



**DANCE
ENVIRONMENTAL
INC.**

**Scoped E.I.S.
Craigholme Estates: Phase 6
Belmont, Central Elgin,
County of Elgin, ON.**

**Prepared for
Craigholme Estates Limited**
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DE-419

1.0 BACKGROUND

Craigholme Estates Limited is applying for approval to proceed with Phase 6 of the Craigholme development located in Belmont, Central Elgin , ON.

An EIS was prepared in 2008 which addressed the Phase 5 and 6 lands (Stantec 2008). Since the 2008 EIS is out of date a new EIS has been requested and it is prepared in accordance with policies of Section 3.4 of the current Central Elgin Official Plan (2013).

A Terms of Reference (TOR) for the current Scoped EIS was submitted, with Jim McCoomb, Planner, indicating on March 21, 2017 that the Terms of Reference were acceptable. The TOR are contained in Appendix 1.

On October 30, 2017, an Issues Scoping Report (ISR) was submitted to Mr. McCoomb for review. The ISR is also present in Appendix 1.

In late Winter 2017, Dance Environmental Inc. was retained by Craigholme Estates Limited to prepare the updated EIS and to provide ecological advice to the project team.

2.0 DESCRIPTION OF THE NATURAL ENVIRONMENT

2.1 Existing Information Research

2.1.1 Methods

The 2008 Stantec EIS report was reviewed.

MNRF was requested to undertake an initial SAR Screening.

Fisheries data were requested from the KCCA.

On-line data were reviewed: DFO fish and mussel location mapping and the MNRF Make-a-map: Natural Heritage Areas data base was checked on April 13/17 for features present in squares: 17MH9147, 17MH9148, 17MH9247 and 17MH9248.

Natural heritage feature and function mapping and text present in the Central Elgin and County of Elgin Official Plans were reviewed.

A map of lands regulated by the Kettle Creek Conservation Ontario Regulation 181/06 was provided by Joe Gordon of the KCCA.

2.1.2 Findings

2.1.2.1 Stantec Report (2008)

The Stantec reported on policies and inventory results from two site visits. May 14 and July 10, 2007. This study prepared an ELC map and listed plant species observed across the Phase 5 and 6 lands and within 120m, but did not indicate in which ELC units the plant species occurred.

A breeding bird survey was not completed by Stantec.

2.1.2.2 MNRF Initial SAR Screening

Known occurrences of Species at Risk from the general project area were provided, these included: Butternut, Barn Swallow, SAR bats and Wood Thrush (email from Kathryn Markham, MNRF Biologist to K.W. Dance, June 30, 2017).

2.1.2.3 Fisheries

KCCA file data indicates that warm water minnow, sucker, darter and sunfish species dominate Kettle Creek in the vicinity of Belmont.

There is no fish habitat on the Phase 6 lands, but the main branch of Kettle Creek is located approximately 100m south of the southern boundary of the Phase 6 lands.

The DFO SAR fish and mussel mapping does not show any SAR within 100m of the Phase 6 lands.

2.1.2.4 NHIC Make-a-map SAR Data

The four records in the NHIC data base are from 1990 or earlier. Two species are hawthorns, along with Swamp Agrimony and Woodland Vole.

2.1.2.5 Official Plans

Review of the local municipal and county Official Plans indicates that the Kettle Creek valley is designated Natural Heritage with a Natural Hazard overlay in the Central Elgin OP. A Woodland is mapped on the adjacent off site property near the southwestern margin of the Phase 6 lands and along the Kettle Creek valley south of the Phase 6 lands on the County of Elgin OP, Appendix 1 Natural Heritage Features and Areas map. No PSWs nor ANSI are shown to be present on or near the present study area.

2.1.2.6 KCCA Regulation 181/06

Figure 1 shows the locations and extent of lands in the study area that are regulated by the KCCA.

2.2 Site Inventory

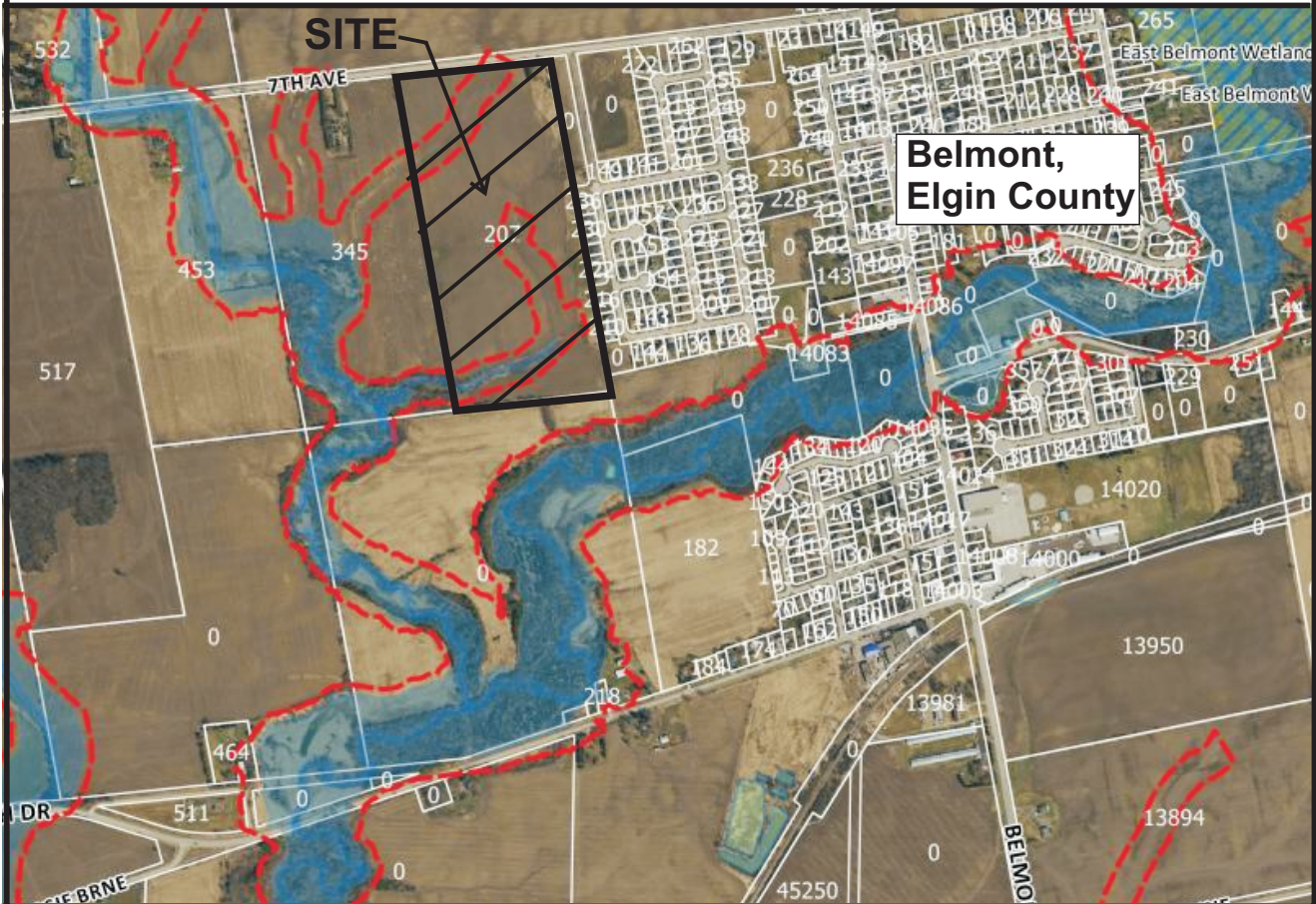
2.2.1 Methods

2.2.1.1 Dates of Site Visits



Table 1 lists site visit dates, times, weather and purposes of the site visit. Site visits were conducted between April 8 and September 11, 2017.

An initial site visit, along with a review of historical records from NHIC for the 10x10 km squares in which the study area is located were used to determine the surveys to be conducted. The methodological approaches used to complete flora and wildlife surveys are provided in detail below.

FIGURE 1. Natural Features and KCCA Regulated Areas Within Craigholme - Phase 6 Study Area.



LEGEND

- #1** Features Number
-  KCCA Regulation Limit
-  Flood Hazard Limit
- Wetlands (PSW)
- 

Disclaimer: The KCCA disclaims explicitly any warranty, representation or guarantee as to the content, sequence, accuracy, timeliness, fitness for a particular purpose, merchantability or completeness of any of the data depicted and provided therein. The KCCA assumes no liability for any errors, omissions or inaccuracies in the information provided herein and further assumes no liability for any decisions made or actions taken or not taken by any person in reliance upon the information and data furnished hereunder.

Imagery: 2015 SWOOP

Date: April 20, 2017

ONTARIO REGULATION 181/06

Development, Interference with Wetlands and Alterations to Shorelines and Watercourses

Base map source:
 **Kettle Creek**
 Conservation Authority



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May 9, 2017.

2.2.1.2 Vegetation

Vascular Plant Inventory and ELC Community Identification

Detailed vascular plant surveys were conducted during Spring, Summer and Autumn (see Table 1 for dates) to develop a list of plant species present within the study area. The plant surveys also focused on determining whether any regionally or provincially rare plants were present within the study area.

