

Environmental Impact Statement for 3490 Innes Road

**Draft Report
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Submitted To:

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1.0 INTRODUCTION

Kilgour & Associates Ltd. (KAL) was retained by Caivan Communities (Caivan) to prepare an Environmental Impact Statement (EIS) to support potential development of the property at 3490 Innes Road (the property). The EIS of this property was triggered by the potential presence of species at risk (SAR) on the site and other potential natural heritage features such as possible Significant Woodland to the south.

The property is primarily composed of agricultural lands partitioned by tree patches and hedgerows. The north part of the property currently contains a golf driving range and parking lot areas. The south end of the property includes an extension of a larger forest section that has the potential to be classified as Significant Woodland. The majority of the property is under active agriculture. The areas were observed to be alfalfa fields, which could be used by SAR birds (Bobolink [*Dolichonyx oryzivorus*] and Eastern Meadowlark [*Sturnella magna*]) during the breeding season.

2.0 PROPERTY INFORMATION

The subject property (Gloucester, CON 3 of PT LOT 5:RP 4R9761 PT PART 1 RP: 4R25012 PART 1PIN: 044040464, 044040485, 044040486) is a 31 ha parcel owned by Caivan Communities, west of Ottawa (Figure 1) (geoOttawa, 2016). The property is bordered by Innes Road to the north, commercial and residential development to the west, commercial lots and woodlands to the east, and forest to the south.

The property at 3490 Innes Road is currently zoned as Light Industrial (IL). This zone recognizes lands intended for future development of light industrial uses that are in accordance with Employment Area or General Urban Area designations (Ottawa Zoning By-laws, 2016). This zones supports the development of light industrial or commercial uses.

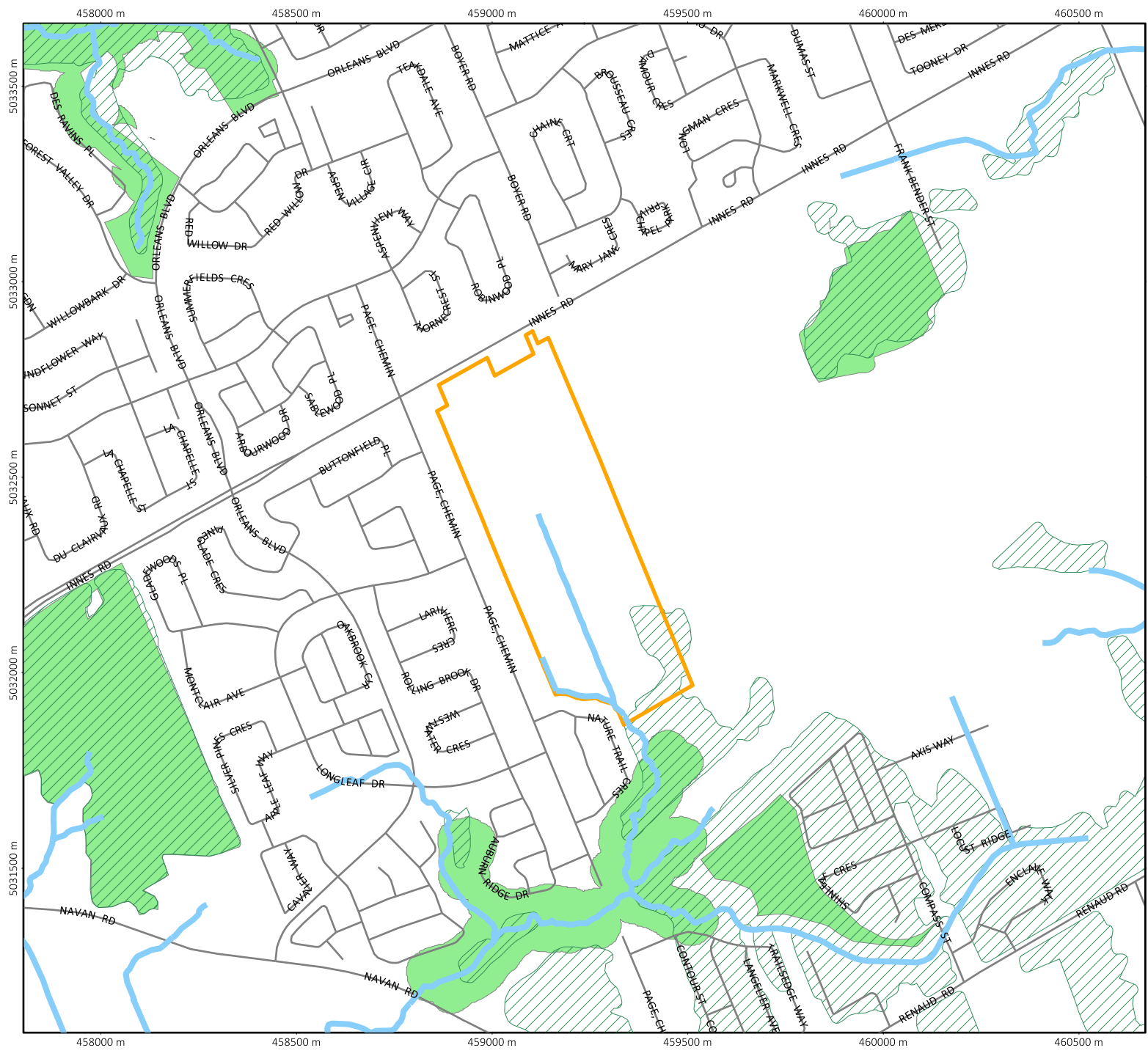





Figure 1 Area context

- Legend**
-  Property Line
 -  Schedule L
 -  SignifWoods_KV_Ottawa
- (MNR 1st approx.)



