

KENNEDY – GRANGE SOUTH (WARWICK CA AND AREA)

Region of Peel	NAI Area # 8515	Credit Valley Conservation Authority
Town of Caledon	Size: 129 hectares	Watershed: Credit River
Con 2 EHS, Lots 1-5	Ownership: 64% private, 36% public (CVC)	Subwatershed: East Credit River

General Summary

This natural area is comprised of a large wetland along the East Credit River, and deciduous and mixed forest communities on the higher, undulating terrain. This natural area occupies a substantial proportion of the concession block. The area is part of a larger species movement corridor running east-west along the East Credit River.

This site supports a high diversity of flora and fauna species and vegetation communities. Several of these are Species At Risk, provincially rare or regionally rare species. The extensive vegetated riparian area along the East Credit River helps protect water quality and quantity.

NAI ELC surveyors, botanists and ornithologists inventoried vegetation communities, plants and breeding birds and made incidental observations of other fauna (Table 1), covering 50% of the natural area (determined by access permission). Data collection (for the three core NAI inventory types) is incomplete in this area with additional inventories needed for the part of the area north of the Caledon Trailway. At the time these inventories were conducted, the natural area was viewed as being bound by the trailway. However, the newer, current definition what constitutes a sufficiently wide break in natural vegetation to separate areas, finds the trailway to not be wide enough and thus although the trailway bisects this area it does not separate it. Additional incidental observations were contributed by several observers. Fish data was collected by CVC biologists both within the natural area and from upstream sampling stations. As there are no barriers between the upstream stations and the natural area, the data from upstream has been combined with the on-site fish species data.

Table 1: NAI Field Visits

Visit Date	Inventory Type
22 July 1999	Fish
04 Oct. 2001	Fish
15 July 2002	Fish
21 Aug. 2002	Fish
14 June 2008	Fauna
08 July 2008	Fauna
10 Aug. 2009	ELC
11 Aug. 2009	ELC

12 Aug. 2009	ELC
13 Aug. 2009	ELC
14 Aug. 2009	ELC
18 Aug. 2009	ELC
18 June 2010	Flora
21 June 2010	Fauna
25 Aug. 2010	Flora
26 Aug. 2010	Flora

Natural Feature Classifications and Planning Areas

This natural area is part of:
 ESA - Kilmanagh Swamp ESA
 PSW - Little Credit River Wetland Complex
 Oak Ridges Moraine Conservation Plan
 Greenbelt Plan

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Physical Features

This area is in the Oak Ridges Moraine physiographic region that is characterized by a steep, hilly topography of fine-grained sand glacial deposits. This site is at the edge of the moraine. Soils tend to be sandy loams that allow high rates of recharge to groundwater aquifers.

The East Credit River (also known as the Little Credit River) passes through this natural area. This tributary joins the Credit River just east of Inglewood.

Human History

The former community of Kilmanagh was located less than two kilometres to the east of this natural area at the crossroads of Dixie Rd. and Olde Baseline Rd. It was settled in the early 1830's by Hugh McTaggart who named it after his hometown in Ireland (Caledon Public Library, 2009).

The abundant wetlands have likely been protected from large-scale human disturbance due to their unsuitability for land conversion (e.g. to agricultural use). However, the drier land surrounding the wetlands are generally in agricultural or rural residential use, leaving only small forest communities and a relatively narrow forest buffer around the wetlands. Several young plantations have been planted up on what was likely agricultural land. Several small valley slopes around the wetlands are regenerating from past agricultural usage. Two of the plantation patches serve to connect some isolated natural communities with the main natural area. When these plantations naturalize they will improve the shape of the natural area, reducing the fragmentation.

This area is bisected by the Caledon Trailway, a public recreational trail. This area includes Warwick Conservation Area, a currently undeveloped conservation property although plans are underway to house CVC's plant nursery facility on this site.

