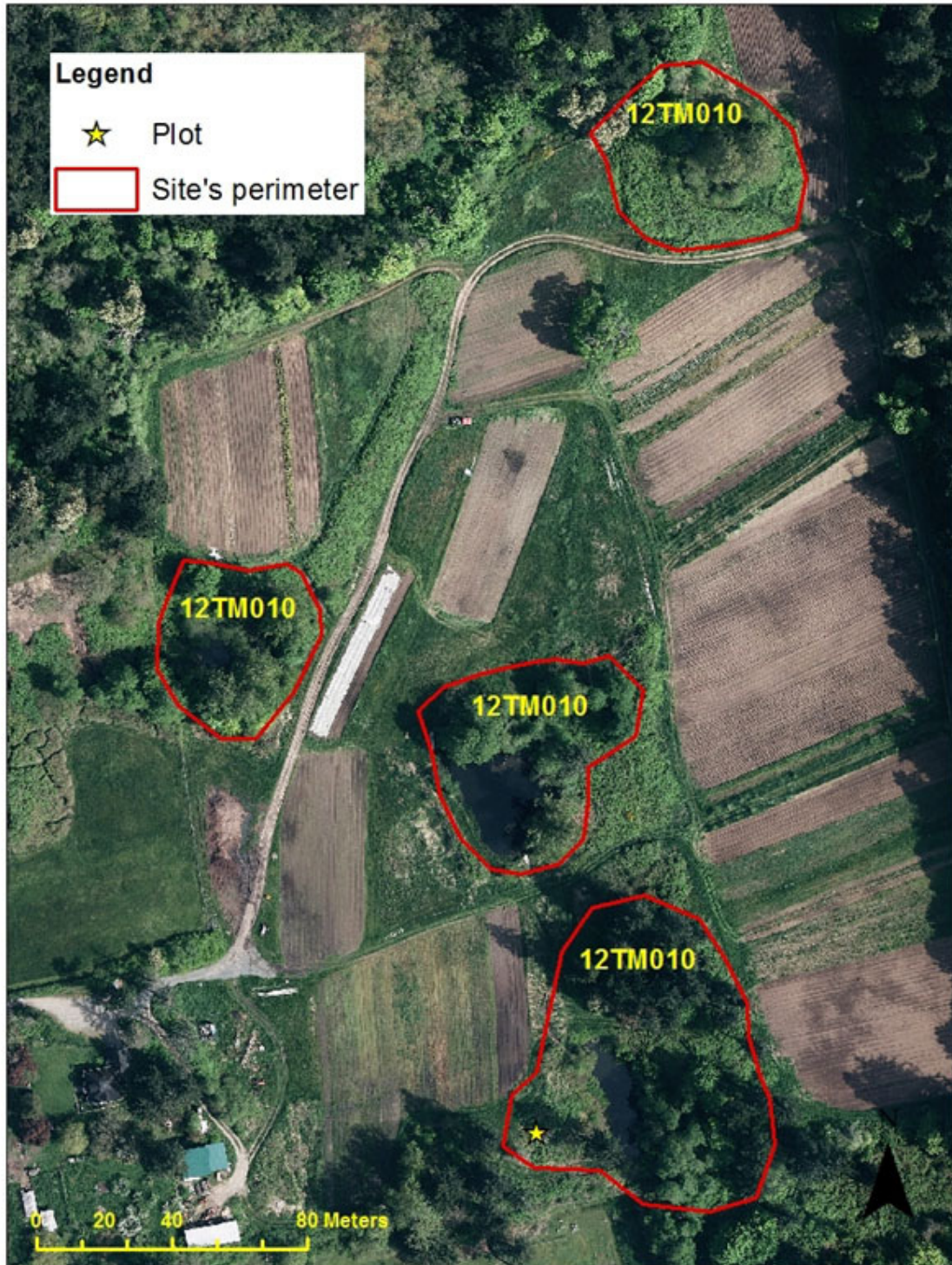


FIGURE 27
Site 12TM011 – 4626 Cordova Bay Road