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Figure 2 Current site conditions

Legend

Property Line

ELC

- Golf
- Parking
- OAG
- MEMM3
- FOD2-1
- FOD7
- FOD7-3
- FOCM5
- FOCM6
- THDM2
- THDM3

Trees/Treed Areas

- Tree group
- Notable Tree



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3.0 SITE AND THE NATURAL ENVIRONMENT

3.1 Methodology and Area of Detailed Assessment

Colour digital aerial photographs from geoOttawa (geoOttawa, 2016) and GoogleEarth were used to identify natural environment features on the property through a desktop information review. Ontario Base Map (OBM), GeoOttawa, and Ottawa OP Schedules 'L' and 'K' layers (Ottawa, 2014) were used to demarcate surface water, potential wetland areas, and other natural heritage system features and were overlaid on the aerial photographs to aid interpretation.

KAL biologists Terry Hams conducted natural heritage assessments, tree inventory surveys, and Ecological Landscape Classification (ELC) surveys of the property and adjacent lands on July 20, and November 28 2016. The purpose of these field surveys was to complete a tree inventory and classify the habitats on the property, but also to determine the potential for SAR habitat presence and to characterize natural heritage features.

Additional information on natural heritage features and wildlife species for the property was obtained from online sources, which include but are not limited to:

- Natural Heritage Information Centre (MNRF, 2016a);
- Rideau Valley Conservation Authority (RVCA, 2016);
- Species at Risk Public Registry (Canada, 2016);
- Ontario Species at Risk List (MNRF, 2016b);
- Breeding Bird Atlas of Ontario (OBBA) (Cadman *et al.* 2007);
- Bat Conservation International species profiles (BCI, 2016); and
- Reptiles and Amphibians of Ontario (Ontario Nature, 2016).

During the field visits, the KAL biologist surveyed for potential habitat for SAR. This information was used to complement desktop background review for the SAR section of this report.

3.2 Landform, Soils and Geology

The property is located within the Ottawa Valley Clay Plains, which are composed of areas of Champlain Sea deposits, glacial deposits and drumlins, glaciofluvial deposits, shallow and exposed bedrock, and peat and muck from wetlands (Schut and Wilson, 1979). On a more local scale, the property occurs primarily within the Bearbrook association, which is dominantly poorly drained Gleyed Orthic Melanic Brunisols, Orthic Humic Gleysols, and Rego Gleysols on level to very gently sloping topography to the south.

Although rocky outcroppings were reported to occur near the north edge of the property along Innes Road (Schut and Wilson, 1979), none were not observed on site during field surveys. The south portion of

the property falls within the Manotick Series, which is strongly acid, coarse-textured marine, estuarine and fluvial veneer that is 25 to 100 cm thick. This series is composed of Orthic Sombric Brunisols, Gleyed Sombric Brunisols, Gleyed Humo-Ferric Podzols, Orthic Humic Gleysols, and Rego Gleysols with gently sloping and undulating but predominately level topography. The Mud Creek Subwatershed Summary Report categorized surficial geology as 48% sand, 45% clay, 3% diamicton, 2% bedrock, and 2 % organic soils (RVCA, 2012).

There are no rocky outcrops on the property and no Earth Science Areas or Natural and Scientific Interest as designated by the Ministry of Natural Resources identified in OP Schedule K (Ottawa, 2014).

3.3 Surface Water, Groundwater and Fish Habitat

The property and adjacent lands lie within the Mud Creek Subwatershed (RVCA, 2016). The property is approximately 450 m north of the James Blais Drain. An unnamed drainage channel flows southward along the hedgerow in the center of the property and connects to larger drainage channel at the southwest end of the property (Figure 1). This southwestern drainage channel borders the residential properties to the south of the property and flows southward to stormwater ponds that connect with James Blais Drain, which is a tributary to Mud Creek.

The central drain was dry during field visits and likely only serves to transport water during spring freshet and precipitation events southward from the property. The southwest drain was also mostly dry during field surveys with no flow observed, though there were small areas of pooling water observed at the southern border of the property. It is unlikely that these pools would support fish, but are likely used by amphibians during the spring and summer.

A small wetland-like patch was observed adjacent to the property on the northeast corner. This area is simply a depression that catches spring and post-precipitation runoff from the adjacent site. Cattails were observed there but the area is likely too small to support a large amphibian population and is not connected to any fish bearing waterways. The nearest Provincially Significant Wetland is Mer Bleue located approximately 2km to the south.

3.4 Vegetation and Land Cover

3.4.1 Forest Cover/Forest Significance

The property is located within the Mud Creek Subwatershed (RVCA, 2016). According to the Mud Creek Subwatershed Summary Report (RVCA, 2012), the primary lands use of this area is agriculture (48%) and urban development (23%). Forest areas make up the next highest land use category at 22%, while rural land-use, wetlands, and unclassified make up 2%, 5%, and 1%; respectively.

The majority of property is under active alfalfa agriculture, but parking lots and the driving range also account for much of the land use on the north side. Deciduous hedgerows occur in the center and east side of the property. Small patches and single trees are found across the property and a large coniferous plantation was observed in the centre. On the south end of the property is a deciduous forest along with patches of thicket and meadow.

Most treed areas on the property are young, early successional regrowth on former agricultural fields, and hedgerows. The forest at the south end of the property however, could potentially be considered a Significant Woodland, with portions of it flagged in the City of Ottawa Schedule L (Figure 1). The MNR's estimate mapping of Significant Woodland areas (City of Ottawa data layer "SignifWoods_KV_Ottawa") does include this entire wooded area (Figure 1). The portion nearest the property however, is only identified in one contributing layer: the "Proximity_KV_Ottawa" layer. This suggests it was flagged as potentially significant only because it is somewhat contiguous with higher quality forest areas to the south.

The City is currently redrafting its definition of Significant Woodland as its existing woodland policy is inconsistent with the 2014 Provincial Policy Statement (Ontario, 2014). The new definition is anticipated to identify as significant, all existing wooded areas occurring within the urban boundary greater than 0.8 ha as were present in 1976. The goal is to capture blocks of mature forest, without including areas of recent regrowth.