Vegetation Communities

The general community composition of this natural area is coniferous forest (3%), deciduous forest (9%), mixed forest (11%), marsh (15%), deciduous swamp (13%), mixed swamp (9%), thicket swamp (8%), open aquatic (3%), cultural meadow (9%), cultural savannah (5%), cultural woodland (4%), and plantation (11%).

Over the part of this area that was inventoried, 27 separate vegetation communities that fall into 23 different vegetation types (Table 2) were identified. This includes two plantation communities. This area supports one regionally rare vegetation type, Fresh – Moist Sugar Maple – Hemlock Mixed Forest (FOM6-1). One of the communities, the Swamp Loosestrife Organic Shallow Marsh is dominated by a regionally rare species, Hairy Swamp Loosestrife (*Decodon verticillatus*).

Table 2: ELC Vegetation Communities

Map reference *	Vegetation type	Size in hectares	% of natural area
FOD5-6	Dry-Fresh Sugar Maple – Basswood Deciduous Forest	0.54	0.42
FOD8-1	Fresh – Moist Poplar Deciduous Forest	0.40	0.31
FODM5-11	Dry – Fresh Sugar Maple – Hardwood Deciduous Forest	0.39	0.30
FOM6-1	Fresh – Moist Sugar Maple – Hemlock Mixed Forest (2 communities)	5.64	4.38
FOM8-1	Fresh – Moist Poplar Mixed Forest	0.91	0.71
FOM8-2	Fresh – Moist Paper Birch Mixed Forest	1.82	1.41
MAM2-2	Reed-canary Grass Mineral Meadow Marsh	1.56	1.21
MAMO1-2	Cattail Graminoid Organic Meadow Marsh	3.17	2.46

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MAS3-1	Cattail Organic Shallow Marsh	3.03	2.35
MAS3-12	Swamp Loosestrife Organic Shallow Marsh	11.97	9.29
SWD2-1	Black Ash Mineral Deciduous Swamp	1.77	1.37
SWD5-1	Black Ash Organic Deciduous Swamp (2 communities)	6.84	5.31
SWD7-A	Willow Organic Deciduous Swamp	0.51	0.40
SWDM4-5	Poplar Mineral Deciduous Swamp	4.70	3.65
SWDO3-3	Trembling Aspen Organic Deciduous Swamp	1.18	0.92
SWMO4-1	Balsam Fir – Hardwood Organic Mixed Swamp	7.43	5.77
SWM1-1	White Cedar – Hardwood Mineral Mixed Swamp	0.93	0.72
SWM4-1	White Cedar – Hardwood Organic Mixed Swamp	2.77	2.15
SWT2-1	Alder Mineral Thicket Swamp (3 communities)	3.26	2.53
SWT2-5	Red-osier Mineral Thicket Swamp	3.13	2.43
CUW1-A3	Native Deciduous Cultural Woodland	1.54	1.19
CUP3-1	Red Pine Coniferous Plantation	0.94	0.73
CUP3-2	White Pine Coniferous Plantation	0.25	0.20
	TOTAL AREA INVENTORIED	64.68	

* Note: The map reference code refers to the vegetation type shown on mapping for this area and also to the Appendix list of species typically encountered in this vegetation type.

Species Presence

Vascular Plants

A total of 340 vascular plant species are recorded for this area, of which 268 (79%) are native. Seventeen regionally rare species (Table 4) were recorded including Hairy Swamp Loosestrife (also known as Water-willow, *Decodon verticillatus*) which dominates a large shallow marsh.

Breeding Birds

A total of 81 species are recorded for this area, of which 79 (97%) are native. Seven of these species are presumed to be visitors, but the remaining 71 bird species recorded here showed some level (possible, probable, confirmed) of breeding evidence. Three of these are Species At Risk (Table 3). Barn Swallow (*Hirundo rustica*) is Threatened nationally, Bobolink (*Dolichonyx oryzivorus*) is Threatened nationally and provincially and Eastern Meadowlark (*Sturnella magna*) is Threatened nationally.