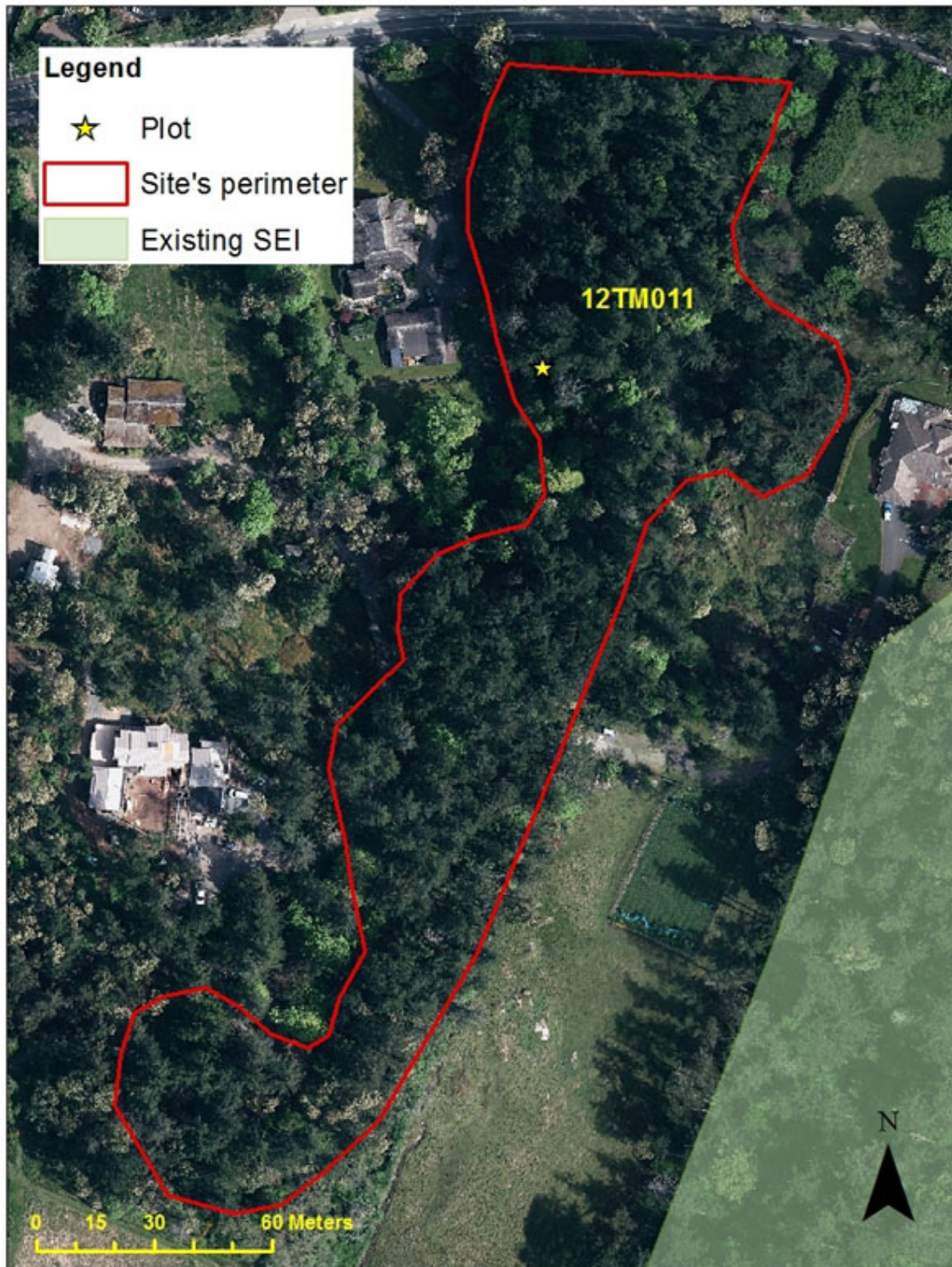


FIGURE 28
Site 12TM012 – 1439 Wende Ave