In 1976, based on geoOttawa aerial photography, the south end of the property was under active agriculture right to the property line. In the 1991 air photo of the area, saplings are visible spreading to the north, northeast, and east of the core woodland area, which corresponds with the ELC categorization of these forest patches. The core forest in the 1976 air photo may be classified as Significant Woodland, but the younger forest to the north and northeast (i.e. the portions on the property) do not meet the requirements for this designation.

Forested areas on the property do likely provide some ecological service as habitat areas for common, suburban-tolerant fauna. Trees there will also provide a significant contribution to canopy cover within the broader vicinity with all the associated benefits (urban cooling, wind breaks, carbon capture, improvement of air quality, enhanced infiltration of surface runoff and recreational potential).

3.4.2 Ecological Land Classification

Ecological Land Classification (Lee et. al., 1998) and vegetation community surveys were completed on the property on November 28, 2016. Habitat types were classified according to the ELC of Southern Ontario. The property was classified into five broad ELC categories: deciduous forest, coniferous forest, meadow, shrubland, and agricultural lands (Figure 2). Each habitat category was further refined based on species composition.

Two hedge rows in the centre and eastern parts of the property were classified as Dry-Fresh Deciduous Hedgerow Thicket (THDM3) and composed of shrubs and trees (Figure 2). The main tree species in these hedgerows were American Elm (*Ulmus americana*), Eastern Cottonwood (*Populus deltoides*), Green Ash (*Fraxinus pennsylvanica*), Trembling Aspen (*Populus tremuloides*), and Manitoba Maple (*Acer negundo*), many of which were showing signs of dieback or were snags. Shrubs and saplings trees dominated the hedgerows and common species observed were Hawthorns (*Crataegus* sp.), Common Buckthorn (*Rhamnus cathartica*), Glossy Buckthorn (*Frangula alnus*), Black Cherry (*Prunus serotina*), Willows (*Salix* sp.), and Staghorn Sumac (*Rhus typhina*).

Three shrubland areas occur on the property, two on the north end and the other on the southwest end. These features have been classified as Dry-Fresh Deciduous Shrub Thicket ecosites (THDM2) and are mostly composed of shrub species and small trees (Figure 2). The primary shrub species observed in these areas were willows, hawthorns, Staghorn Sumac, and Chokecherry (*Prunus virginiana*). Tree species observed were Red Maple (*Acer rubrum*), White Birch (*Betula papyrifera*), Trembling Aspen, Eastern Cottonwood, American Elm, and Green Ash.

The coniferous plantation near the center of the property is as Naturalized Coniferous Plantation (FOCM6) ecosite (Figure 2). This cultural woodland was composed mainly of planted Norway Spruce (*Picea abies*), White Pine (*Pinus strobus*), and Red Pine (*Pinus resinosa*) with subordinate tree species of Manitoba Maple, Eastern Cottonwood, White Ash (*Fraxinus americana*), White Spruce (*Picea glauca*), Red Oak (*Quercus rubra*), and American Elm.

Three meadow areas were observed on the property, one along the east edge of the property and two on the southern portion. These areas were classified as Dry-Fresh Mixed Meadow Ecosite (MEMM3) (Figure 2). These meadows were mainly composed of grasses, sedges, and various forbs such as Common Raspberry (*Rubus idaeus*), Common Milkweed (*Asclepias syriaca*), Goldenrod (*Solidago* sp.), Wild Carrot (*Daucus carota*), Wild Grape (*Vitis riparia*), with scattered shrub species such as hawthorn, Staghorn Sumac, and willows.

A forested area edges onto the site from south of the property consisting of three contiguous forest ecosites. The northern most ecosite was classified as Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3) (Figure 2). This is a lowland forest with small trees, saplings, and shrubs. The main species observed were Green Ash, American Elm, and willow shrubs, but some Trembling Aspen were also observed. Southeast of the property, the forest becomes Dry-Fresh Oak-Red Maple Deciduous Forest (FOD2-1). This area was mainly composed of Green Ash, Red Maple, Trembling Aspen, Red Oak, and White Birch with subordinate tree species American Beech (*Fagus grandifolia*), White Spruce, and Black Cherry. The south central area is Fresh-Moist Lowland Deciduous Forest (FOD7) (Figure 2). This forest was composed of larger trees than the other two forest sections and mainly composed of Red Maple, White Birch, Silver Maple, American Beech, and Yellow Birch with subordinate tree species of Green Ash, Black Cherry, American Basswood (*Tilia americana*), and Sugar Maple (*Acer saccharum*).

The majority of the property is agricultural land classified as Open Agricultural (OAG) (Figure 2). These areas were composed of alfalfa fields that occupy most of the central portion of the property.

3.4.3 Site Trees

The tree inventory survey was performed on November 28, 2016. Because much of the site is contiguous forest habitat, it is unrealistic to count and measure the Diameter at Breast Height (DBH) of each tree on site. Instead, we estimated species composition of each ELC habitat on site (Section 3.4.2; Figure 2) by abundance of each tree species and gave a range of DBH for each species per each patch. Lone trees or trees of some distinction (especially large individuals, rare or protected species) were identified and measured individually. Results are presented in Table 1.

Tree ages were not specifically determined. The 1976 air photo no forested areas on site and only scattered lines of trees along the edges farm fields. The central and east hedgerows were present in this air photo; the potential Significant Woodland block was situated below the south property boundary. The south forest area only begins to creep onto the property in the 1991 air photo. The coniferous plantation in the centre of the property first appears in the 1999 air photo. Scattered shrublands, tree patches, and trees pop up on the property over time but appear to be mainly in areas of regenerating agricultural lands.

Table 1. Results of the tree inventory survey of the property in November, 2016.