Wood Duck (*Aix sponsa*) fledglings were observed. A colony of about ten pairs of Green Heron (*Butorides virescens*) was observed and is believed to be one of the larger concentrations of this species in Peel.

This natural area supports five species of colonial-nesting birds, Great Blue Heron (*Ardea herodias*), Green Heron, Northern Rough-winged Swallow (*Stelgidopteryx serripennis*), Cliff Swallow (*Petrochelidon pyrrhonota*) and Barn Swallow and four species of waterfowl, Wood Duck, American Black Duck (*Anas rubripes*), Hooded Merganser (*Lophodytes cucullatus*) and Mallard (*Anas platyrhynchos*). Forest communities are large enough to provide interior habitat, supporting seven species of area-sensitive forest interior birds, namely Hairy Woodpecker (*Picoides villosus*), Pileated Woodpecker (*Dryocopus pileatus*), Red-breasted Nuthatch (*Sitta canadensis*), Brown Creeper (*Certhia americana*), Winter Wren (*Troglodytes troglodytes*), Scarlet Tanager (*Piranga olivacea*) and Veery (*Catharus fuscescens*). Large grassland/open country successional communities also exist at this site, supporting seven species of grassland birds, namely Bobolink, Eastern Meadowlark, Savannah Sparrow (*Passerculus sandwichensis*), Eastern Bluebird (*Sialia sialis*), Eastern Kingbird (*Tyrannus tyrannus*), Field Sparrow (*Spizella pusilla*) and Willow Flycatcher (*Empidonax traillii*); three of which (Bobolink, Eastern Meadowlark, Savannah Sparrow) are area-sensitive. It supports at least

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one raptor species, Broad-winged Hawk (*Buteo platypterus*). Wetlands in this area provide breeding habitat for one species of wetland bird, Virginia Rail (*Rallus limicola*).

Fish

A total of 23 fish species were observed, of which 22 (96%) are native. Brassy Minnow (*Hybognathus hankinsoni*), Iowa Darter (*Etheostoma exile*) and Pearl Dace (*Margariscus margarita*) occur at this site, one of only a few locations where these species have been detected in the Credit River watershed. This natural area supports coldwater fish communities.

Butterflies and Skippers

A total of 27 species of butterflies/skippers have been observed incidentally at this site, of which 25 (93%) are native. One of these species, Monarch (*Danaus plexippus*), is of Special Concern both nationally and provincially (Table 3). The Monarch is also provincially rare. The provincially rare Common Sootywing (*Pholisora catullus*, S-rank S3) occurs here, one of only two sites where it was found during NAI fieldwork in 2008 and 2009. It is regionally rare in adjacent Halton Region. This is the only site where Banded Hairstreak (*Satyrrium calanus*) was found during NAI fieldwork in 2008 and 2009. Milbert's Tortoiseshell, also present, is regionally rare in adjacent Halton Region (Dwyer, 2006).

Dragonflies and Damselflies

A total of 28 species of dragonflies/damselflies were observed incidentally in this natural area. All are native. Even with the limited window of time that dragonfly/damselfly observations were made, a high biodiversity was found. One species, Lilypad Clubtail (*Arigomphus furcifer*, S-rank S3), is provincially rare. Frosted Whiteface (*Leucorrhinia frigida*) was found here, one of only three sites that it was found at during NAI fieldwork in 2008 and 2009. Also, Beaverpond Baskettail (*Epiptera canis*) was found here, one of only two sites that it was found at during NAI fieldwork in 2008 and 2009.

Lilypad Clubtail is regionally rare in adjacent Halton Region (Rothfels, 2006).