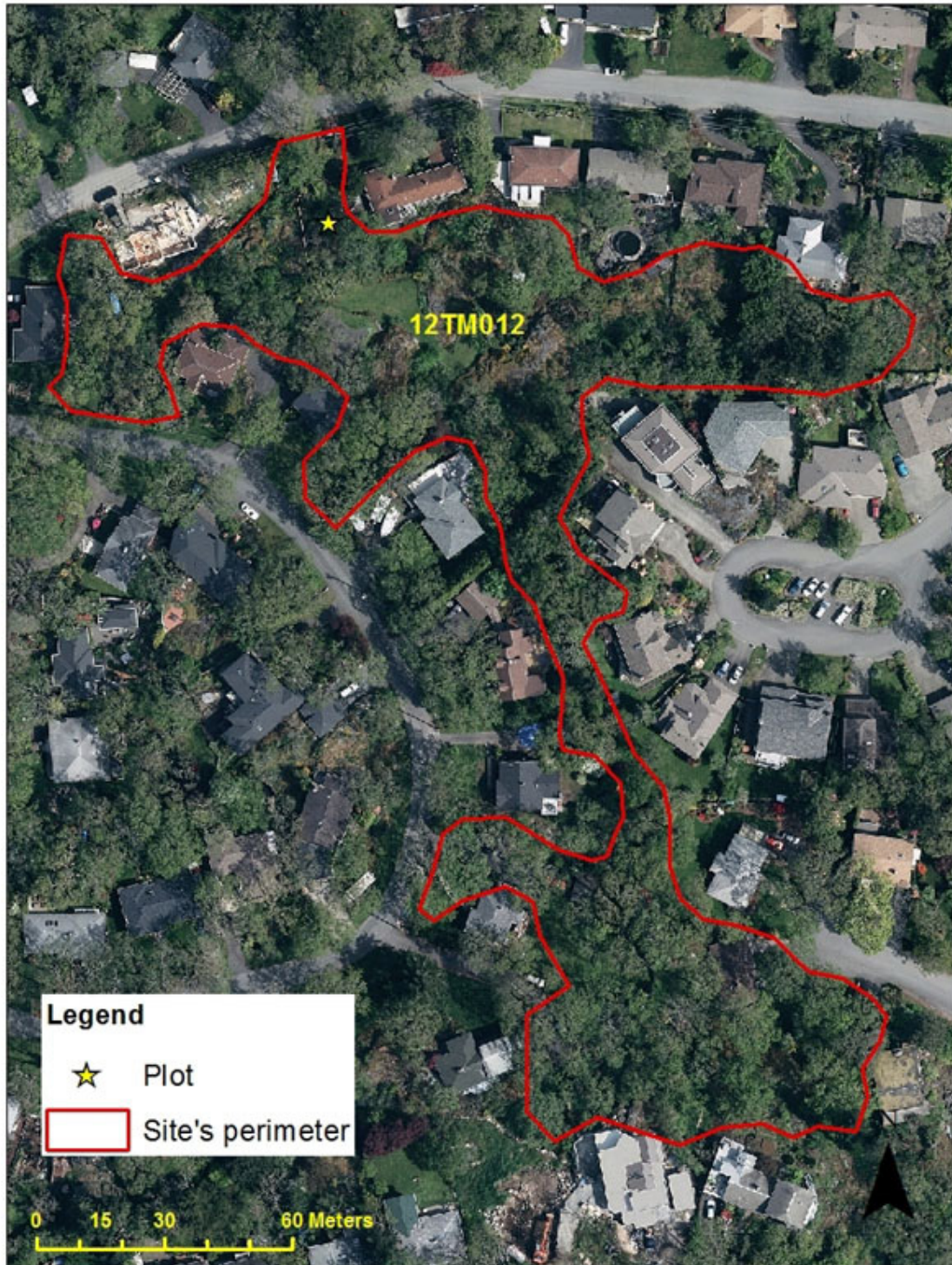
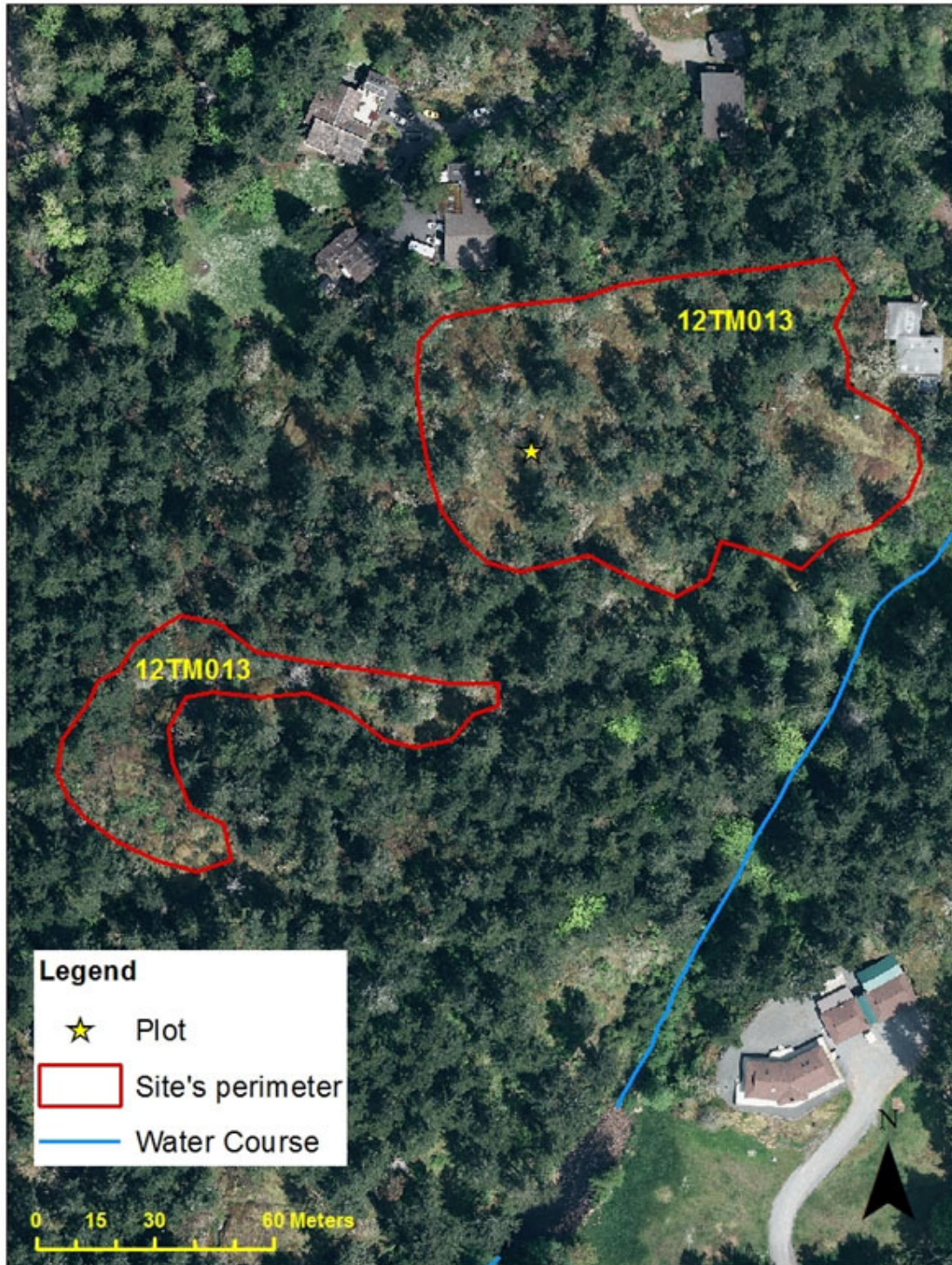