Location	Tree Species	Quantity	DBH (range) (cm)	Condition
Tree 1	Eastern Cottonwood*	1	35 – 55	(Multi-stem) one large snag as well
Tree 2	White Spruce	1	51	
Tree 3	White Spruce	1	47	
-	White Pine	1	53	
-	Scots Pine	1	49	
Tree 4	White Pine*	1	56, 42	Two-stems
Tree 5	Red Pine	1	39	
Tree 6	Manitoba Maple	1	14, 12, 16	Three-stems
Tree 7	White Spruce	1	36, 44	Two-stems
-	White Pine	1	48	
Tree 8	Red Pine	1	41	
Tree 9	Red Pine	1	45	
Tree 10	White Spruce*	2	44, ~70	
Tree 11	American Elm	1	20 – 35	Multi-stem
Tree 12	Manitoba Maple	1	48, 41	Two-stems
-	Apple	1	47	
Tree 13	White Ash	4	25-40	Mostly dead
Tree 14	White Ash	1	60, ~65	Mostly dead with many cavities
Tree 15	White Ash	13	10 – 18	Mostly dead
Tree 16	White Birch	2	10 – 20	Multi-stem
Tree 17	Red Oak	2	10 – 20	Multi-stem
Tree 18	American Elm	1	21	Three snags
-	White Ash	1	11	
Patch 1	Manitoba Maple	13	20 – 40	Many saplings and snags
-	Trembling Aspen	6	20 – 25	A couple saplings and snags
Patch 2	Red Pine	6	30 – 35	
Patch 3	Green Ash	>75	10 – 35	A few large trees ~50 – 65 cm, mostly dead
-	Manitoba Maple	~30	10 - 30	Many saplings
-	Red maple	~15	10 – 15	
-	Red Oak	~15	10 – 20	A couple large tree ~50 cm
-	American Elm	~ 50	10 – 30	Mostly dead trees
Patch 4	Norway spruce	>150	10 – 30	
-	Manitoba Maple	~50	10 – 20	Many dead small tree in interior

Location	Tree Species	Quantity	DBH (range) (cm)	Condition
-	White Pine	>100	20 – 40	A few snags
-	Red Pine	~40	10 – 30	
-	Red Oak	~50	20 – 40	Many sapling
-	Eastern Cottonwood	~10	20 – 40	
-	Trembling Aspen	~40	10 – 35	
-	American Elm	~30	10 – 30	Mostly dead and many snags
-	White Spruce	~20	10 – 20	
Patch 5	Eastern Cottonwood	6	10 – 18	
Patch 5 (continued)	Manitoba Maple	9	10 – 16	
Patch 6	Green Ash	>100	10 – 40	Mostly dead, A few large trees ~60 – 75 cm
-	American Elm	>75	10 – 45	Mostly dead
-	Eastern Cottonwood	5	10 – 20	
-	Red Oak	~20	10 – 25	
-	Trembling Aspen	~40	10 – 35	
Patch 7	Green Ash	~50	10 – 30	Many saplings
-	American Elm	~40	10 – 30	Many saplings
-	Willow	~20	10 – 25	Many saplings
-	Trembling Aspen	1	27	
Patch 8	White Ash	>100	10 – 40	Mostly dying
-	Red Maple	~30	10 – 25	
-	Red Oak	>80	15 – 35	
-	Red Oak*	~15	~50 – 65	
-	Trembling Aspen	~50	15 – 40	
-	White Birch	~70	15 – 30	Many small snags
-	American Beech	~20	10 – 30	
-	Black Cherry	~10	20 – 30	
Patch 9	Red Maple	~40	20 – 45	
-	American Beech	~25	25 – 35	
-	White Pine	~20	20 – 40	
-	White Spruce	~30	20 – 45	
-	White Birch	~40	15 – 30	
-	Yellow Birch	~25	15 – 30	
-	Sugar Maple	~15	10 – 30	
-	Silver Maple	~10	30 – 50	
-	American Basswood	~10	20 – 45	
-	Black Cherry	~15	10 – 25	
-	Green Ash	~40	15 – 30	
Patch 10	Red Maple	~15	10 – 20	
-	White Birch	~20	10 – 20	
-	Trembling Aspen	~15	10 – 20	
-	American Elm	5	10 – 15	Many snags

Location	Tree Species	Quantity	DBH (range) (cm)	Condition
-	Manitoba Maple	~20	10 – 20	
-	Willow	~15	10 – 20	
Patch 11	White Ash	8	15 – 60	Mostly dead

* = Potential specimen tree

The majority of trees on the property were within the forest patches in the south, which is may support a limited community of urban-tolerant wildlife. The hedgerows also contained many trees, some of which were large (i.e. >50 cm DBH). Most of the larger trees however (predominantly ashes and elms) were dead or showing signs of dieback. Individual trees and small patches around the driving range and parking lots were mostly small to medium sized trees. There were only a few large cavity trees on the property, but they were mostly found in hedgerows and small patches that are unlikely to be attractive to SAR bats due to the lack of protection they offer.

3.5 Incidental Wildlife Observations

Incidental wildlife observations were recorded during field visits to the property. All incidental species observations and evidence of species occurrence (e.g. tracks, scat) were recorded during site visits.

Overall, 29 wildlife species were observed during the field survey. The majority of species observed were birds (25), but four mammal species were also observed (Appendix 3); however, field surveys were completed outside of the active season for birds, amphibians, mammals, and invertebrates. Moreover, the number of wildlife species observed on the property would likely be higher if species specific surveys were conducted (e.g. breeding bird surveys, amphibian call surveys, winter tracking surveys).

3.6 Species at Risk

KAL submitted a natural heritage information request to the Kemptville MNRF office for the property. At the time of this report no reply to this information request was received. Therefore, we formulated our own list of SAR with the potential to occur on site using information gathered from the NIHC database, OBBA, and other species atlases for Ontario (Section 2.1).