Herpetofauna

Eight species of herpetofauna occur at this site, observed incidentally, all of which are native. One of these species, Eastern Snapping Turtle (*Chelydra serpentina*) is Special Concern nationally and provincially, as well as provincially rare (Table 3). In the summer, many predated turtle nests are evident in the gravel of the Caledon Trailway raised bed (D. Renfrew pers. comm., 2009). Abundant American Bullfrogs (*Rana catesbeiana*) occur at this site and are reported to have been introduced (Curry, 2010). The remaining herpetofaunal species consist of four additional frog species, one snake species and one additional turtle species. The presence of tadpoles (unknown species) is indicative of amphibian breeding within this natural area.

Mammals

Eight species of native, common mammals were recorded incidentally from this area. Large amounts of Beaver (*Castor canadensis*) feeding evidence is present along the trailway and many Aspen (*Populus* sp.) trees have been felled. Beaver in the pond adjacent to the north of the trailway repeatedly dam up the culvert through the raised railbed of the trailway and have built a very large lodge near the culvert. Beaver have been observed on many occasions in this pond, over 2009-2011 (D. Renfrew, pers. comm., 2011).

Table 3: Designated Species at Risk

Scientific name	Common name	COSEWIC	COSSARO	S rank	G rank
BIRDS					
<i>Hirundo rustica</i>	Barn Swallow	THR		S5B	G5
<i>Dolichonyx oryzivorus</i>	Bobolink	THR	THR	S4B	G5
<i>Sturnella magna</i>	Eastern Meadowlark	THR		S5B	G5

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BUTTERFLIES/ SKIPPERS					
<i>Danaus plexippus</i>	Monarch	SC	SC	S2N, S4B	G5
HERPETOFAUNA					
<i>Chelydra serpentina</i>	Eastern Snapping Turtle	SC	SC	S3	G5T5

Table 4: Regionally Rare Vascular Plant Species (Kaiser, 2001)

Scientific name	Common name	S rank	G rank
VASCULAR PLANTS			
<i>Carex prairea</i>	Prairie Sedge	S5	G5?
<i>Ceratophyllum demersum</i>	Common Hornwort	S5	G5
<i>Chrysosplenium americanum</i>	American Golden-saxifrage	S5	G5
<i>Cinna arundinacea</i>	Stout Wood Reedgrass	S4	G5
<i>Cirsium muticum</i>	Swamp Thistle	S5	G5
<i>Decodon verticillatus</i>	Hairy Swamp Loosestrife	S5	G5
<i>Eleocharis intermedia</i>	Matted Spike-rush	S4	G5
<i>Epilobium coloratum</i>	Purple-leaf Willow-herb	S5	G5
<i>Lactuca biennis</i>	Tall Blue Lettuce	S5	G5
<i>Lonicera hirsuta</i>	Hairy Honeysuckle	S5	G4G5
<i>Monotropa hypopithys</i>	American Pinesap	S4	G5
<i>Oclemena nemoralis</i>	Bog Aster	S5	G5
<i>Polygonum pensylvanicum</i>	Pennsylvania Smartweed	S5	G5
<i>Potamogeton zosteriformis</i>	Flatstem Pondweed	S5	G5
<i>Salix serissima</i>	Autumn Willow	S4	G4
<i>Wolffia borealis</i>	Dotted Watermeal	S4S5	G5

Site Condition and Disturbances

This site is in good condition, largely because its abundant wetlands have been a deterrent to development. Some parts of the surrounding lands are regenerating from past clearing as suggested by patchy woodlands, early successional species and old rusty barbed wire fences.

Non-native species are occasional with notable invasives being Manitoba Maple (*Acer negundo*), Common Buckthorn (*Rhamnus cathartica*), Purple Loosestrife (*Lythrum salicaria*), Common Reed (*Phragmites australis*) and Colt's Foot (*Tussilago farfara*). In the vicinity of the old farmhouse on the CVC property, garden escapes such as Periwinkle (*Vinca minor*) and European Lily-of-the-valley (*Convallaria majalis*) have spread into the adjacent forests.

Trails on the CVC-owned portion sustain light recreational use and local residents canoe recreationally on the river. There is some localized trash dumping near an old cabin in the south part of this natural area.