FIGURE 29
Site 12TM013 – 305 Viaduct Ave



Appendix I

Ecological Assessment of Groundtruthed Sites



Additional ESA Mapping Project Report

Polygon Number	SEI Class /Other	Other Values	Landscape Context	Condition	Restoration Potential	Landscape Type	Evaluation / Method 1	Evaluation / Method 2
12TM001	SG:co	Large Fd's; potential barred and/or screech owls nest, and cooper's hawk; Red listed community	Good-Fair	Fair	Fair	Matrix	2.2/ C	2.2
12TM002	SG:mx	Large Fd's; Red listed community	Good-Fair	Fair-Poor	Fair	Matrix	2.1/ C	2
12TM003	SG:mx	Wildlife trees	Good-Fair	Fair-Poor	Fair	Matrix	2.1 / C	2
12TM004	Urban forest	Community green space	Good-Fair	Fair-Poor	Fair	Matrix	2.1 / C	2
12TM005	SG:co	Red listed community	Good	Good	Excellent	Matrix	3.2 / B	3.3
12TM006	SG:co	Buffer to Viaduct flats, and partial forested corridor to Quick's bottom	Good	Fair	Fair	Matrix	2.5 / C	2.3
12TM007	WD		Fair	Poor	Fair	Small patch	1.6 / D	1.7
12TM008	WD	Buffer to Quick's bottom	Good	Fair - Poor	Fair	Small patch	2.1 / C	2.2
12TM009	SG:co	Green space forested corridor between Quick's bottom and Colquitz Parks and other forested areas in Glendale lands and Viaduct flats.	Good	Fair	Fair	Matrix	2.5 / C	2.3
12TM010	WN:sw	Wildlife concentration and biodiversity values within an agricultural area; adjacent to Mt Douglas Park	Good-Fair	Good-Fair	Good	Small patch	2.6 / B	2.7
12TM011	SG:co		Good-Fair	Fair	Fair	Matrix	2.2 / C	2.2
12TM012	WD	Potential neighbourhood education project regarding the value of Garry oak woodlands	Fair	Good	Fair	Small patch	2.5 / C	2.3



Additional ESA Mapping Project Report

Polygon Number	SEI Class /Other	Other Values	Landscape Context	Condition	Restoration Potential	Landscape Type	Evaluation / Method 1	Evaluation / Method 2
12TM013	WD		Good	Excellent	Excellent	Small patch	3,7 / A	3,7
12MG001	SG:co	Red listed community; Connectivity to Goward Park (other side of Haro Rd), and nearby forested sites (Queenswood, and Queen Alexandra Hospital properties)	Good-Fair	Fair	Fair	Matrix	2.2 / C	2.2
12MG002	WN:sw / RI:5	Biodiversity value connected to Mount Tolmie Park, part of the Bowker Cr. system; not identified as a isolated wetland has no drawback development protection	Good-Fair	Fair	Good	Small patch	2.2 / C	2.5
12MG003	Urban forest / community green space	Green space community corridor between MacDonald Dr and Queenswood Dr.	Good-Fair	Fair-Poor	Fair	Matrix	2.1 / C	2
12MG004	SG:mx	Veteran Douglas firs >100 yrs old scattered throughout: "Significant trees" such as the one known as the "spider tree" for the spider diversity.	Good	Good	Good	Matrix	3 / B	3
12MG005	WD	Site adjacent to Wedgewood Park and Konukson Park	Good	Poor	Poor	Small patch	1.7 / D	1.7
12MG006	HT	Green community space along undeveloped R o W between Tudor Ave and Sea View Rd	Good-Fair	Fair	Fair	Small patch	2,2	2.2



Additional ESA Mapping Project Report

Polygon Number	SEI Class /Other	Other Values	Landscape Context	Condition	Restoration Potential	Landscape Type	Evaluation / Method 1	Evaluation / Method 2
12MG007	HT:ro	Green community space along undeveloped portion of Bedford Rd	Good-Fair	Good-Fair	Good-Fair	Small patch	2.3 / C	2.5
12MG008	Buffer / Community green space	Buffer Marine Backshore Unit along Portage Inlet from Hwy 1	Poor	Poor	Fair	Matrix	1.2 / D	1.3
12MG009	WD	Potential community green space and wildlife habitat	Fair	Poor	Fair	Small patch	1.6 / D	1.7
12MG010	RI: 3		Fair	Poor	Fair-Poor	Linear	1.6 / D	1.5
12MG011	WD / HT		Fair	Fair	Good-Fair	Small patch	2.2 / C	2.2
12MG012	HT:ro		Excellent	Excellent	Good	Small patch	3.7 / A	3.7
12MG013	RI:6	Known presence of Blue grey taildropper slug, a red listed sp. in Logan Park (K. Ovaska)	Excellent	Excellent	Good	Linear	3.7 / A	3.7
12MG014	CB		Good-Fair	Good	Fair	Linear	2.6 / B	2.5
12MG015	HT:ro	Conservation Data Centre rare occurrence 40735; two large Douglas fir snags (see photo)	Good	Good	Good	Small patch	3 / B	3
12MG016	HT:ro		Good	Excellent / Good	Fair	Small patch	2.7 / B	2.8
12MG017	OF	Several Red and Blue listed species and communities, three SEI wetlands, eight woodland areas (ENKON Environmental Report 2002 for Mr. Holmes)	Good	Excellent	Excellent	Matrix	3.6 / A	3.7
12MG018	WN: sw / RI:4	Naturalized ponds may provide habitat biodiversity	Good	Fair	Fair / Poor	Small patch	2.2 / C	2.2