The findings of the vascular plant inventory conducted within the study area boundaries were used to assist with the determination of ELC polygons within and adjacent to the study area. Vegetation community mapping used the Ecological Land Classification (ELC) methods described in Lee et al. (1998), with vegetation community types being classified using Harold Lee's 2008 update to the ELC vegetation community types and community codes (Lee 2008).

Searches for Butternut trees were conducted by BHA assessor #241, K.W. Dance, during the growing season of 2017. No Butternuts were found in the study area.

2.2.1.3 Wildlife

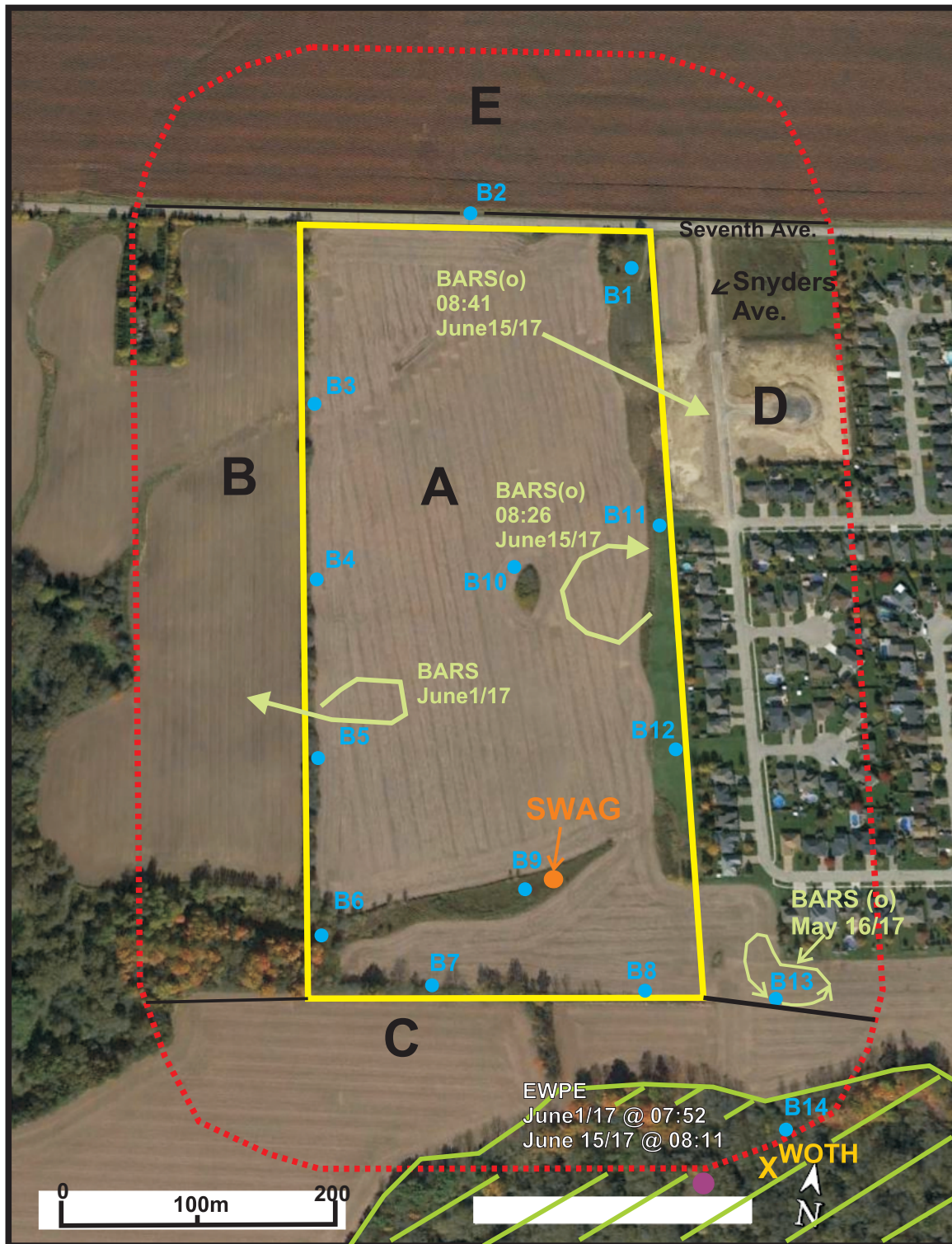
2.2.1.3.1 Breeding Birds

Breeding bird surveys conducted in 2017 were completed following the breeding bird survey protocol used for the Ontario Breeding Bird Atlas (OBBA 2001). The breeding bird surveys focused on assessing the breeding bird activity within the study area over two survey visits, at least 10 days apart. All visits were conducted during early morning hours between a half hour before sunrise and 09:00 hrs. The breeding bird surveys involved a Dance Environmental Inc. biologist recording birds present at point count locations spread throughout the study area. Birds seen while walking between point count stations were also recorded. Figure 2 shows the locations of the 14 point count stations.

All bird species observed or heard within the study area during each breeding bird site visit were recorded. Any birds which were observed or heard within the study area boundaries, but outside of when the breeding birds surveys were being conducted, were recorded as incidental observations. If any Species at Risk were observed, their locations were to be mapped and any details of the observations recorded.

Surveys for crepuscular birds (Common Nighthawk and Eastern Whip-poor-will) were not conducted because there were no historical records for these species and suitable undisturbed habitat was not present.

Figure 2. Bird Inventory Stations & SAR Observation Locations, Craigholme Estates Phase 6, 2017.



Approximate Site Area Boundary



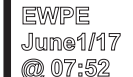
Approximate 120m from Site Area Boundary



Approximate Breeding Bird Point Count Location



Barn Swallow Observations



Eastern Wood-pewee Observations



Wood Thrush May 16/17



Swamp Agrimony



Wildlife Polygon Boundary



Significant Wildlife Habitat for EWPE



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Dec. 4, 2017
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2.2.1.3.2 Reptiles and Amphibians

No formal turtle surveys were conducted on the site lands since there are no ponds present on the site.

If turtle nests had been observed in the field that comprises the subject lands they would have been mapped and described. No turtle nests were found, however, during the 2017 study period.

Within the study area, searches for reptiles and amphibians were undertaken on several survey dates. Logs, leaf mould, debris and stones were lifted to search for herptiles.

Early Spring season visits were made on warm sunny days to check for snakes emerging from hibernation sites.

Locations checked were the north bank of Kettle Creek, soil piles along the eastern margin of the site, hedgerows along the western and southern margin of the site and the former farmstead site in the northeastern corner of the Phase 6 lands. Visits to search for emerging snakes were conducted on April 8, 17, 23 and May 16, 2017.

During the early Spring searches for snakes when vegetation die back produced suitable visibility searches for American Badger dens were also conducted. Searches were concentrated around the site margins, but the entire site field was walked during Spring/early Summer 2017.

While searching site margins for snakes and badger holes the trees present were evaluated for potential as bat maternity roosts considering tree diameter, presence/absence of cavities and loose bark.

Insects (butterflies, dragonflies and damselflies) were documented when observed during Spring through Autumn visits. Some were captured in an insect net for identification before release on site.

Drainage, vegetation, wildlife, and woodland features on and adjacent to the Phase 6 lands site were examined and recorded during site visits.

**TABLE 1. Dates, Times and Durations of Inventory Site Visits to Phase 6
Craigholme Estates Study Area, 2017.**

DATE (2017)	START	END	Weather	STAFF	Purpose of Visit
April 8	14:43	16:48	- sun, no cloud, 14°C, wind Beauf. 2, dry	KWD, JLD	- search for emerging snakes and badger dens and birds
April 17	13:01	15:05	- sun, <5% cloud, 13 °C, wind Beauf. 2, dry	KWD, JLD	- search for emerging snakes and badger dens and birds
April 23	14:32	15:53	- sun, <5% cloud, 18 °C, wind: Beauf. 1, dry	KWD JLD	- search for emerging snakes and badger dens, birds, Spring wildflowers
May 16	11:08	14:23	- overcast, 16 °C, wind Beauf. 1, dry	KWD	- bird migration, snakes, badger dens, Spring wildflowers
June 1	06:45	09:01	- cloud 60%, no wind, 13 °C at start; 16 °C and sun at end	KWD, JLD	- breeding bird survey
June 15	06:16	08:46	- 100% cloud, 16°C, wind: Beauf. 2, dry	KWD	- breeding bird survey
July 24	10:40	11:49	- 100% cloud, 22°C, wind: Beauf. 2 to 3, dry	KWD	- vegetation, birds, insects
Aug. 8	10:50	14:58	- 5% cloud, sunny, 21°C, wind: Beauf. 2, dry	KSD KWD	- ELC mapping, plant & wetland soils inventory, birds & insects
Sept. 11	10:10	12:45	- 30% cloud, 21°C, Wind: Beauf. 1, dry	KWD	- flag wetland edge for survey, plant and insect inventory.

LEGEND

KWD = Ken Dance, M.Sc.
KSD = Kevin Dance M.E.S.
JLD = Janet Dance

2.2.2 Site Inventory Findings

2.2.2.1 Vegetation

Figure 3 shows the locations and extents of ELC polygons.

The site is covered principally by an annual row crop field that was planted to soybeans in 2017.