Our information review indicated a potential for 12 SAR listed under the *Endangered Species Act* (Ontario, 2007) and *Species at Risk Act* (Canada, 2002) to occur in proximity to the property (Table 3). These species include Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Bobolink, Eastern Meadowlark, Eastern Wood-pewee (*Contopus virens*), Henslow's Sparrow (*Ammodramus henslowii*), Wood Thrush (*Hylocichla mustelina*), Little Brown Myotis (*Myotis lucifuga*), Northern Long-eared Myotis (*Myotis septentrionalis*), Eastern Small-footed Myotis (*Myotis leibii*), Tri-colored Bat (*Pipistrellus subflavus*), and Butternut (*Juglans cinerea*).

For full due diligence, Table 2 indicates the habitat requirements of these SAR plus others SAR potentially present within the broader area and whether the property may provide significant habitat. The list also includes additional entries for species under consideration for listing within the next two years.

Table 2: Species at risk potential for occurrence on the 3490 Innes Road property.

Species Name	Provincial (ESA) Status	Habitat Requirement	Habitat on Site	Project Concerns Associated with Habitat on Site
Birds				
Bank Swallow (<i>Riparia riparia</i>)	Threatened	Colonial nester; burrows in eroding silt or sand banks, sand pit walls, and other similar habitats	No nesting habitat observed on or adjacent to the property, but may forage in open habitats nearby.	Negligible potential for presence. Not a concern.
Barn Swallow (<i>Hirundo rustica</i>)	Threatened	Species prefers to nest on manmade structures such as bridges, barns, and buildings near open terrestrial and aquatic habitats where it forages.	Limited potential for nesting is located on manmade structures in the driving range portion of the property; however, no nests were observed on the property during field surveys.	Low potential for presence. Not a Concern.
Bobolink (<i>Dolichonyx oryzivorus</i>)	Threatened	Periodically mown, dry meadow for nesting. Habitat (meadow) should be > 10 ha, and preferably > 30 ha before bobolink are attracted to the site. Not near tall trees.	Alfalfa fields on the property may provide nesting areas for species; however, these areas would not be considered as preferred habitat.	Moderate potential for presence. Breeding bird surveys should be completed to determine presence.
Eastern Meadowlark (<i>Sturnella magna</i>)	Threatened	Prefers grasslands and pastures >5 ha in area with moderately tall grasses (25 to 50 cm) and abundant litter cover. High proportion of grasses to forbs and shrubs (<35% forbs and shrubs).	Alfalfa fields on the property may provide nesting areas for species; however, these areas would not be considered as preferred habitat.	Moderate potential for presence. Breeding bird surveys should be completed to determine presence.
Eastern Wood-pewee (<i>Contopus virens</i>)	Special Concern*	Prefers mature and intermediate-aged deciduous and mixed forest with an open understory. Often nests and forages near open areas and forest edges.	Forests in the south section of the property are likely to provide nesting and foraging habitat for this species.	High potential for species to breed on site; however, they are not currently protected under the ESA. Presence though could indicate Significant Wildlife Habitat.
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	Endangered	Species prefers open fields with tall grass and flowering plants with few scattered shrubs.	Alfalfa fields on the property are unlikely to provide breeding areas for species, and there are no recent observation of this species in the Ottawa area.	Negligible potential for presence. Not a concern.
Wood Thrush (<i>Hylocichla mustelina</i>)	Special Concern*	Moist deciduous hardwood or mixed forests with trees >16 m in height, a closed canopy (>70%), moderate sub-canopy and shrub layer, fairly open forest floor, and moist soil.	Forests in the south section of the property are likely to provide nesting and foraging habitat for this species.	High potential for species to breed on site; however, they are not currently protected under the ESA. Presence though could indicate Significant Wildlife Habitat.
Mammals				

Species Name	Provincial (ESA) Status	Habitat Requirement	Habitat on Site	Project Concerns Associated with Habitat on Site
Little Brown Myotis (<i>Myotis lucifuga</i>)	Endangered	Widespread, roosting in trees and buildings. Hibernate in caves or abandoned mines.	Some large snags with cavities were observed on the property; however, not at the ≥ 10 snags (≥ 25 cm DBH) per hectare abundance that is required for potential maternity roosts. No potential hibernacula observed on the property.	Moderate potential for presence. Property is unlikely to meet criteria for maternity roost habitat, but species likely uses the site for summer roosting and foraging.
Northern Long-eared Myotis (<i>Myotis septentrionalis</i>)	Endangered	Associated with boreal forests, choosing to roost under loose bark and in the cavities of trees. Hibernate in caves or abandoned mines.	Some large snags with cavities were observed on the property; however, not at the ≥ 10 snags (≥ 25 cm DBH) per hectare abundance that is required for potential maternity roosts. No potential hibernacula observed on the property.	Moderate potential for presence. Property is unlikely to meet criteria for maternity roost habitat, but species likely uses the site for summer roosting and foraging.
Eastern Small-footed Myotis (<i>Myotis leibii</i>)	Endangered	Species roosts in a range of habitats including under rocks, rocky outcroppings, buildings, under bridges, caves, mines, and hollow trees. Hibernate in smaller caves subject to air movement.	No rocky outcroppings were observed on or adjacent to the property, but some large snags were observed on the property.	Low potential for presence. Property is unlikely to meet criteria for maternity roost habitat, but species likely uses the site for summer roosting and foraging.
Tri-colored Bat (<i>Pipistrellus subflavus</i>)	Endangered	Prefers to roost in trees in old forests but sometimes uses buildings. Forage over water courses or open fields with large trees nearby. They never forage in deep woods. Hibernate in caves or abandoned mines.	Some large snags with cavities were observed on the property; however, not at the ≥ 10 snags (≥ 25 cm DBH) per hectare abundance that is required for potential maternity roosts. No potential hibernacula observed on the property.	Moderate potential for presence. Property is unlikely to meet criteria for maternity roost habitat, but species likely uses the site for summer roosting and foraging.
Trees				
Butternut (<i>Juglans cinerea</i>)	Endangered	Found in various forest and open habitats that are moist to moderately dry with well-drained rich soils, but is intolerant of shade and requires full sunlight.	Potential habitat is available on site in shrubland and hedgerow areas; however, species was not observed on the property during field surveys.	Moderately suitable habitat provides potential for presence but none observed. Not a concern.