Appendix II

Photographic Report



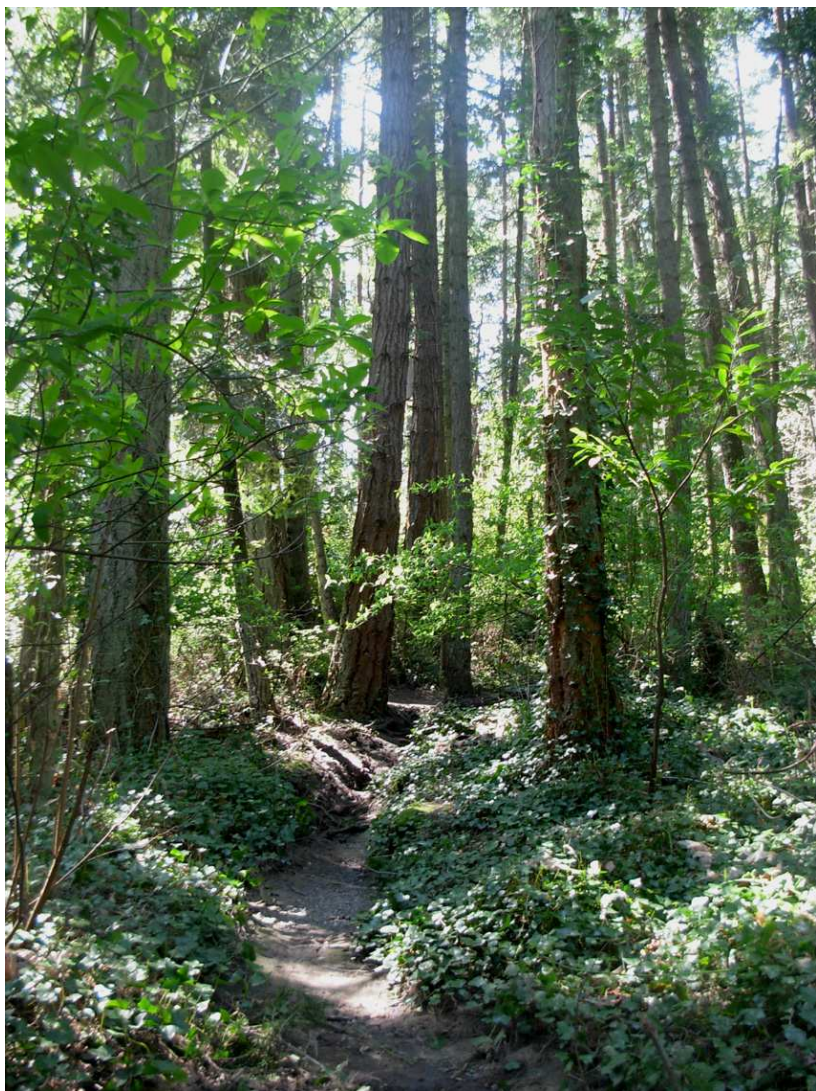


Photo 1. Site 12MG001. Harowoods. View of second growth Douglas fir coniferous forest, with abundant cover of English ivy in the under story.



Photo 2. Site 12MG001. Harowoods mountain bike jumps built by residents in the southeast area of Harowoods..



Photo 3. Site 12TM001. View of second growth Douglas fir forest in Queenswood property. Dense shrub undercover, including salal, ocean spray, English ivy and snowberry.



Photo 4. Site 12TM002. Ditch dug in Alexandra Hospital along the west border of the property.



Photo 5. Site 12MG002. View of the northeast shore of Kingsberry Crescent pond with dense willow and black hawthorn cover.



Photo 6. Site 12MG003. Undeveloped right of way of Sherwood Dr., among second growth forests of Douglas fir and arbutus, main ecosystem type in the area and neighbouring private properties.



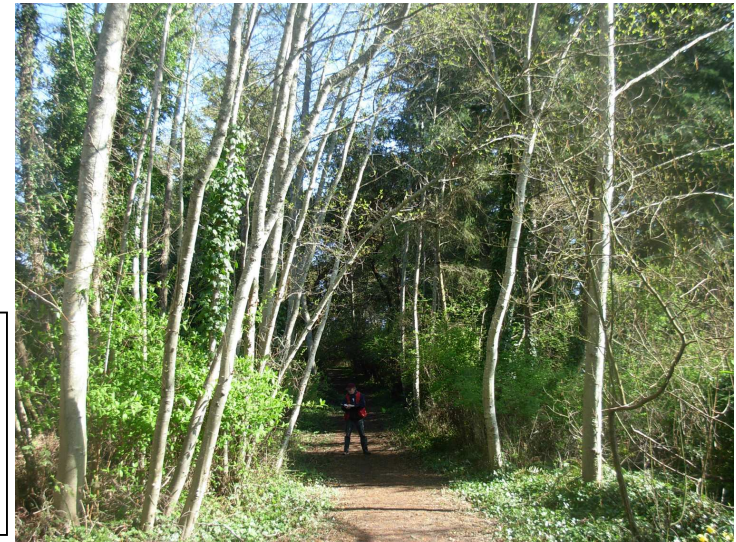
Photo 7. Site 12MG004. Sherwood Drive undeveloped right of way. Link fence and rock fill in private property adjacent to the right of way.



Photo 8. Site 12TM003. Plot site at Mystic Vale's northwest top of ravine. Douglas fir, Western redcedar and broadleaf maple mixed forest with thick cover of English ivy in understory. Many maple snags.



Photos 9-10. Site 12TM004. Undeveloped right of way at MacColl Place end of Benson Park. Alder grove next to a wet area. Downy woodpecker on alder. Abundance of birds under shrub cover of wetland.