Narrow buckthorn deciduous hedgerows are present along the western and southern site margins. A mixed mineral meadow marsh wetland transverses the southwestern corner of the site. The margins of this wetland unit were flagged by Dance Environmental Inc. and were checked by representatives of Central Elgin (James McCoomb and Lloyd Perrin) on September 11, 2017 before the OLS surveyed and plotted the wetland boundary.

The list of plant species found in specific ELC units is contained in Appendix 2.

The only uncommon species found is Swamp Agrimony (*Agrimonia parviflora*). This plant was found in the on site meadow marsh. It had been found by Stantec in 2007 along the northern Kettle Creek bank south of the Phase 5 lands, but not at that time on the Phase 6 lands.

No Butternut trees, nor uncommon hawthorn trees were found on the Phase 6 lands.

2.2.2.2 Wildlife

Breeding Birds

Table 2 lists the bird species seen during the April to September 2017 period. Those seen during the breeding season are identified by a “B” in Table 2. The bird polygon locations are shown on Figure 2. The greatest variety of birds were observed in Polygon C, associated with the Kettle Creek valley, located 50m or more from the southern margin of the proposed subdivision.

Two Special Concern species were found in Polygon C. These were: Wood Thrush present during Spring migration, but not during the breeding season, and Eastern Wood-Pewee which was present during both breeding bird surveys.

Barn Swallow, a Threatened species in Ontario and Canada, was observed overhead of the site and in off site polygons during the breeding season. There was no evidence of the species nesting on the site and no suitable nesting structures occur on site.

Reptiles and Amphibians

No snakes were found emerging from hibernation during 4 Spring surveys. No reptiles and amphibians were observed on site until August 8, 2017, when one Eastern Gartersnake, 1 American Toad and 3 Northern Leopard Frogs were seen. The amphibians were present in the meadow marsh habitat.

Figure 3. ELC Vegetation Communities, Craigholme Estates Phase 6, 2017.



LEGEND

- = Approximate Study Area Boundary
- = Approximate 120m from Study Area Boundary
- = Approximate ELC Polygon Boundaries

CODE DESCRIPTION

CODE	DESCRIPTION
THDM3-1	Buckthorn Deciduous Hedgerow Thicket
THDM2-6	Buckthorn Deciduous Shrub Thicket
THDM3	Dry-Fresh Deciduous Hedgerow Thicket Ecosite
FODM5-2	Dry-Fresh Sugar Maple-Beech Deciduous Forest Type
FODM7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest Type
MEFM1	Dry-Fresh Forb Meadow
MAMM3-1	Mixed Mineral Meadow Marsh Type
OAGM1	Annual Row Crops

Table 2. Bird Inventory Results: Craigholme Estates Phase 6, 2017.

Scientific Name	Common Name	Dance Environmental Biologist Observations, 2017					GRANK	SRANK	COSEWIC	SARO
		A	B	C	D	E				
<i>Branta canadensis</i>	Ducks, Geese & Swans									
	Canada Goose	B					G5	S5		
<i>Meleagris gallopavo</i>	Partridges, Grouse & Turkeys									
	Wild Turkey		B				G5	S5		
<i>Cathartes aura</i>	VULTURES									
	Turkey Vulture	W(o), S(o)		S(o)			G5	S5B		
<i>Accipiter cooperii</i> <i>Buteo jamaicensis</i>	HAWKS, KITES & EAGLES									
	Cooper's Hawk			B(o)			G5	S4	NAR	NAR
	Red-tailed Hawk			S,B			G5	S5	NAR	NAR
<i>Charadrius vociferus</i>	PLOVERS									
	Killdeer	W(o),S,B		B(o)			G5	S5B, S5N		
<i>Actitis macularia</i> <i>Gallinago delicata</i>	SANDPIPERS & PHALAROPES									
	Spotted Sandpiper		B				G5	S5		
	Wilson's Snipe	S					G5	S5B		
<i>Larus delawarensis</i>	GULLS, TERNS & SKIMMERS									
	Ring-billed Gull	W(o)		S(o)			G5	S5B, S4N		
<i>Zenaida macroura</i>	PIGEONS & DOVES									
	Mourning Dove	W,S,B,P(o)		S	S,B		G5	S5		
<i>Archilochus colubris</i>	HUMMINGBIRDS									
	Ruby-throated Hummingbird	P					G5	S5B		
<i>Ceryle alcyon</i>	KINGFISHERS									
	Belted Kingfisher			B(o)			G5	S4B		
<i>Melanerpes carolinus</i> <i>Picoides pubescens</i> <i>Colaptes auratus</i>	WOODPECKERS									
	Red-bellied Woodpecker		B	S,B			G5	S4		
	Downy Woodpecker	S,B,P	B	S			G5	S5		
	Northern Flicker		B	S,B			G5	S4B		
<i>Contopus virens</i> <i>Empidonax minimus</i> <i>Myiarchus crinitus</i> <i>Tyrannus tyrannus</i>	TYRANT FLYCATCHERS									
	Eastern Wood-Pewee			B			G5	S4B	SC	SC
	Least Flycatcher			S,B			G5	S4B		
	Great Crested Flycatcher		B	B			G5	S4B		
	Eastern Kingbird	P	B				G5	S4B		
<i>Vireo gilvus</i> <i>Vireo olivaceus</i>	VIREOS									
	Warbling Vireo		B	B			G5	S5B		
	Red-eyed Vireo			S,B			G5	S5B		
<i>Cyanocitta cristata</i> <i>Corvus brachyrhynchos</i>	CROWS & JAYS									
	Blue Jay		B	S,B			G5	S5		
	American Crow		B	W,S,B			G5	S5B		
<i>Eremophila alpestris</i>	LARKS									
	Horned Lark	W,S,B	B			W	G5	S5B		
<i>Tachycineta bicolor</i> <i>Hirundo rustica</i>	SWALLOWS									
	Tree Swallow			S			G5	S4B		
	Barn Swallow	B(o),F(o)	B(o)	S	S,B(o)		G5	S4B	T	THR
<i>Poecile atricapillus</i>	CHICKADEES & TITMICE									
	Black-capped Chickadee	W,B	B	S,B			G5	S5		
<i>Sitta canadensis</i> <i>Sitta carolinensis</i>	NUTHATCHES									
	Red-breasted Nuthatch			S			G5	S5		
	White-breasted Nuthatch	S	B	S,B			G5	S5		
<i>Troglodytes aedon</i>	WRENS									
	House Wren		B	S,B			G5	S5B		
<i>Regulus calendula</i>	KINGLETS									
	Ruby-crowned Kinglet	S					G5	S4B		
<i>Poliophtila caerulea</i>	GNATCATCHERS									
	Blue-gray Gnatcatcher			S			G5	S4B		
<i>Catharus ustulatus</i> <i>Catharus guttatus</i> <i>Hylocichla mustelina</i> <i>Turdus migratorius</i>	THRUSHES									
	Swainson's Thrush			S			G5	S4B		
	Hermit Thrush	S					G5	S5B		
	Wood Thrush			S			G5	S4B	T	SC
	American Robin	W,S,B,P	B	S,B	S,B	B(o)	G5	S5B		

Scientific Name	Common Name	Dance Environmental Biologist Observations, 2017					GRANK	SRANK	COSEWIC	SARO
		A	B	C	D	E				
	MOCKINGBIRDS & THRASHERS									
<i>Dumetella carolinensis</i>	Gray Catbird	B	B	S,B			G5	S4B		
	STARLINGS									
<i>Sturnus vulgaris</i>	European Starling	B	B	S(o)	S,B	B(o)	G5	SNA		
	WAXWINGS									
<i>Bombycilla cedrorum</i>	Cedar Waxwing	B,P		S,B			G5	S5B		
	WOOD-WARBLERS									
<i>Vermivora ruficapilla</i>	Nashville Warbler			S			G5	S5B		
<i>Parula americana</i>	Northern Parula			S			G5	S4B		
<i>Dendroica petechia</i>	Yellow Warbler	S,B	B	S,B			G5	S5B		
<i>Dendroica pensylvanica</i>	Chestnut-sided Warbler			S			G5	S5B		
<i>Dendroica magnolia</i>	Magnolia Warbler			S			G5	S5B		
<i>Dendroica coronata</i>	Yellow-rumped Warbler			S			G5	S5B		
<i>Dendroica virens</i>	Black-throated Green Warbler			S			G5	S5B		
<i>Dendroica castanea</i>	Bay-breasted Warbler			S			G5	S5B		
<i>Dendroica striata</i>	Blackpoll Warbler			S			G5	S4B		
<i>Mniotilta varia</i>	Black-and-white Warbler			S			G5	S5B		
<i>Setophaga ruticilla</i>	American Redstart		B	S,B			G5	S5B		
<i>Geothlypis trichas</i>	Common Yellowthroat	B	B				G5	S5B		
	SPARROWS									
<i>Spizella passerina</i>	Chipping Sparrow	B	B	S	S,B		G5	S5B		
<i>Spizella pusilla</i>	Field Sparrow		S				G5	S4B		
<i>Passerculus sandwichensis</i>	Savannah Sparrow	S,B	B			B	G5	S4B		
<i>Melospiza melodia</i>	Song Sparrow	S,B,P	B	S,B	B		G5	S5B		
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow			S			G5	S4B		
<i>Junco hyemalis</i>	Dark-eyed Junco	W		S			G5	S5B		
	CARDINALS & ALLIES									
<i>Cardinalis cardinalis</i>	Northern Cardinal	S	B	S,B			G5	S5		
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak		B	S,B	S		G5	S4B		
<i>Passerina cyanea</i>	Indigo Bunting		B				G5	S4B		
	BLACKBIRDS									
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	W,S,B	B	B	S,B	B	G5	S4		
<i>Quiscalus quiscula</i>	Common Grackle	W,B,P		S,B	S,B	B(o)	G5	S5B		
<i>Molothrus ater</i>	Brown-headed Cowbird	S,B	B	S	S,B		G5	S4B		
<i>Icterus galbula</i>	Baltimore Oriole		B	S,B			G5	S4B		
	FINCHES									
<i>Carpodacus mexicanus</i>	House Finch	W,S,B			S,B		G5	SNA		
<i>Carduelis tristis</i>	American Goldfinch	S(o),B(o),P(o)	B	S(o)	S,B	B(o)	G5	S5B		
	OLD WORLD SPARROWS									
<i>Passer domesticus</i>	House Sparrow	B		S	S,B		G5	SNA		