Ecological Features and Functions

Much of this natural area is included as part of the Kilmanagh Swamp ESA. The wetlands at this site form part of the provincially significant Little Credit Wetland Complex.

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The Ontario Ministry of the Environment maintains a groundwater monitoring station in this area. Credit Valley Conservation maintains both wetland and forest monitoring plots in the area.

With forest communities greater than 4 ha, wetlands over 0.5 ha in size and open successional communities totalling over 10 ha, this natural area supports and sustains biodiversity, healthy ecosystem functions and provides long-term resilience for the natural system. The riparian area provides a transitional zone between terrestrial and aquatic habitats, helping to maintain the water quality of the river, moderating the impacts of flooding, preventing erosion and sedimentation, and providing a movement corridor for plants and wildlife.

By containing a high number of habitat types, this natural area has the potential for high biodiversity function, particularly for species that require more than one habitat type for their life needs. This natural area contains a regionally rare community as well as a vegetation community dominated by a regionally rare plant species and thus supports additional biodiversity above and beyond that found in common community types.

Within the concession block, cultural meadow lying adjacent to the north end of this natural area supports the function of the natural area and also serves to link this area to another natural habitat patch a short distance to the northwest. This area also links with nearby natural areas across the roads. Across Heart Lake Rd., upstream along the East Credit River, the natural vegetation is confined to a narrow strip, however behind the roadside residences and farther back from the road the river forms another large, natural wetland. The East Credit River flows through this natural area and its vegetated banks facilitate species movement throughout the region. The relatively close proximity of other areas of natural habitat creates above-average potential for wildlife movement between natural areas, species dispersal and recovery from disturbance, creating additional resilience for the ecosystem.

A major tributary of the Credit River runs through this area and thus this natural area supports the connectivity function of the Credit River and its tributaries by providing a natural habitat corridor that facilitates the cross-regional movement of wildlife along this corridor between major provincial corridors.

This natural area contains a regionally rare vegetation type. It also contains five Species At Risk (three bird species, one butterfly species, one turtle species), four provincially rare species (two butterfly species, one dragonfly species, one turtle species) and seventeen regionally rare plant species.

Interior forest habitat exists at this site, and supports seven area-sensitive forest interior bird species.

This area supports the breeding of five species of colonial-nesting birds, four waterfowl species, one species of wetland-nesting bird and seven grassland bird species (including three area-sensitive grassland species).

This site supports Bullfrogs.

Wetlands of this area support amphibian breeding.

This site supports turtle nesting.

Based on the above features, this area should be evaluated to determine if significant wildlife habitat is present in accordance with the Provincial Policy Statement, Region of Peel Official Plan, and area municipal Official Plan.

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Opportunities

Existing linkages to other natural areas should be maintained and enhanced where possible. Increasing the width of connecting bands of natural vegetation would improve the ability of wildlife species to freely move along the East Credit River corridor.

The distribution and spread of invasive species could be monitored and controls considered. Where possible, removal of exotic plant species that have escaped from the old farmhouse gardens into the adjacent forests of the CVC-owned property should be considered.

The incidental observations of butterflies and dragonflies/damselflies indicate high biodiversity for both groups. Targeted surveys for these, extending throughout the summer may be productive. An area in the north part of this site has a large number of sedges that should be surveyed in the late summer/fall for skippers.

Given the variety of habitat types as well as the biological richness of various taxonomic groups, data gaps for mammals should be filled. In particular bat and small mammal inventories may be productive.

This natural area has three mature forest communities and they could be checked for old-growth forest characteristics.