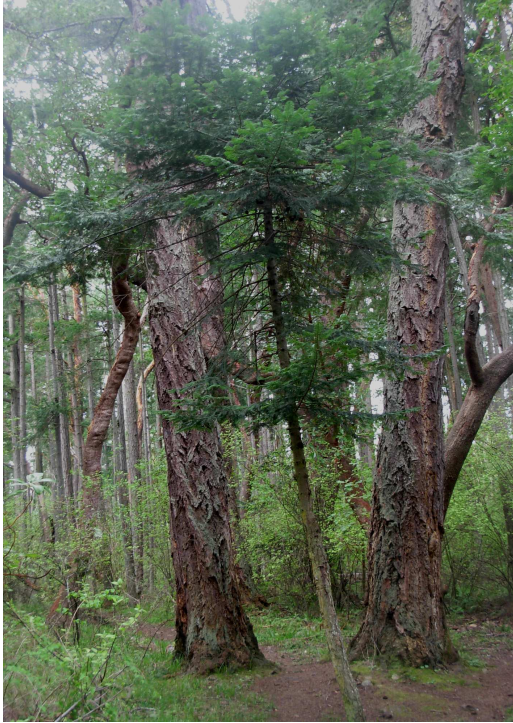


Photo 11. 12MG004. Older second growth forest in Kanukson Park, with veteran trees interspaced throughout.



Photo 12. 12MG004. Outstanding veteran tree in Kanukson Park known as the "spider tree".



Photo 13. 12MG005. Old Garry oak woodland and rocky outcrop altered by rockfill for a building site. Site dominated by invasive plants. Licorice fern and surviving Garry oaks denotes the old woodland site.



Photos 14-15. 12MG006. Undeveloped right-of-way between Tudor Ave and Sea View Rd across a herbaceous terrestrial SEI site. Sides of the path covered by invasive exotic species (periwinkle, H. blueberry). Garry oaks drying out and covered with English ivy.



Photo 16. 12MG006. Herbaceous terrestrial ecosystem with some old but mostly small Garry oaks; sides of the foot trail and storm ditch covered with invasive species.

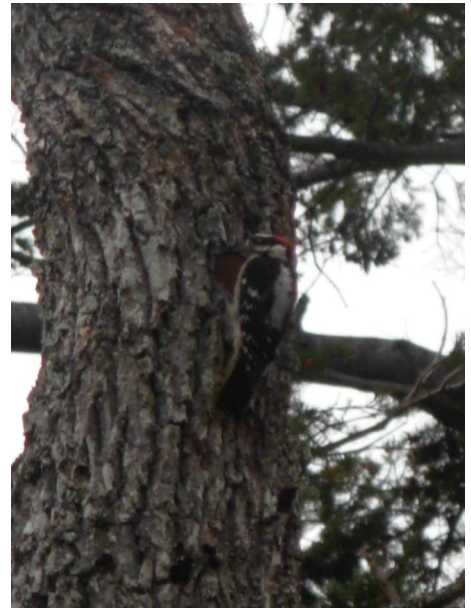


Photo 17. 12MG006. Downy woodpecker drilling on an old Garry oak.



Photo18. 12MG007. Undeveloped right-of-way along Bedford Rd in a rocky outcrop and meadow, with native species such as common camas, licorice fern, and western parsley piert, but also daffodils, English blue-bells, and other exotics garden scapees.

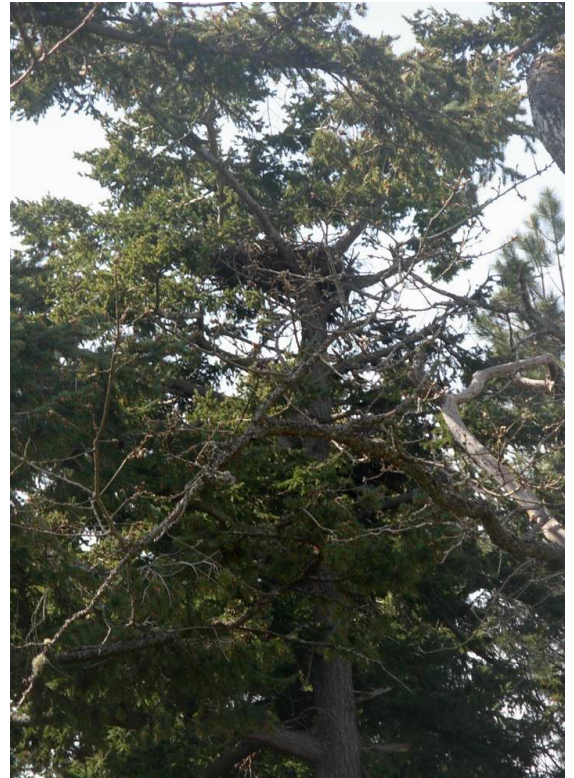


Photo 19. Active bald eagle nest in a large Douglas fir at property adjacent to site 12MG007.



Photo 20. 12MG009. Undeveloped right-of-way at the end of Woodley Rd, landscaped and fenced as part of private yard.



Photo 21. 12MG008. Community greenspace at end of Portage Rd with paved trail through site.



Photos 22-23. 12MG011. Woodland and rocky meadow in Cedar Hill Golf Course. Meadow dominated by agronomic grasses, but some native flowers and licorice fern still remain. The area is under a restoration program.



Photos 24-25. 12MG010. Small creek in Cedar Hill Golf Course partly in a culvert, with scarce riparian vegetation mostly composed of exotic species such as Himalayan blackberry and English ivy.



Photos 26-27. 12MG012. Open grassy rocky outcrop with moss covered rocks in Observatory Hill, with isolated Garry Oak, arbutus and Douglas fir.