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Study Polygons	Location
<u>Polygon</u>	
A	Site Including West and South Hedgerows
B	Off Site to the West
C	Off site to the South
D	Off site to the East
E	Off Site to the North
Note: see Figure _ for Polygon Locations	
S = Spring (April 8, 17, 23 and May 16, 2017)	
B = Breeding (June 1, 15, 2017)	
P = Post-Breeding season (July 25, and August 8, 2017)	
W = Winter (March 8, 2017)	
S-Rank (Provincial)	
SNA = A status rank is not applicable because the species is not a suitable target for conservation activities	
S4 (Apparently Secure= Uncommon but not rare; some cause for long-term concern due to declines or other factors)	
S5 (Secure)= Common, widespread, and abundant in the nation or state/province	
COSEWIC	
T (Threatened)= A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction	
SC = A wildlife species that may become threatened or endangered because of a combination of characteristics and identified threats to the species	
SARO	
TH (Threatened) = A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed	
SC = A species with characteristics that make it sensitive to human activities or natural events	
NAR = Species is currently not at Risk of extirpation or extinction	

Mammals

Only common mammals were observed: Eastern Cottontail, Raccoon, Coyote and White-tailed Deer. There was no evidence of American Badger nor Woodland Vole in the study area.

Insects

Only common butterflies were found: Cabbage White, Red-spotted Purple, Black Swallowtail, Viceroy, and Monarch. Black Saddlebags and Twelve-spotted Skimmer, adult dragonflies were observed.

Figure 2 shows the locations of sightings of the Threatened and Special Concern animal species and the uncommon Swamp Agrimony from the 2017 inventory results.

2.2.2.3 Physical Findings

Figure 1 shows that the site drains southwesterly and flows off site into an unnamed tributary of the main branch of Kettle Creek.

There are no ponds on site, but there is seasonal flow through the meadow marsh drainage feature that transverses the southern portion of the site.

The Strik Baldinelli Moniz Servicing and Stormwater Feasibility Study (2019) indicates that the site is assumed to have soils typical of Hydrologic Soil Group D characteristics.

2.2.2.4 Provincial Policy Statement Factors: Habitat of Endangered and Threatened Species

Barn Swallow (Threatened)

During the 2017 breeding season, Barn Swallows were observed foraging over the site and other off site fields and within the existing Craigholme Estates subdivision. See Figure 2 for locations. No nest sites, nor habitat for nests were found on the site. The site would be considered a Habitat Category 3 area (OMNR 2013).

Habitat of Special Concern Species

Eastern Wood-Pewee (Special Concern)

During the June 1 and 15, 2017 breeding bird inventories this bird species was heard calling slightly more than 120m from the southern site boundary in the wooded Kettle Creek valley.

Breeding by this species is assumed to have occurred off site during 2017. The FODM5-2 and FODM7-4 off site forest habitats shown on Figure 3 (ELC Map) are considered to be the breeding habitat for the Eastern Wood-Pewee.

Wood Thrush (Special Concern)

This species was present only during Spring migration, there were no occurrences during the breeding season. The FODM5-2 and FODM7-4 off site forest habitats would also provide habitat for Wood Thrush.

Monarch (Special Concern)

Adult Monarchs were observed in the meadow marsh. Here there were larval food plants (Common Milkweed) and nectar plants for adults eg. asters and goldenrods. Figure 3 shows the extent of the meadow marsh where Monarch sightings were concentrated.

Significant Wetlands and ANSIs

The County of Elgin Official Plan (2015) Appendix #1 Natural Heritage Features and Areas map indicates that there are neither PSWs nor ANSIs present in the study area.

Section D1.2.2.3 of the 2015 County of Elgin OP indicates that “locally significant or unevaluated wetlands may be identified and incorporated into the County’s natural heritage system in accordance with Section D1.2.4” of the OP.

Section D1.2.4 indicates the intention to consider establishment of a natural heritage system at the time of the next Official Plan Review.

Significant Woodlands

Elgin County considers that any woodland 10ha or greater in area is a significant woodland. The appendix #1 Natural Heritage Features and Areas map included in the 2015 Elgin County OP shows the THDM2-6 vegetation unit located off site of the southwestern corner of the Phase 6 lands to be part of a significant woodland polygon which continues to the southwest and joins the significant woodland polygon present along Kettle Creek.

Fish Habitat

As noted earlier, the main branch of Kettle Creek provides warm water fish habitat. There is no fish habitat on site, nor within 120m of the site in the intermittent drainage course that drains from the southwestern corner of the Phase 6 lands.

Significant Valleylands

The Elgin OP Section D1.2.2.7 provides a definition of significant valleylands. All valleylands which have a well-defined slope, with water flow and an average width of 25m or more are significant.

There are no significant valleylands on site, but the valley of Kettle Creek located approximately 100m south of the southern margin of the Phase 6 lands would be considered to be significant valleylands.

Significant Wildlife Habitat

Wildlife habitat was investigated in the study area to identify candidate Significant Wildlife Habitat (SWH). The ELC community mapping was used as the basis for determining the presence (or absence) of candidate SWH.

Section 9 and Figure 9-1 of the Natural Heritage Reference Manual (2010), the Significant Wildlife Habitat Technical Guide and Appendices A through R MNR (2000), and the Ecoregion Criteria Schedule for Ecoregion 7E (MNR 2015) were used to complete these assessments.

All of the ELC ecosite occurrences on the site and within 120m in the study area, are common in Ecoregion 7E and thus are not considered rare vegetation communities (MNR 2015).

Schedule 3: Ecoregion 7E Criteria for seasonal concentration areas, specialized wildlife habitat for Species of Conservation Concern and animal movement corridors were examined. Each set of habitat factors was evaluated, guided by the content of the Ecoregion 7E Criterion Schedule (MNR 2015). As part of the impact assessment, each section of the Criterion Schedules of the Significant Wildlife Habitat Technical Guide are assessed as follows.

Regarding Section 1.1 of the 7E Schedule Seasonal Concentration Areas of Animals: none of the 14 criteria were found to occur in the present area in 2017. Stantec (2008) also did not report any seasonal concentration areas of animals.

Following a review of the ELC inventory results, it was concluded that none of the rare vegetation communities listed in Section 1.2.1 of the 7E Schedule occur on the site or within 120m.

A review of the ELC vegetation data and the wildlife inventory results revealed that there are no Section 1.2.2 Schedule 7E criteria met in the study area.

Section 1.2.2 of the 7E Schedule Ecoregion contains 8 criteria about Specialized Habitat for Wildlife which were evaluated.

Waterfowl Nesting Area

None of the target waterfowl species were present within the study area during the breeding season and the habitat adjacent to the small on site meadow marsh was soybean field in 2017. No candidate nor confirmed SWH for this factor.

Bald Eagle and Osprey Habitat

Neither of these species were observed during the study and no nests of these two species were seen and none are known from the study area. No candidate nor confirmed SWH for this factor.

Woodland Raptor Nesting Habitat

There is no forest interior habitat on or within 120m of the site. Both Red-tailed Hawk and Cooper's Hawk were observed off site in the Kettle Creek valley during the breeding season, but no raptor stick nests were observed within the off site 120m radius of the site.

There is not confirmed SWH for this factor.

Turtle Nesting Areas

There are no exposed sand or gravel areas in the study area – the soils are dense clay.

No adult turtles and no turtle nests were observed during the numerous site visits during the growing season. No candidate nor confirmed SWH for this factor.

Seeps and Springs

The seep which contributes water to the on site MAMM3-1 meadow marsh is not surrounded by forest cover, rather grasses and herbs dominate. Small numbers of Wild Turkey and White-tailed Deer have been observed in the area and may drink from this feature.

The on site seep is a single diffuse seepage area, but does not have 2 or more seeps or springs, so it is not confirmed SWH for this factor.

Amphibian Breeding Habitat: Woodland or Wetland

The site and off site within 120m does not have woodland pond or pool habitat and the indicator species were not observed in the study area in 2017.

Although a meadow marsh feature is present on site there are no pools or ponds within the wetland deep enough to support wetland amphibian breeding. No eggs nor tadpoles were observed in the meadow marsh and only on one date (August 8, 2017) were 1 American Toad adult and 3 Northern Leopard Frog adults observed from habitat greater than 120m from the site. No confirmed SWH for this factor.