* Species status is, or will soon be, under review and thus may change in the near future.

Species occurring or having high potential to occur on site due to presence of habitat.

No SAR were observed on the property during site visits in 2016. The background data review indicated that two species have a high potential for occurrence (Eastern Wood-pewee and Wood Thrush) on the property; however, two other SAR (Bobolink and Eastern Meadowlark) have a moderate potential to occur on the property and breeding bird surveys should be completed during the appropriate timing window (late May until mid-July). Little Brown Myotis, Northern Myotis, and Tri-colored Bat have a moderate potential to occur on the property in the forest in the south portion of the property. Species specific surveys for amphibians and birds were not completed during the 2016 field season, and therefore SAR use of the property could not be fully determined.

3.7 Other Natural Heritage Features

There are no Provincial or Locally Significant Wetlands, Life Science Areas of Natural and Scientific Interest, or Significant Valleylands on or adjacent to the site (Figure 1).

4.0 PROJECT DESCRIPTION

The proposed development (Figure 3) will include 20.2 ha of residential space in the central and south portions of the property consisting mostly (80.1% of the housing area) of singles with a smaller mix of town homes (12.6%) and back-to-back towns (7.4%). The residential area will include a single, 1.02 ha park. Four large blocks totaling 10.8 ha at the north end of the site will be reserved for future development. The community will be accessed by a single north-south road down the centre of the property from Innes.

Storm water flows will be directed to the existing SWM pond facility south of the site. That facility may be subject to future expansion, but is sufficiently sized for the current project. Alteration of existing overland drainage paths will be done consultation with the RVCA and will be supported by a Headwater Drainage Feature Assessment to be complete in the spring of 2017.

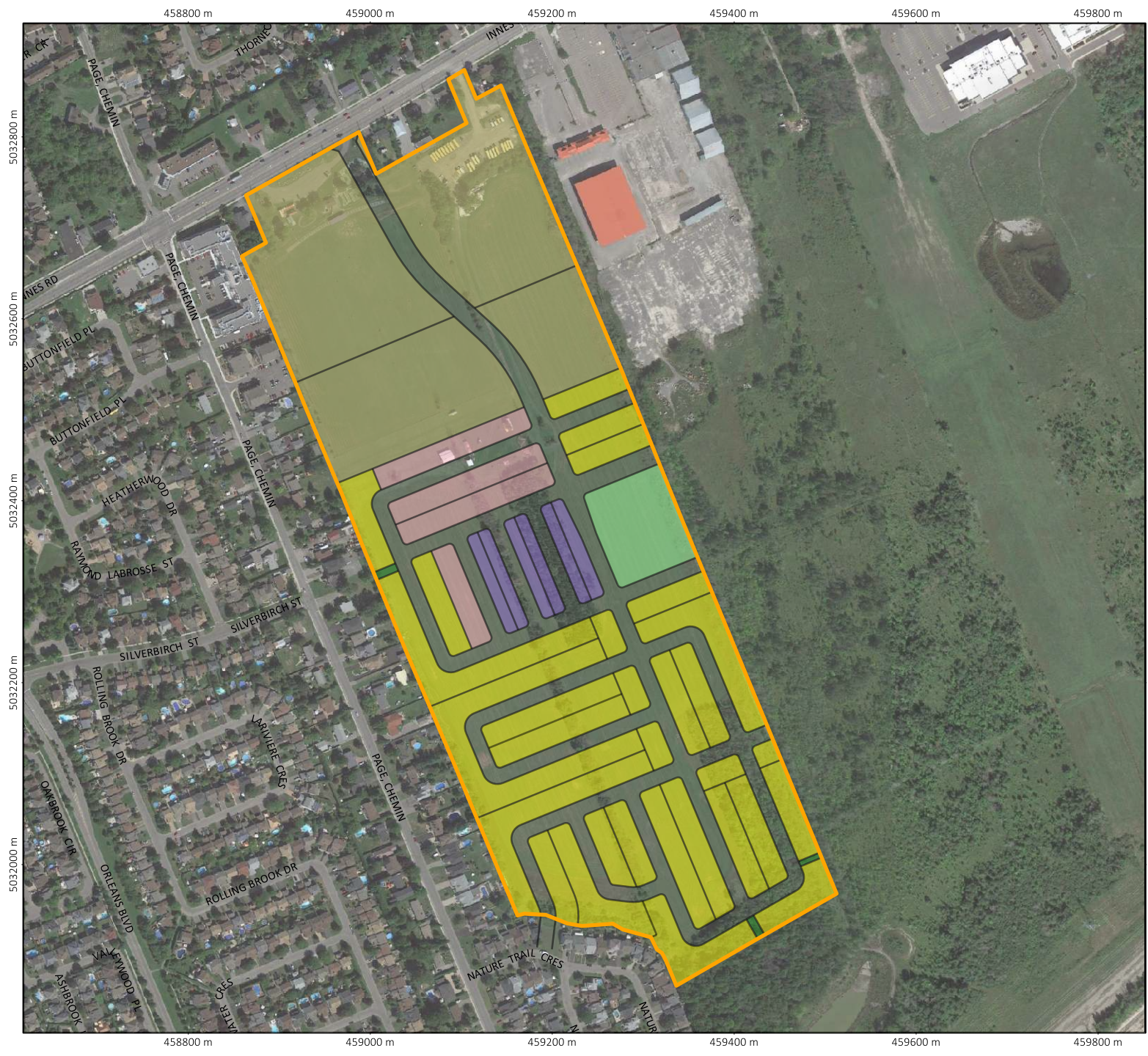









Figure 3 Community plan

Legend

-  **Property Line**

- Community Plan**
-  Future Development
-  Park
-  Pathway
-  Single Detached
-  Townhouses
-  B2B Towns