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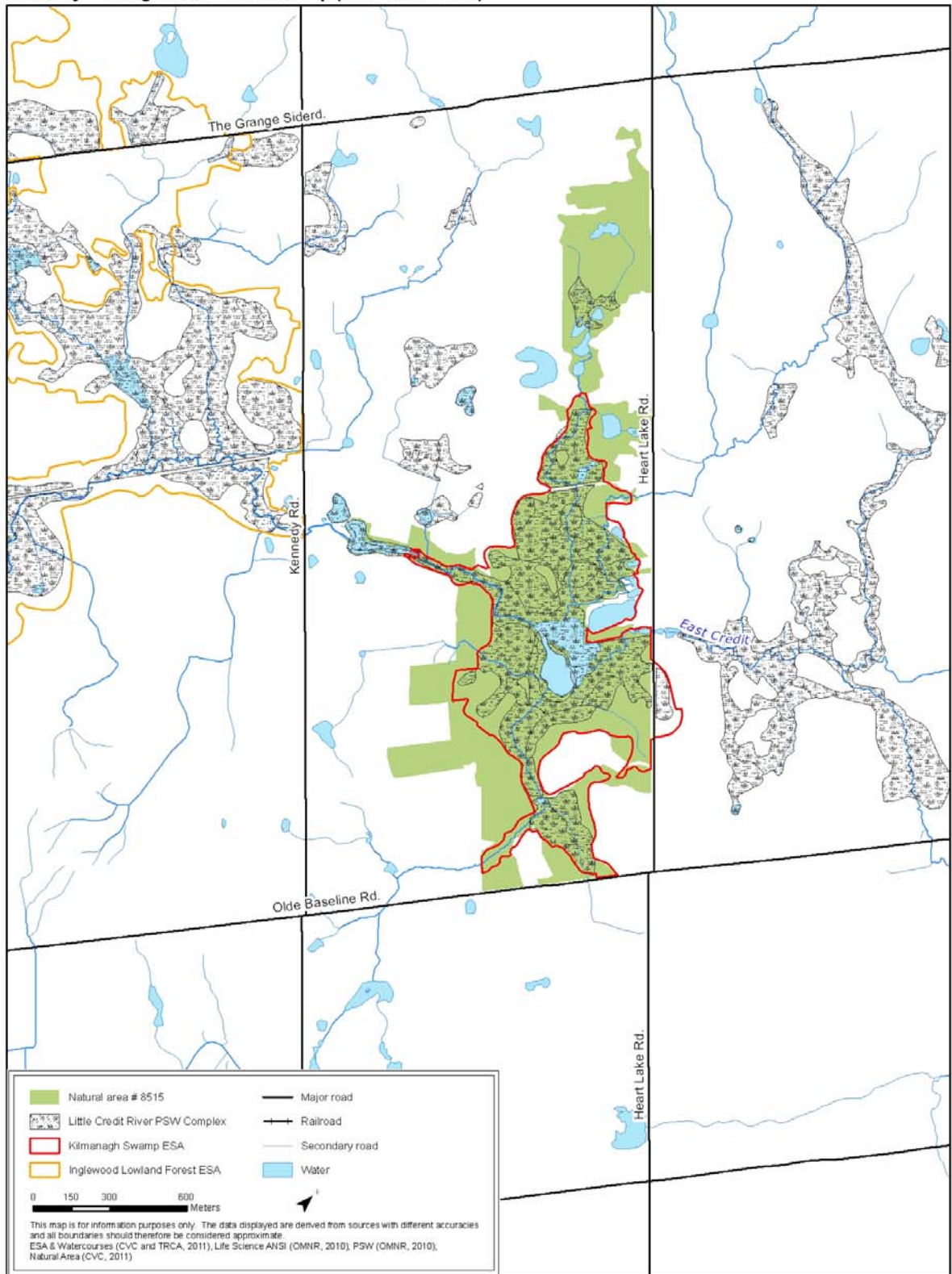
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