Woodland Area – Sensitive Bird Breeding Habitat

None of the target bird species for this factor were present in the study area during the breeding season, see Table 2.

There is no interior forest habitat located on or within 120m of the site. No candidate, nor confirmed SWH for this factor.

Section 1.3 Habitat for Species of Conservation Concern has five criteria which were evaluated as follows.

Marsh Breeding Bird Habitat

Although the small polygon of Meadow Marsh habitat is present on site, none of the indicator breeding bird species were present. This means that SWH for this factor is not confirmed.

Open Country Bird Breeding Habitat.

A small polygon of forb meadow is present along the eastern margin of the site, where weeds, wild grasses and some turf grass have grown upon soil piles left by previous subdivision construction. Much of this area is mowed short, so it has virtually no value as open country bird breeding habitat.

Only one indicator breeding bird species, Savannah Sparrow was found in the onsite fields and off site fields to the west. Our experience is that this species will nest on the margins of grain and soybean fields in addition to open country meadows.

To qualify as SWH the meadow area has to have 2 or more of the listed indicator bird species present and the study area has only 1 species: Savannah Sparrow.

So, the study area does not have confirmed SWH.

Shrub/Early Successional Breeding Bird Habitat

Some Buckthorn Deciduous Shrub Thicket is present off site to the west of the southwestern corner of the Phase 6 lands, see Figure 3.

The only observation of a shrub/early successional bird species was a calling Field Sparrow during the Spring season at a location off site to the west. This species was not observed during the breeding season.

The required number of indicator bird species was not found during the breeding season, so there is not confirmed SWH for this factor.

Terrestrial Crayfish

The Meadow Marsh habitat present is potential habitat for these crayfish. Despite many checks of the Meadow Marsh no terrestrial crayfish, no chimneys and no burrows were observed. So, there is not confirmed SWH for this factor

Special Concern and Rare Wildlife Species

The three Special Concern species: Eastern Wood-Pewee, Wood Thrush and Monarch were addressed briefly in Report Section 2.2.2.4, but more detail is provided here.

Eastern Wood-Pewee (EWPE)

As can be seen on Figure 2, the locations of calling EWPE on June 1 and 15, 2017 were slightly more than 120m from the southern margin of the Phase 6 lands. The ELC Vegetation Communities map (Figure 3) indicates that the treed polygons present in the Kettle Creek valley south of the site are Sugar Maple – Beech and Black Walnut Deciduous forest. Both of these polygons could provide habitat for the EWPE that appeared to be present on a breeding territory in 2017.

Tables Q-3 and Q-4 in the Significant Wildlife Habitat Guide (SWHTG) (OMNR 2000) were considered relative to EWPE and habitat conditions in the Kettle Creek valley. Given the extensive wooded area along the valley, the presence of water which supports a significant food source, the presence of mature tree canopy, breeding season use by EWPE and the relatively well protected nature of the wooded feature it is concluded that the deciduous forest habitat associated with the Kettle Creek Valley is considered to be confirmed SWH for EWPE.

The FODM5-2 and FODM7-4 forest polygons shown on Figure 3 would be SWH for EWPE in the study area.

Wood Thrush (WOTH)

Since WOTH was only recorded during the Spring migration season, the off site forest habitat present in the Kettle Creek valley is not confirmed SWH for WOTH breeding.

Monarch (MONA)

Tables Q-3 and Q-4 in the SWHTG (OMNR 2000) were considered relative to the Monarch and habitat conditions on site. The MEFM1 dry-fresh forb meadow present along the eastern margin of the Phase 6 site did not have significant number of Monarchs present.

The MAMM3-1 meadow marsh vegetation unit, however, had hundreds of Common Milkweed plants present. This plant species is used by Monarchs as an egg laying site and a larval food source.

A check of 20 Common Milkweed plants present in the Meadow Marsh on August 8, 2017 found 6 eggs and 1 adult Monarch to be present.

On July 24 and on September 11, 2017 one adult Monarch was observed feeding on a flower in the Meadow Marsh.

The occurrence of Monarch on three dates in the Meadow Marsh habitat reflects the presence of egg laying, larval and adult feeding habitat.

Single adult Monarchs were observed flying across the study area on two dates: July 24/17 flying from the southern end of Snyders Ave. toward the southwestern corner of Phase 6 and on August 8/17 one was flying in the northeastern corner of the Phase 6 lands. These Monarchs were moving through the area and were not observed to be stopping at specific habitat features.

Considering Tables Q-3 and Q-4 of the SWHTG the presence of numerous larval and adult food plants, connections to treed areas of tributaries to Kettle Creek the size of the habitat polygons offered by connections to the Kettle Creek valley, and confirmed egg laying and adult nectaring it is concluded that the Meadow Marsh unit is confirmed SWH for the Monarch butterfly.

Uncommon Plant Species

Swamp Agrimony *Agrimonia parviflora* was found to be growing in the Meadow Marsh during 2017 inventories. This species was found by Stantec in wet areas of the Kettle Creek Valley (Stantec 2000).

This plant species requires damp soils and is considered to be a Vulnerable Species in Elgin County. See Figure 2 for the location of the plant in 2017.

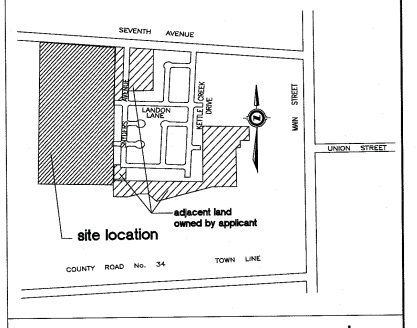
3.0 DESCRIPTION OF THE DEVELOPMENT PROPOSAL

A 284 lot residential development is proposed, with 236 single family and 48 semi-detached units proposed, see Figure 4. Municipal water and sewage services will be relied upon.

Stormwater management and storm servicing is described in the Strik Baldinelli Moniz (SBM) (2019) report. Extracts from the SBM report are as follows:
“The following SWM management criteria were established for this site:

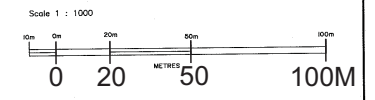
- Quality Controls
 - The post-development flows generated from the site during the 2-year to 100-year design storms are to be attenuated to the pre-development levels.
- Grading and Drainage Controls
 - Grading will direct overland flows to the proposed on-site dry pond and released to the existing creek/wetland via outlets within the SWM Block matching pre-development levels or less for each storm event.
- Quality Controls
 - A normal level of stormwater quality control (70% total suspended solids [TSS] removal) is proposed on site and will be accomplished through a treatment train approach using soakaway pits, snouts in road catch basins and Oil/Grit Separator (OGS) units” SBM (2019).

**FIGURE 4.
CRAIGHOLME ESTATES
PHASE 6 DRAFT PLAN.**



key plan nts

**DRAFT PLAN OF
SUBDIVISION**
PART OF LOT 2, CONCESSION 7
MUNICIPALITY OF CENTRAL ELGIN
FORMERLY VILLAGE OF BELMONT
COUNTY OF ELGIN



OWNER'S CERTIFICATE
I hereby authorize Mr. Donald D. Leahy to submit this proposed Plan of Subdivision.

MR. JOE SNYDERS
CRAIGHOLME ESTATES LTD. DATE

SURVEYOR'S CERTIFICATE
I hereby certify that the boundaries of the land to be subdivided as shown on the plan and their relationship to adjacent lands are accurately and correctly shown.

BLAKE VAN DER VEEN
ONTARIO LAND SURVEYOR DATE

- REQUIREMENTS UNDER SECTION 51(17) OF THE PLANNING ACT**
- a) AS SHOWN ON PLAN
 - b) AS SHOWN ON PLAN
 - c) AS SHOWN ON KEY PLAN
 - d) SINGLE DETACHED RESIDENTIAL
 - e) AS SHOWN ON PLAN
 - f) AS SHOWN ON PLAN
 - g) AS SHOWN ON PLAN
 - h) PIPED WATER
 - i) CLAY LOAM (30% POROSITY)
 - j) AS SHOWN ON PLAN
 - k) FULL SERVICES
 - l) AS SHOWN ON PLAN

LAND USE SCHEDULE

SINGLE DETACHED RESIDENTIAL LOTS 1 -	Ha
STORM WATER MANAGEMENT BLOCK	Ha
FUTURE ROADS, RESERVES BLOCKS	Ha
TOTAL AREA	Ha

CRAIGHOLME ESTATES LIMITED
BELMONT, ONTARIO

Base map source: March 2019

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Drawn By: FS Checked By: DV Date: 19/02/13

File No.: 43900-101
Job No.: 95-009RU

DANCE ENVIRONMENTAL INC. DE-419
Mar. 18/19

- LEGEND**
- Staked, surveyed & plotted wetland boundary
 - Upslope edge of 15m wide wetland buffer
 - 5m wide buffer from approximate tree dripline.

Quantity Control

The post-development flows generated from the site during the 2-year design storm are to be attenuated to the 2-year pre-development levels via a 295mm orifice. Larger storms up to the 100-year design storm are to be released at a maximum of 0.65m³/s through the proposed orifice and weir matching pre-development conditions of the site. The outlet pipe will be directed to a spreader swale to distribute the flows to the wetland as sheet flow rather than a concentrated flow.