Project File: CAIV544
 Created By: AF
 Checked By: TH
 Universal Transverse Mercator - Zone 18 (N)
 Printed on: 2016-12-09



5.0 IMPACT ASSESSMENT

5.1 Impacts to Surface Water Features

No fish or fish habitat was observed on the property during field surveys. The central drainage feature on the property was dry during field surveys and appears to only function as a swale to remove spring freshet and precipitation from the agricultural fields, which flows southward to the James Blais Drain and Mud Creek. This feature will be removed to allow for site grading and road construction.

The drainage feature that borders the southwest of the property was mainly dry during field visits with no apparent flow, though there were small areas of pooled water. For most of its length, it exists as a minor swale at the edge of the existing backyards of the adjacent community. This current configuration however, is not allowed under existing City and CA regulations, which require a 30 m set back on both sides of the feature. It must be removed. Its functionality will be replaced elsewhere in the catchment to offset impacts to the Mud Creek Subwatershed.

5.2 Impacts to Trees/ Significant Woodlands

The majority of the property is composed of agricultural land, a driving range, and parking lots with few trees present. A central and eastern hedgerow occur on the site along with a coniferous plantation, small tree patches, and scattered individual trees. The trees on the property outside of the forested area to the south are unlikely to support a diverse wildlife community. A few bird nests were observed in the central hedgerow, which likely were from common species such as Song Sparrows (*Melospiza melodia*), Cedar Waxwings (*Bombycilla cedrorum*), and American Robins (*Turdus migratorius*). It is unlikely that SAR bats or birds would use these areas because of the lack of cover they offer.

The potential Significant Woodland borders the property to the south, but a younger forest occurs on the south edge of the property. Review of the air photos of the property shows that in 1991 the land north of the Significant Woodland was allowed to begin regenerating and have grown into a less mature forest (Figure 2). This area is designated to be removed during the proposed development, but the initial border of the Significant Woodland as it appears in the 1976 air photo shall be maintained.

The woodland area is currently likely to provide only limited ecosystem services: habitat space for small, urban tolerant fauna, filtration of surface water flow through for the adjacent SWM pond, and general shading/cooling effects consistent with canopy cover. It does not provide shading for the pond as it occurs to the north of that feature. It is unlikely to serve as a wildlife corridor as it is pinched off to the west between the pond and the existing residential community. Having the new community abut its north edge is not anticipated to reduce this limited functionality.

The addition of a walking path through the forest to the SWM pond however, will allow this feature to provide a natural park-type environment of the social benefit of area residents.

The removal of trees from on the property, most of which is not treed, will be mitigated through the planting of trees on or adjacent to house lots throughout the new community, thus generating a net

increase in canopy cover. No negative impacts are anticipated in the context of tree/forest coverage to the broader (i.e. catchment) area

5.3 Impacts to Species at Risk

Although no SAR were observed on the property during field surveys, additional surveys should be complete during appropriate timing windows. The wooded area to the south has potential to provide some habitat for SAR bats and birds, as well as a (somewhat limited) wildlife community, though this area is not predicted to be impacted from the proposed development. There is a moderate risk that Eastern Meadowlark and Bobolink may breed in the alfalfa fields; however, this is not considered preferred habitat for these species. Overall, the potential for the site to be used as SAR bat habitat is negligible; therefore, no impacts to SAR or SAR habitats are anticipated from the project. This will be confirmed in the spring and early summer of 2017.

5.4 Impacts to Wildlife

Most of the site is under active human usage and thus provides very limited wild habitat potential. Moreover, the linear nature of the hedgerows does not provide cover for wildlife species equal to that found in the woodlands on the south portion for the property. Undeveloped land exist to the east and south of the property which are already being used by wildlife and will be unaffected by the proposed development. Standard construction mitigations are anticipated to prevent impacts to any wildlife that does occur on the site; therefore, no impacts to wildlife are predicted from the project.

6.0 MITIGATIONS

6.1 Mitigations for Surface Water Features

The ecological services provided the existing drainage features still need to be identified through the HDFA process. From observations of these features to date, they appear likely to have minimal habitat potential (i.e. for fish, turtles or frogs), but will still almost certainly provide some water conveyance and potential for allochthonous input to downstream areas. The HDFA however, to be conducted in 2017, will fully identify the functionality of these features to the broader catchment. This level of functionality will then need to be protected or replaced elsewhere in the catchment (possibly through a yet-to-be determined compensation project) to mitigate impacts to the Mud Creek Subwatershed. All changes to site drainage will be done in consultation with and under permit from the RVCA.

Any works near water will at minimum require standard erosion and sediment control mitigation measures to protect receiving waters from sediment laden runoff, including:

- a multi-barrier approach to provide erosion and sediment control;
- retention of existing vegetation and stabilize exposed soils with vegetation where possible;
- limiting the duration of soil exposure and phase construction;
- limiting the size of disturbed areas by minimizing nonessential clearing and grading;

- minimizing slope length and gradient of disturbed areas;
- maintaining overland sheet flow and avoid concentrated flows; and
- storing/stockpiling all soil away (e.g. greater than 15 metres) from watercourses, drainage features and top of steep slopes.