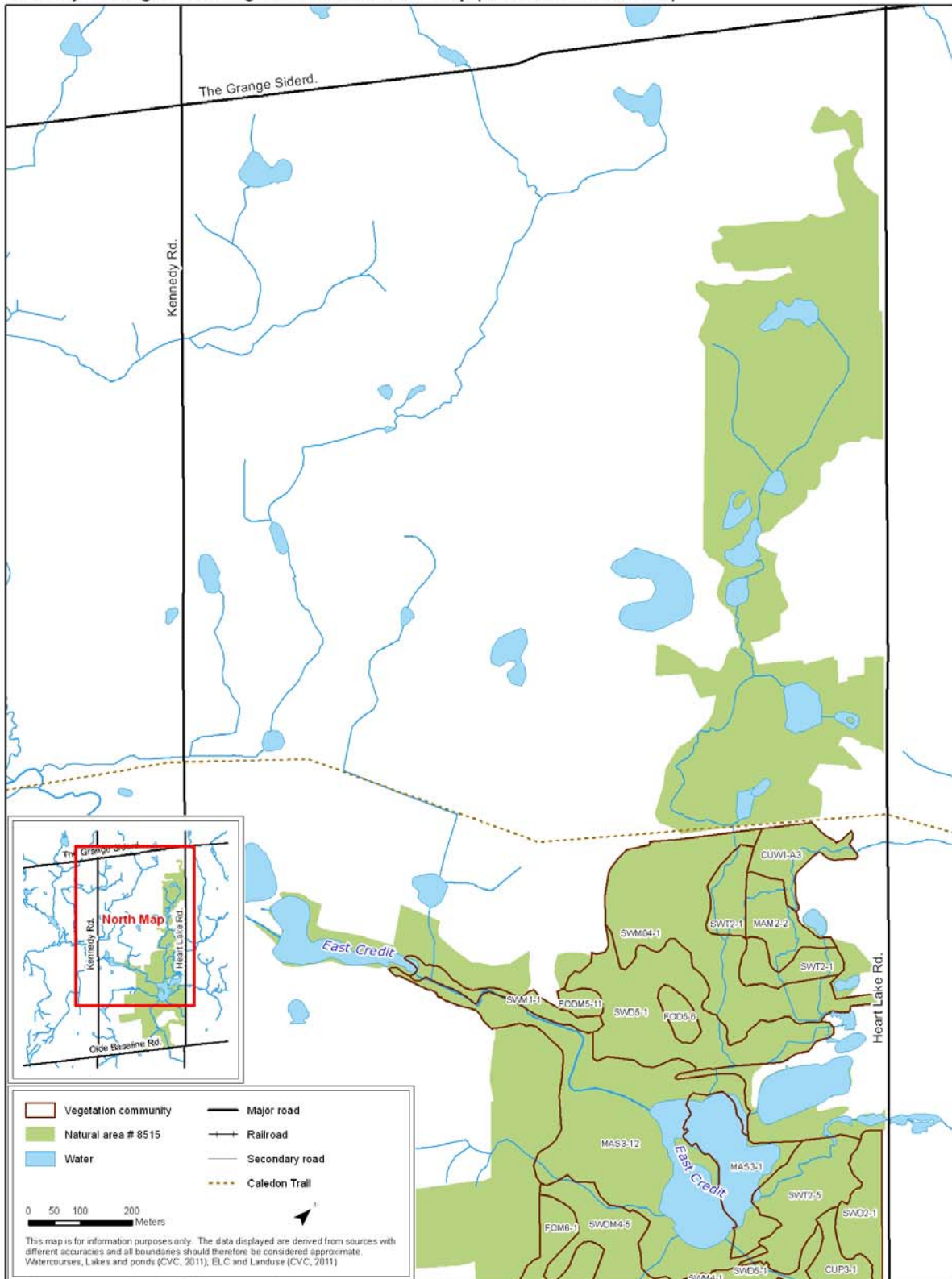
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Kennedy - Grange South Context Map (NAI Area # 8515)