Through completion of a water balance for the wetland feature, the quantity of additional flows to the upstream portion of the wetland will be accommodated through rear yard drainage, if necessary, a second pipe system conveying clean roof/rear yard water to the feature” (SBM 2019).

The calculated preliminary storage volume, based on the revised draft plan would be sufficient to attenuate the 2 to 100-year design storms to pre-development levels as shown above but would further be refined within detailed design.

Quality Controls

“To achieve quality control for the proposed development, we are proposing a treatment train approach. We will be implementing side and rear yard grassed swales and low-slope grading (where feasible) to promote pre-treated and polishing, increase flow length/time of concentration and promote. It is proposed to implement soakaway pits on each lot to infiltrate 20mm off of the rooftops where grading and groundwater levels allow and snouts within the on street catch basins. Prior to discharging to the existing creek/wetland, an OGS unit will be incorporated downstream of the pond outlet to provide a normal level of treatment (70% T.S.S. removal)” (SBM 2019).

Figure 4 shows the proposed lot fabric, streets and the proposed SWM facilities. Figure 4 shows the proposed development footprint relative to natural heritage features and lands regulated by KCCA.

Hedgerows shared with other landowners along the southern and western site boundaries will be preserved. The meadow marsh feature located in the southern portion of the site will be preserved and protected by a 15m wide undisturbed buffer.

Setbacks of more than 60m separate the closest margin of the Phase 6 lands from the closest northern edge of the Kettle Creek valley and associated vegetated corridor.

Phase 6 development is expected to begin shortly after approval.

4.0 DESCRIPTION OF PROPOSED MITIGATION

Table 3 describes mitigation measures proposed to address impact elements and summarizes the residual impact expected.

Table 4 describes the mitigation measures proposed to address each natural environment feature and function, along with the residual impact expected.

The mitigation measures include timing of vegetation clearing, silt and erosion control measures, setbacks (see Figure 4), buffer zone management: including seeding, preparation of a Homeowners' Manual, and Stormwater Management facilities.

5.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

Table 5 lists the range of impact elements expected to be associated with the Phase 6 development. Among Tables 3, 4, and 5 the expected residual impacts after mitigation is implemented can be determined.

Overall the significant natural environment features and functions will be protected from any significant negative impacts.

The key on site feature, the Meadow Marsh, will be protected from development impacts during construction and will be enhanced by seeding of an undisturbed 15m wide buffer.

The hedgerow located along the southern margin of the subject property will be protected by an un-graded 5m buffer from the dripline of the hedgerow and the woodland trees present in the southwestern corner of the subject lands.

TABLE 3. Mitigation Measures to be Implemented to Address Impact Elements and Residual Impact Expected.

Impact Element	Mitigation What, Where & When	Residual Impact Expected
Vegetation Clearing	<ul style="list-style-type: none"> - across the site, undertake vegetation clearing outside of breeding bird and bat maternity seasons; - protect vegetation to be retained with plastic construction fence and silt control fence or other necessary measures. 	<ul style="list-style-type: none"> - protection of vegetation along new edges from soil compaction over roots and trunk/limb damage; no significant negative impact on features/functions of the woodland – see assessment of wildlife elsewhere.
Hedgerows & Significant Woodland	<ul style="list-style-type: none"> - provide a minimum 5m wide undisturbed buffer from the dripline of the western and southern hedgerows and between any development and the off site Significant Woodland. - both silt control fence and construction fence should be installed at the outer margin of the 5m buffer to protect the trees from sedimentation, grading and machinery impact; - the 5m wide buffer should be allowed to naturalize. 	<ul style="list-style-type: none"> - no impact on site margin hedgerow or off site Significant Woodland.
Lot Grading	<ul style="list-style-type: none"> - mudmat, silt control fencing, protection of catch basins from silt and other temporary erosion and sediment control measures will prevent sedimentation impacts during grading. - new grades route water to the SWM system which controls water quantity within pre-development ranges; - the construction and silt control fencing protects vegetation to be retained from grading intrusion. 	<ul style="list-style-type: none"> - no negative impacts on vegetation to be retained, on hydrology or water quality.
Install Services	<ul style="list-style-type: none"> - silt control fencing, mudmat, construction fencing and all sediment control measures, across the site. 	<ul style="list-style-type: none"> - no impacts on water quality or vegetation to be retained.
House Construction	<ul style="list-style-type: none"> - silt control measures and construction fencing, across the site. 	<ul style="list-style-type: none"> - no impacts on water quality or vegetation to be retained.
Landscape Planting	<ul style="list-style-type: none"> - use native species which provide cover and food for wildlife, including birds and pollinators – in house yards, on boulevards and around the SWM pond margins; - put up Tree Swallow nest boxes around the SWM pond. 	<ul style="list-style-type: none"> - results in positive impacts from additional habitat for certain wildlife species.

TABLE 3. Mitigation Measures to be Implemented to Address Impact Elements and Residual Impact Expected.

Impact Element	Mitigation What, Where & When	Residual Impact Expected
Occupied Houses	<ul style="list-style-type: none"> - provide Homeowner’s Manual to those lots adjacent to Meadow Marsh habitat: content includes recommendations on management of yard clippings; pet management – keep inside yard unless on leash, downspouts to grassed surfaces/rain gardens, use of rain barrels, plant native landscaping species attractive to birds and pollinators. 	<ul style="list-style-type: none"> - minimal negative impacts on preserved habitats.
Management of Edge Between Development & Meadow Marsh	<ul style="list-style-type: none"> - fencing should be used to limit and control access into the Meadow Marsh and the associated buffer; - a 15m wide undisturbed buffer should be established from the margins of the surveyed Meadow Marsh – there should be no grading, filling, or stock piling within this buffer; a suitable native seed-mix of grasses & herbs (including aster & goldenrods) should be seeded onto a prepared seedbed within the 15m wide buffer; silt control and construction fencing should be installed at the outer edges of the buffer to prevent machinery access into the buffer; - consideration should be given to EP zoning for the Meadow Marsh and the 15m wide buffer. 	<ul style="list-style-type: none"> - minimize negative impacts on the Meadow Marsh.
Supplemental Food for Wildlife: eg. bird feeders	<ul style="list-style-type: none"> - potentially in many house yards, particularly in Fall and Winter: provision of supplemental food for seed and fruit eating birds. 	<ul style="list-style-type: none"> - expected to increase the survival and numbers of certain resident and wintering bird species.

TABLE 4. Mitigation Measures to be Implemented to Address Natural Environment Features and Functions and Residual Impact.

Features & Functions	Mitigation: What, Where & When	Residual Impact Expected
Significant Habitat of Endangered or Threatened Species	<p><u>Barn Swallow</u> - no nesting sites will be lost; some Category 3 foraging habitat will be changed from cropland to residential landscape and SWM pond where foraging will continue.</p>	<p>- no negative impact is expected.</p>
Significant Wildlife Habitat	<p><u>Eastern Wood-Pewee (EWPE)</u> - there is not Significant Wildlife Habitat for this species on site, nonetheless mitigation measures are described and an impact assessment is completed for this Species of Special Concern; - setbacks between development and the off site woodland habitat will prevent any impact on forest cover and EWPE habitat; - the timing of vegetation clearing (outside of the nesting period) will avoid indirect impact of noise and motion on EWPEs in the off site woodland located in the Kettle Creek valley.</p> <p><u>Wood Thrush (WOTH)</u> - there is not a breeding population of WOTH, but the existing woodland habitat is protected from disturbance by a wide setback between development and woodland habitat; - vegetation clearing outside of the nesting season will avoid indirect impact of noise and motion on WOTH.</p> <p><u>Monarch (MONA)</u> - breeding habitat (Common Milkweed plants), foraging habitat (wild flowers), and tree shelter from the wind are all concentrated in and around the Meadow Marsh and adjacent portions of the western and southern hedgerows; all of this habitat will be protected by wide, undisturbed setbacks; a 15m wide buffer planting of nectar plants along the Meadow Marsh will improve habitat conditions and increase the habitat size of this polygon; - silt control fence and construction fence will protect the Meadow Marsh habitat and the buffer lands from sedimentation and machinery impact on vegetation.</p>	<p>- no significant habitat is impacted & no impact on EWPE is expected.</p> <p>- no significant habitat is impacted & no impact is expected on WOTH.</p> <p>- no negative impact on the Meadow Marsh Monarch habitat, but rather an increase in area of this habitat, which is a positive impact.</p>

TABLE 4. Mitigation Measures to be Implemented to Address Natural Environment Features and Functions and Residual Impact.