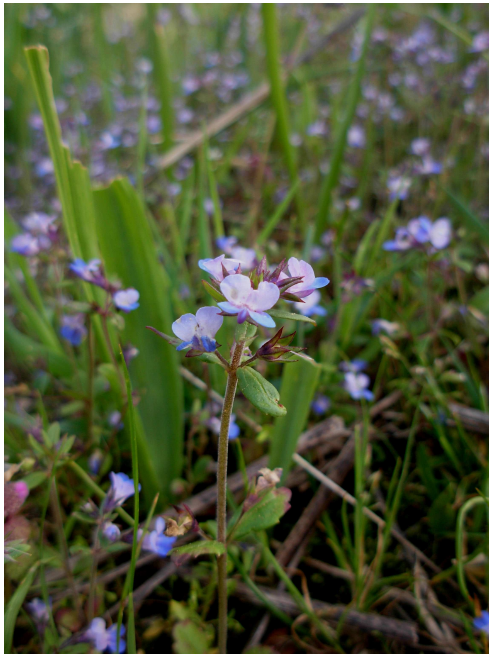
Photo 28. Forested ecosystem with large Douglas firs in Logan. Park with abundance of wildlife trees.



Photo 29. 12MG013. Riparian ecosystem in Logan Park: headwaters of Viaduct Creek. Luxurious cover of forbs and ferns under a canopy of broadleaf maples.



Photo 30. 12MG014. Coastal bluff near Guinevere Place. A group of river otters were feeding and grooming themselves in the islets nearby.



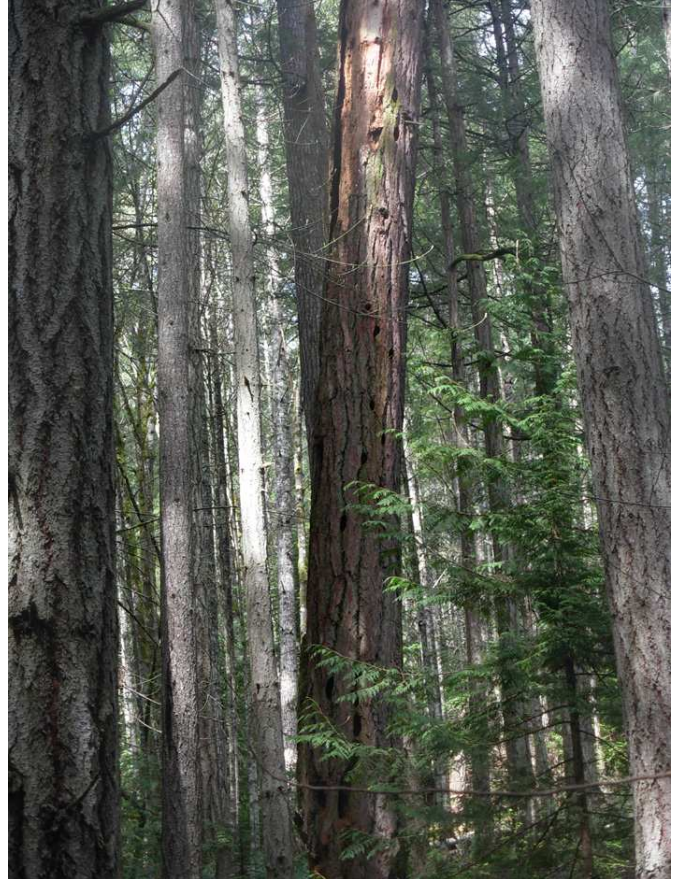
Photos 31- 32. 12MG015. Grass meadow and vernal pool at a rocky opening in Kanukson Park. Abundant cover of camas and small-flowered blue-eyed Mary.



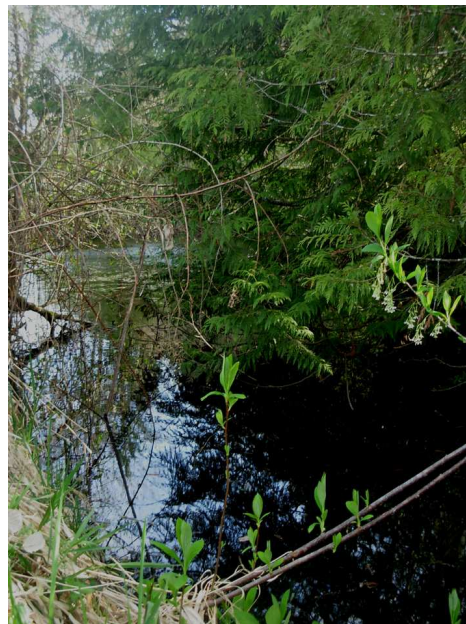
Photo 33. 12MG016. Rocky outcrop and grassy meadow in Cyril Owen Place
Abundant cover of camas, shooting stars and mosses. A few Garry oaks and arbutus trees, Scotch broom is being removed by owner every year.



Photo 34. 12MG017. Older forest of Western Red Cedar at Maltby Lake floodplain with downed logs and abundant cover of mosses.



Photos 35- 36. 12MG017. Older coniferous forest at Maltby Lake property. Last forest fire took place at the turn of the 20th century, visible signs in many trees scarred by the fire.



Photos 37- 38. 12MG018. Naturalized wetlands not in use near Todd Creek flats, with Indian plum, willows and alders in the riparian zone.



Photos 39 - 40. 12TM005. Maturing second-growth Douglas fir woodland on Glendale Lands, Camosun College. Understory of dull Oregon grape and ocean spray.



Photo 41. Site 12TM006: Maturing Douglas-fir / Grand fir woodland on Glendale Lands, Camosun College. Understory invaded by exotic species such as Daphne and Himalayan blackberry, and site is crossed by numerous trails.