6.2 Mitigations for Trees/ Significant Woodlands

Please note that this report does not constitute permission to remove any trees from the site. Removal of trees can only be undertaken upon the issuance of a tree removal permit from the City of Ottawa. This report may be used to support the application for that permit and to advise mitigation measures imposed by the permit. Accordingly, to minimize impact to the remaining trees adjacent to the property, the following protection measures are indicated as necessary during construction:

- Tree removal on site should be limited to that which is necessary to accommodate site construction.
- To minimize impact to remaining trees during future site development:
 - Erect a fence beyond the critical root zone (CRZ, i.e. 10 x the trunk diameter) of trees. The fence should be highly visible (e.g., orange construction fence) and paired with erosion control fencing. Pruning of branches is recommended in areas of potential conflict with construction equipment;
 - Do not place any material or equipment within the CRZ of the tree;
 - Do not attach any signs, notices or posters to any tree;
 - Do not raise or lower the existing grade within the CRZ without approval;
 - Tunnel or bore when digging within the CRZ of a tree;
 - Do not damage the root system, trunk or branches of any tree; and
 - Ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.

The *Migratory Bird Convention Act* (Canada, 1994) protects the nests and young of migratory breeding birds in Canada. The City of Ottawa guidelines require no clearing of trees or vegetation between April 1 and August 15, unless a qualified biologist has determined that no nesting is occurring within 5 days prior to the clearing (Ottawa, 2016d).

6.3 Mitigations for Species at Risk

No SAR or potential SAR habitats were observed on site. For due diligence however, the site should be surveyed for SAR during appropriate time windows.

6.4 Mitigations for Wildlife

Common wildlife species were observed on site during the field visit. The following mitigation measures shall be implemented during construction of the project on site:

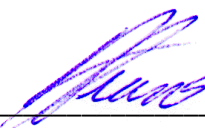
- Areas shall not be cleared during sensitive time of the year for wildlife, unless mitigation measures are implemented and/or the habitat has been inspected for a qualified biologist.
- Site clearing should begin at the north end of the site and proceed southward and eastward to drive any wildlife towards undeveloped lands.
- Do not harm, feed, or unnecessarily harass wildlife.
- Food wastes and other garbage – effective mitigation measures include waste control (prevent littering); keeping all trash secured in wildlife-proof containers, and prompt removal from the site (especially in warm weather).
- Drive slowly and avoid hitting wildlife where possible.
- Shelter – effective mitigation measures include covering or containing piles of soil, fill, brush, rocks and other loose materials; capping ends of pipes where necessary to keep wildlife out; ensuring that trailers, bins, boxes, and vacant buildings are secured at the end of each work day to prevent access by wildlife.
- Checking the work site (including previously cleared areas) for wildlife, prior to beginning work each day;
- Inspecting protective fencing or other installed measures daily and after each rain event to ensure their integrity and continued function; and,
- Monitoring construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.

7.0 SUMMARY AND RECOMMENDATIONS

It is our professional opinion that this project can be completed without significant negative impacts to trees, Significant Woodlands, or surface water features. Additional field studies are recommended to confirm the absence of SAR on the property and to advise compensation requirements for changes to surface water drainage on the site.



Terry Hams, MSc.
Ecologist



Anthony Francis, PhD.
Senior Ecologist/Project Manager

**Appendix 1
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Appendix 2
Qualifications of Report Author

Anthony Francis, PhD

Dr. Francis is an ecologist with over 18 years of experience in both terrestrial and aquatic projects. His doctoral thesis work on global plant diversity patterns included conducting tree surveys across North America. As a consulting ecologist he has worked on diverse ecological projects including literature reviews of forestry management and species-at-risk; environmental studies of contaminants (metals and suspended particulates); geomatic and statistical analyses for federal and provincial ministries as well as for private industry; and aquatic and terrestrial species inventories. He has contributed to environmental impact statements and federal environmental screening assessments for creek realignments and other infrastructure projects across Ontario.

Terry Hams M.Sc.

Terry is a terrestrial ecologist with over 10 years of experience in terrestrial field work and five years of experience in ecological consulting. He has worked on various projects across the United States and Canada surveying for terrestrial plants and wildlife. Terry has worked on Environmental Assessments for potash mines, Environmental Impact Statements, Constraints Assessments, and Species at Risk Assessments. He has experience performing of Species at Risk surveys across Canada and has extensive knowledge of terrestrial plant and wildlife species.

Appendix 3
Site Species Observations

Table 2: Incidental observations of wildlife on the property during field surveys in 2016.

Common Name	Scientific Name	Common Name	Scientific Name
Birds		House Wren	<i>Troglodytes aedon</i>
American Crow	<i>Corvus brachyrhynchos</i>	Killdeer	<i>Charadrius vociferus</i>
American Goldfinch	<i>Spinus tristis</i>	Least Flycatcher	<i>Empidonax minimus</i>
American Robin	<i>Turdus migratorius</i>	Mourning Dove	<i>Zenaida macroura</i>
Baltimore Oriole	<i>Icterus galbula</i>	Northern Cardinal	<i>Cardinalis cardinalis</i>
Black-capped Chickadee	<i>Poecile atricapillus</i>	Northern Flicker	<i>Colaptes auratus</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Pileated Woodpecker	<i>Dryocopus pileatus</i>
Blue Jay	<i>Cyanocitta cristata</i>	Song Sparrow	<i>Melospiza melodia</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Wild Turkey	<i>Meleagris gallopavo</i>
Common Grackle	<i>Quiscalus quiscula</i>	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Common Yellowthroat	<i>Geothlypis trichas</i>	Mammals	
Downy Woodpecker	<i>Picoides pubescens</i>	Coyote	<i>Canis latrans</i>
Eastern Phoebe	<i>Sayornis phoebe</i>	Eastern Chipmunk	<i>Tamias striatus</i>
European Starling	<i>Sturnus vulgaris</i>	Gray Squirrel	<i>Sciurus carolinensis</i>
Gray Catbird	<i>Dumetella carolinensis</i>	Raccoon	<i>Procyon lotor</i>
Hairy Woodpecker	<i>Picoides villosus</i>		