Features & Functions	Mitigation: What, Where & When	Residual Impact Expected
Significant Valleyland & Fish Habitat	<ul style="list-style-type: none"> - wooded slopes of the Kettle Creek valley and the fish habitat in Kettle Creek will be protected by 65m wide undeveloped setbacks; - silt fence around the southern margins of the development site will prevent soil from being washed into the valley and Kettle Creek. - the Stormwater Management facilities will protect the water quantity and quality of Kettle Creek. 	<ul style="list-style-type: none"> - no negative impact on the valley or Kettle Creek fish habitat.
Significant Woodland	<ul style="list-style-type: none"> - the off site Significant Woodland would be protected from construction impacts by silt and construction fence placement prior to any earthmoving; the 5m setbacks from hedgerow driplines and 15m setback/buffer from the Meadow Marsh will protect the off site woodland from disturbance during and after construction; the SWM plan will ensure no hydrologic impacts on the downstream woodland. 	<ul style="list-style-type: none"> - no negative impacts on the off site Significant Woodland.
Environmental Features of Local Significance	<ul style="list-style-type: none"> - Swamp Agrimony is an uncommon wetland plant which is growing in the Meadow Marsh; - silt and construction fencing, setting aside an undisturbed 15m wide setback that will be seeded to native herbs and grasses will preserve the entire Meadow Marsh and will provide a new vegetated buffer to protect this plant; the SWM Plan will maintain a baseflow of uncontaminated surface water to preserve the hydrologic cycle of the Meadow Marsh habitat that is required by the Swamp Agrimony. 	<ul style="list-style-type: none"> - no negative impact on the Meadow Marsh and the Swamp Agrimony living within the marsh.
Meadow Marsh Wetland	<p>the extent of the Meadow Marsh feature has been flagged, checked by Municipal staff and has been surveyed and plotted on the Plan of Subdivision; the wetland feature will be preserved and protected by a 15m setback within which no grading, filling or stockpiling will occur. At the outer limit of the 15m setback from the wetland edge silt control and construction fences will be placed prior to earthmoving on site. The 15m buffer will be seeded to native herbs and grasses which will provide bird and Monarch habitat as well as a natural protective buffer for the wetland. The SWM Plan will maintain a baseflow of uncontaminated surface water to preserve the hydrologic cycle of the Meadow Marsh habitat.</p>	<ul style="list-style-type: none"> - net positive impact by increasing the size of the green space around the Meadow Marsh and preserving the key features and functions.

TABLE 4. Mitigation Measures to be Implemented to Address Natural Environment Features and Functions and Residual Impact.

Features & Functions	Mitigation: What, Where & When	Residual Impact Expected
Meadow Marsh Wetland	<p>- A Homeowners' Manual will be provided to owners of lots which abut the Meadow Marsh to educate them on appropriate yard management so that adjacent property owners do not impact the wetland.</p> <p>- ecological linkages: (a) hydrologic – flow volume from the site to un-named tributary of Kettle Creek will be maintained and water quality will be treated by the Stormwater Management facilities and the Erosion and Sediment Control Plan.</p> <p>Mitigation components to avoid hydrologic inputs include: a spreader swale to distribute SWM flows to the wetland, completion of a water balance for the wetland, soakaway pits to infiltrate roof runoff, (where suitable soil and ground water conditions exist) and an OGS downstream of the pond outlet.</p> <p>(b) vegetation propagule and wildlife movement corridors: the off site woodland habitat, all hedgerows and the Meadow Marsh will be retained and protected by fencing and setbacks and a planted 15m wide buffer around the Meadow Marsh – these measures will protect existing ecological linkages across the site and to off site features.</p>	<p>- hydrologic flow volumes similar to pre-development conditions.</p> <p>- no negative impacts to linkages expected.</p>

TABLE 5 . Assessment of Potential Impacts.

Vegetation Clearing	- lands within the development are mainly turf grass and crop field.	- clear vegetation outside breeding bird & bat maternity seasons - temporary loss of small grassy area; - landscaping replaces vegetation in yards within a short period.	- small area affected, local impact only, not significant.
Lot Grading	Across the site.	- permanent changes in grade; results in vegetation changes described above in vegetation clearing; directs runoff to the sub-drainage areas for Stormwater Management.	- not significant impacts on vegetation and hydrology.
Install Services	Across the site, within the road corridors and onto lots.	- during early phases of construction; duration of a few months.	- no significant impacts on the natural environment.
House Construction	Across the site.	- during build out: 2 or more years.	- noise, motion: minor short-term effects of only minor significance for wildlife along the subdivision margins where hedgerows or meadow marsh exists.
Landscape Planting	House yards and boulevards throughout the subdivision	- during build out: 2 or more years.	- positive impact to provide cover and food for wildlife.
Occupied Houses	- across the subdivision - of most importance on lots backing onto the hedgerows or marsh meadow.	- on-going.	- noise, motion, traffic, pets: small increase in activity level over existing agricultural cropping.
Supplemental Food for Wildlife eg. bird feeders	- potentially across the subdivision.	- on-going, especially in winter.	- expected to sustain and increase numbers of resident & wintering birds & mammals.

5.0 RECOMMENDATIONS AND CONCLUSIONS

The following recommendations should be addressed in the draft plan of subdivision or be conditions of draft plan approval, as specified.

- a. Undertake vegetation clearing outside of the breeding bird and bat maternity seasons;
- b. Protect vegetation to be retained with orange plastic construction fence and silt control fence or other necessary measures;
- c. Implement recommendations in the Servicing and Stormwater Management Feasibility Study and subsequent detailed design reports, designed to minimize erosion and sedimentation;
- d. During construction, monitor effectiveness of erosion and sedimentation control measures and take remedial action, as required, during construction;
- e. As mentioned in the SBM (2019) report, a water balance for the wetland feature and measures to ensure that clean water is discharged to the wetland should be addressed to ensure long-term viability of the wetland feature;
- f. Prepare and provide Homeowners' Manuals to those with lots adjacent to the Meadow Marsh – the manuals would address appropriate lot management, eg. use of native species for lot landscaping and appropriate actions to take relative to adjacent off site habitat – this should be a draft plan condition;
- g. Prepare the seed bed in the 15m wide buffer adjacent to the Meadow Marsh and seed with native herb and grass species at the appropriate time of year. This should be undertaken when appropriate after completion of construction of any SWM facilities which discharge to the wetland;
- h. Consideration should be given to applying Environmental Protection (EP) or similar zoning to the Meadow Marsh and it's buffer; and
- i. All other aspects of mitigation measures described in Tables 3, 4 and 5 should be implemented.

6.0 CONCLUSIONS

Assuming that the mitigation measures recommended are successfully implemented we expect no residual negative natural environmental impacts from the proposed residential subdivision.

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Report prepared by:
Dance Environmental Inc.



K.W. Dance, M.Sc.
President



K.S. Dance, M.E.S.
Senior Terrestrial Ecologist

APPENDICES

1. EIS Terms of Reference & Issues Summary.
2. Vegetation Species List by ELC Unit.
3. CVs of EIS Authors.

APPENDIX 1

EIS Terms of Reference
&
Issues Summary.

**Terms of Reference
for
Scoped EIS
for
Craigholme Estates Limited: Phase 6,
Belmont, ON, Central Elgin.**

1.0 INTRODUCTION

This Terms of Reference has been prepared in accordance with policies contained in Section 3.4 of the Central Elgin Official Plan.

An Issues Scoping Report was prepared in early May 2017 which concluded that a scoped EIS would be appropriate to address the proposed development of Phase 6 lands.

Dance Environmental Inc. has been retained by the proponent to prepare the EIS.

2.0 DESCRIPTION OF THE NATURAL ENVIRONMENT

2.1 Existing Information Research

The 2008 Stantec EIS will be examined. Existing information has been requested from Central Elgin, the County of Elgin, KCCA and MNRF, Aylmer. The NHIC on-line data on SAR will be reviewed and the DFO on-line SAR fish and mussel maps will be examined.

2.2 Inventory

ELC methods will be used to document vegetation communities. Searches for Butternut and other Species at Risk will be undertaken. Spring, Summer and early Autumn vegetation inventories will be completed.

Two breeding bird visits will be undertaken 10 days apart during the June to early July period. Species will be recorded/mapped according to OBBA methods.

Searches for American Badger dens will be conducted on 3 dates in Spring before vegetation obscures dens.

Incidental observations on insects, mammals, reptiles and amphibians will be recorded.

Three visits in Spring will be completed to search for emerging snakes.

On site drainage conditions will be documented during site visits.

Interpretation of the inventory data will identify ecological and physical features and functions. The significance of the features and functions, linkages and ecological processes will be identified. Mapping and text will document inventory results.

If any Species at Risk are found, their habitat occurrences on and off site will be described.

Interpretation of the inventory findings relative to policies of the County, Township, KCCA, province, and DFO will be provided.

2.0 DESCRIPTION OF THE DEVELOPMENT PROPOSAL

Text will describe the types of development activities proposed, along with the expected timing and phasing.

A map will plot the development footprint and the location of natural heritage features and functions and any hazard lands and regulated areas.

3.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

Methods of assessing environmental effects will be described.

Predicted effects on natural heritage features, functions and linkages including those to the Kettle Creek Valley will be addressed. Direct and indirect effects on and off-site will be documented.

Mapping, tables and text are expected to be used during the impact prediction work.

4.0 DESCRIPTION OF PROPOSED MITIGATION

Any need to modify the development plan to avoid impact on key features or functions will be indicated. Alternative techniques to avoid impact would be documented.

An Environmental Management Plan would be prepared to map and describe buffer zones, timing windows, any fencing, signage, plantings and so on that may be required to mitigate potential impacts. Mapping would show development limits relative to natural features and functions.

5.0 RECOMMENDATIONS

Recommendations would be numbered and listed.

6.0 CONCLUSIONS

Conclusions on development effects following mitigation and an opinion on the advisability of proceeding would be documented.

7.0 BIBLIOGRAPHY


8.0 APPENDICES

Final Terms of Reference

Species Lists

C.V.s of EIS Authors

Draft Terms of Reference Prepared by:

A handwritten signature in black ink that reads "K.W. Dance". The signature is written in a cursive style with a large, looped 'D'.