Photos 42 -43. Site 12TM007: High Oak Farm, with small Garry oak woodland site remaining in midst of active agricultural activities on slope overlooking seasonal wet fields.





Photos 44 – 45. Site 12TM008: Remnant Garry oak woodland on east slope of property overlooking Quick's Bottom Park. Fawn lilies remain in understory dominated by invasives such as Daphne and English ivy.



Photo 46. Site 12TM009: Maturing second growth Douglas-fir woodland on Markham Road, with many invasive species in understory, and heavily used by black tailed deer.



Photo 47. Site 12TM010: One of four excavated farm ponds on Madrona Farm, Blenkinsop Valley. Ponds have high wildlife values for birds, with numerous tree and shrub species naturalizing the sites.



Photo 48. Site 12TM011: Maturing Douglas-fir / Grand fir woodland on Cordova Bay Road, near Mt. Douglas Park. Understory heavily used by black tailed deer, with numerous invasive species.



Photo 49. Site 12TM012: Wende-Athlone subdivision, containing fragmented Garry oak woodland on interiors of many properties. Rock outcrops and woodland understory support many Garry oak forbs and numerous birds.



Photos 50- 51. Site 12TM013: Private property on Viaduct Road containing Douglas-fir/Arbutus/Garry oak woodland on rock outcrops, with healthy forb and moss cover and minimal disturbance.

Appendix III

Field Forms



Additional ESA Mapping Project Report

Site Visit Form Page 1

 Ministry of Forests and Range		 SITE VISIT FORM		PROJECT ID	
Plot No.	Plot Type	Grnd ☐	Visual ☐	Note ☐	Other ☐
Surveyors		Map Polygon No.		Date YY - MM - DD	
Plot Location		Plot Photo			
FS Region/ District					
East		North		UTM Zone	
NTS Map		Lat.		Long.	
				Accur. (+/- m)	
Plot Representing					
BGC		SS	SMR	SNR	Map Label
Site Features	Elevation	Slope %	Aspect	Surface Shape	ST ☐ CC ☐ CV ☐
Crest ☐	Upper ☐ Mid ☐ Lower ☐	Toe ☐	Level ☐	Dep. ☐	Gully ☐ Flood Plain? ☐
Expose. Type	☐ insolation	☐ wind	☐ snow	☐ water spray	☐ misc.
☐ n/a	☐ frost	☐ cold air	☐ salt spray	☐ air toxicity	
Site Disturb.	☐ fire	☐ site prep.	☐ terrain	☐ soil dist.	
☐ n/a	☐ harvest	☐ planted	☐ biotic	☐ other	
Stand Attributes	Stand Age	Est. Mea. ☐	Stand Ht.	Est. Mea. ☐	Canopy Composition
Struct. Stage	1a ☐ 1b ☐ 2a ☐ 2b ☐ 2c ☐ 2d ☐ 3a ☐ 3b ☐ 4 ☐ 5 ☐ 6 ☐ 7a ☐ 7b ☐				
Success Status	NV ☐ PS ☐ YS ☐ MS ☐ OS ☐ YC ☐ MC ☐ OC ☐ DC ☐				
Terrain	Texture	Surficial Material	S. Expression	Geo. Process	Rock Types
1					1
2					2
Rooting Zone	Drainage	☐ X ☐ R ☐ W ☐ M ☐ I ☐ P ☐ V			
Humus/Organic Form	☐ Mor ☐ Moder ☐ Mull ☐ Fibric ☐ Mesic ☐ Humic				
Humus Thickness	cm	Ah? ☐ Ae? ☐	Estimated Soil Depth		
R.Z. Soil Texture		R.Z. Coarse Fragment %	Estimated Rooting Depth		
Gleying or Mottling	cm	Seepage ☐ n/a	Restrict. Layer		
☐ n/a		cm	cm		
Restrict. Type	☐ Cement ☐ Pan ☐ Kompact ☐ Lithic ☐ Water ☐ X Chem. ☐ Z Permafrost				

FS 1333 HRE 2010/03



Additional ESA Mapping Project Report

Conservation Evaluation Form

CONSERVATION EVALUATION FORM			
PROJECT IDENTIFICATION		DATE:	
PROJECT ID:		PLOT #:	
POLY #:	SEI CLASS:SUBCLASS:		
ECOLOGICAL COMMUNITY			
CONSERVATION INFORMATION			
OWNER/JURISDICTION:			
DISTURBANCE:		KNOWN THREATS:	
ADJACENT LAND USE:		OTHER FACTORS:	
ALIEN SPP.:			
SUCCESS. STATUS:		EST. SIZE COMM: (ha)	
FRAGMENTATION OF ECOLOGICAL COMMUNITY			
☐ < 5% FRAGMENTED ☐ 5 - 25 % FRAGMENTED ☐ > 25% FRAGMENTED			
EVALUATION SUMMARY			
LANDSCAPE CONTEXT:		EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐	
ECOLOGICAL INTEGRITY:		EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐	
CONDITION:		EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐	
NOTES (AT-RISK SPECIES, WILDLIFE OBSV., ACCURACY INFO, ETC)			
OBSERVER		NAME:	
ADDRESS:			
EMAIL:		PHONE/FAX:	
SUBMIT DATA			
CDC, Ministry of Environment, Ecosystems Branch, P.O. Box 9358 Station Provincial Government, Victoria BC V8W 9M2 (fax: 250-387-2733) THANK YOU!			
Include: FS882 or GIF or VENUS file ☐ air photos with polygon marked ☐ map product(s) ☐ ground photos ☐			