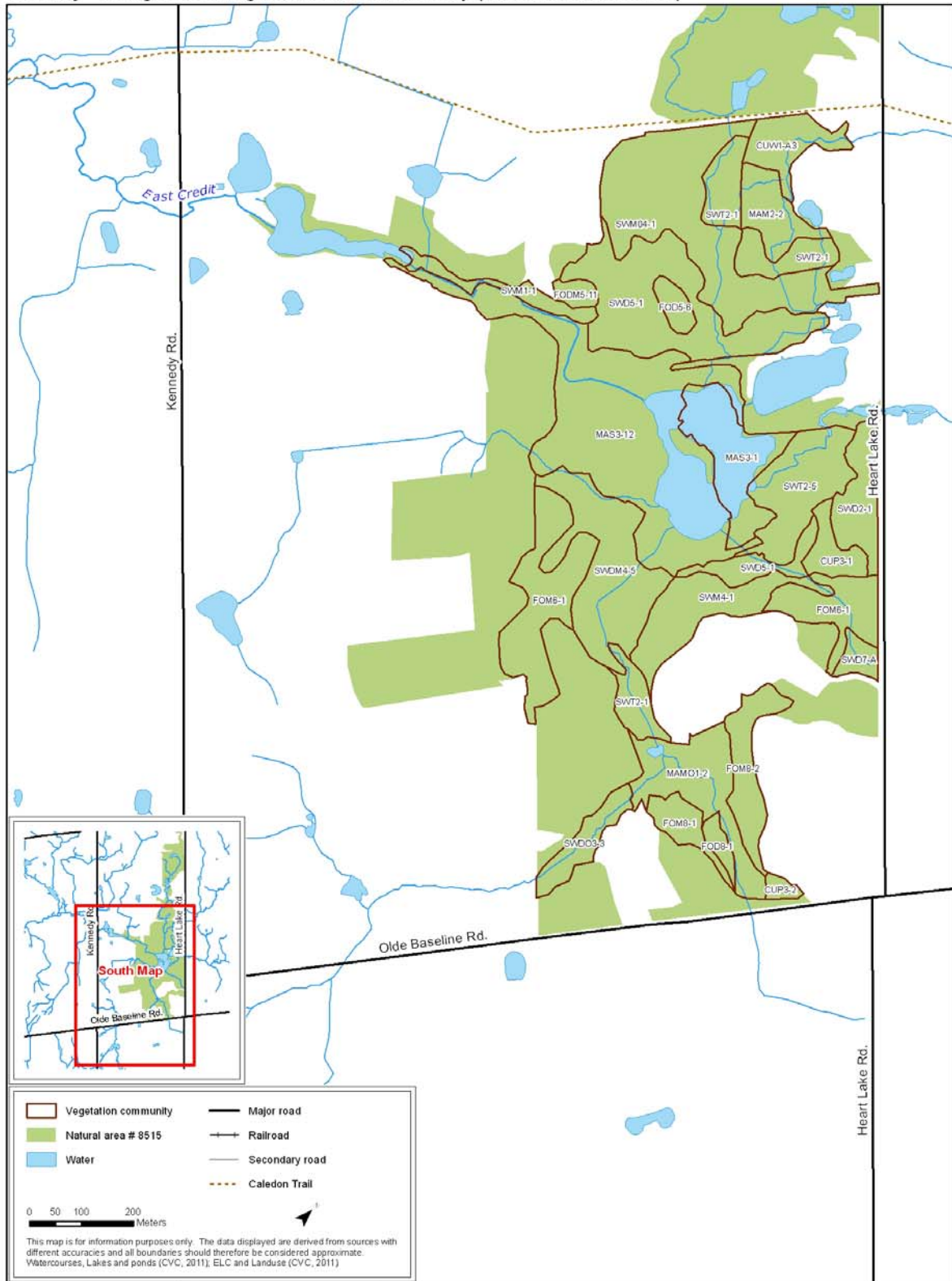
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Kennedy - Grange South Vegetation Communities Map (North NAI Area # 8515)



KENNEDY – GRANGE SOUTH (WARWICK CA AND AREA)

Kennedy - Grange South Vegetation Communities Map (South NAI Area # 8515)



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