K.W. Dance, M.Sc.
President
Dance Environmental Inc.



**Issues Summary Report – Craigholme Estates Limited: Phase 6
Draft Plan of Subdivision; Central Elgin (Belmont) ON**

Sept. 26, 2017.

DE-419

INTRODUCTION

Dance Environmental Inc. has been retained to prepare an EIS for the Craigholme Estates Limited Phase 6 lands. The present work will provide more current information than is contained in the Stantec 2008 Phases 5 & 6 EIS Update.

The purpose of the ISR is to define the scope of the EIS by identifying and describing the potential impacts of development on any adjacent natural heritage and/or natural hazard features.

SUBJECT SITE

The subject site lies within the Municipality of Central Elgin, in the community of Belmont. The site constitutes the sixth phase of an ongoing subdivision development south of Seventh Avenue (Manning Road) and situated directly north of an identified environmental area. This environmental area is designated in the Official Plan of the Village of Belmont as open space in Schedule A and Open Space; Category 1 lands in Schedule F. The designation of this environmental area stems from the Village of Belmont Environmental Area Plan commissioned by the municipality and completed by Dillon Consulting in 1996. The location of the subject site and adjacent features, including regulated areas, is illustrated on the attached Figure 1.

NATURAL AREAS

The natural areas and regulated areas are made up of 4 separate features that are described below:

Feature 1 on Figure 1 is a regulated area which is expressed as a depression in the existing crop field. There is no wild vegetation or habitat associated with this feature. A permit from the KCCA is required to alter this feature.

Feature 2 is another area regulated by the KCCA. The upstream end of the regulated area is a damp spot in the crop field where a patch of Phragmites is growing. The majority of the north/south oriented section of this portion of the regulated area is farmed.

The east/west oriented section of Feature 2 has a marsh meadow present with a seepage flow during the Spring season.

Feature 3 is off site, but abuts the southwestern margin of the Phase 6 lands. Although the vegetation adjacent to the site is a cultural thicket it is potentially part of the off site Significant Woodland.

Feature 4 the Kettle Creek valley which has Significant Valleyland and Significant Woodland designations appears to be within 120m of the southeastern margin of the Phase 6 lands.

POTENTIAL ISSUES, ECOLOGICAL LINKAGES, NATURAL PROCESSES AND STUDY AREA BOUNDARIES

Potential issues to be addressed by the EIS Include:

- Impacts of the proposed use of the subject lands on the four specific areas identified in Figure 1; and
- Identification and detailing of mitigative or compensatory measures to address the potential impacts.

Linkages to off site features will be considered within the EIS. This will include vegetative links and the need to maintain any seepage/surface water flows to off site tributaries to Kettle Creek, where fish habitat is present.

POTENTIAL CUMULATIVE EFFECTS OF DEVELOPMENT

The proposed development includes single family residential lots with roads, servicing and site grading to facilitate the proposed use. Development is planned to occur in regulated area 1, development may occur near regulated area 2 with appropriate setbacks in place. Features 3 and 4 are off site but may require mitigation to prevent impacts. The EIS will address any need for mitigation relative to all 4 features.

The following potential impacts will be addressed in the EIS:

1. Impacts of site grading on the adjacent natural areas;
2. Impacts of SWM and servicing on adjacent natural areas including changes to overland flow and impacts on ground water flow volumes and water quality;
3. The potential for vegetation removal;

4. Impacts of site lighting on flora/fauna on adjacent natural areas;
5. Physical impacts of site use by residents of the proposed development; and
6. Temporary impacts due to construction activities (i.e. noise, dust, mechanical impacts of machinery).

ADDITIONAL INFORMATION REQUIRED

The 2008 Stantec EIS and Village of Belmont Environmental Area Plan provide historical information for the subject natural features, however, the following information is required:

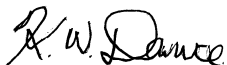
- Up-to-date terrestrial data (flora) for the study area;
- Assessment of the statutory setback requirements in the context of the inventory data;
- Breeding bird inventory and other wildlife inventory;
- Inventory to address Species at Risk;
- Inventory necessary to address PPS factors;
- Location, staking, surveying and plotting of the meadow marsh/seepage area margins within regulated area Feature 2; and
- Water budget/SWM design information to ensure that base flow to off site tributaries to downstream fish habitat is maintained.

RECOMMENDATION

Based on current knowledge, there are two on site and two off site features that the EIS will focus on. Inventory during the March to September 2017 period will reveal whether there are additional factors which will need to be addressed in the EIS.

It is recommended that a Scoped EIS be undertaken as summarized in a Terms of Reference.

Prepared by:



Ken Dance, M.Sc.
President
Dance Environmental Inc.

APPENDIX 2

Vegetation Species List
by ELC Unit.

APPENDIX 2. Vegetation Species List by ELC Unit.

BOTANICAL NAME	COMMON NAME	ELC Polygons								COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	OMNR STATUS	COSEWIC STATUS	GLOBAL STATUS	LOCAL STATUS ELGI
		SOURCE:	OAGM1	THDM3	THDM2-6	FODM5-2	FODM7-4	MAMM3-1	MEFM1								
PTERIDOPHYTES	FERNS & ALLIES																
Equisetaceae	Horsetail Family																
<i>Equisetum arvense</i>	Field Horsetail						X			0	0		S5			G5	C
GYMNOSPERMS	CONIFERS																
Cupressaceae	Cedar Family																
<i>Juniperus communis</i>	Common Juniper								X	4	3		S5			G5	
Pinaceae	Pine Family																
<i>Picea abies</i>	Norway Spruce							X			5	-1	SE3			G?	
<i>Pinus sylvestris</i>	Scotch Pine							X			5	-3	SE5			G?	IR
DICOTYLEDONS	DICOTS																
Aceraceae	Maple Family																
<i>Acer negundo</i>	Manitoba Maple			X			X			0	-2		S5			G5	C
<i>Acer platanoides</i>	Norway Maple							X			5	-3	SE5			G?	IR
<i>Acer saccharinum</i>	Silver Maple							X	X	5	-3		S5			G5	C
<i>Acer saccharum ssp. saccharum</i>	Sugar Maple			X	X					4	3		S5			G5T?	C
Amaranthaceae	Amaranth Family																
<i>Amaranthus retroflexus</i>	Green Amaranth	X							X		2	-1	SE5			G?	IC
Apiaceae	Carrot or Parsley Family																
<i>Daucus carota</i>	Wild Carrot	X					X	X	X		5	-2	SE5			G?	IC
Apocynaceae	Dogbane Family																
<i>Apocynum androsaemifolium ssp. androsaemifolium</i>	Spreading Dogbane							X		3	5		S5			G5T?	C
Asclepiadaceae	Milkweed Family																
<i>Asclepias syriaca</i>	Common Milkweed		X					X	X	0	5		S5			G5	C
Asteraceae	Composite or Aster Family																
<i>Ambrosia artemisiifolia</i>	Common Ragweed	X	X					X		0	3		S5			G5	C
<i>Ambrosia trifida</i>	Giant Ragweed						X		X	0	-1		S5			G5	C
<i>Arctium minus ssp. minus</i>	Common Burdock		X					X	X		5	-2	SE5			G?T?	IC
<i>Bidens frondosa</i>	Devil's Beggar-ticks		X						X	3	-3		S5			G5	C
<i>Carduus nutans ssp. nutans</i>	Musk Thistle							X			5	-1	SE?			G?T?	
<i>Centaurea jacea</i>	Brown Knapweed							X			5	-1	SE5			G?	I
<i>Cichorium intybus</i>	Chicory							X			5	-1	SE5			G?	IC
<i>Cirsium arvense</i>	Canada Thistle						X	X			3	-1	SE5			G?	IC
<i>Cirsium vulgare</i>	Bull Thistle						X				4	-1	SE5			G5	IC

BOTANICAL NAME	COMMON NAME	ELC Polygons							COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	OMNR STATUS	COSEWIC STATUS	GLOBAL STATUS	LOCAL STATUS ELGI
		SOURCE:	OAGM1	THDM3	THDM2-6	FODM5-2	FODM7-4	MAMM3-1								
<i>Erigeron annuus</i>	Daisy Fleabane		X				X		0	1		S5			G5	
<i>Eupatorium maculatum ssp. maculatum</i>	Spotted Joe-pye-weed					X			3	-5		S5			G5T5	C
<i>Euthamia graminifolia</i>	Flat-topped Bushy Goldenrod					X			2	-2		S5			G5	C
<i>Lactuca serriola</i>	Prickly Lettuce						X			0	-1	SE5			G?	I
<i>Solidago canadensis</i>	Canada Goldenrod		X			X	X	X	1	3		S5			G5	X
<i>Solidago patula</i>	Rough-leaved Goldenrod					X			8	-5		S5			G5	X
<i>Symphotrichum lanceolatum var. lanceolatum</i>	Tall White Aster					X			3	-3		S5			G5T?	C
<i>Symphotrichum lateriflorum var. lateriflorum</i>	Calico Aster						X		3	-2		S5			G5T5	X
<i>Symphotrichum novae-angliae</i>	New England Aster					X	X	X	2	-3		S5			G5	C
<i>Symphotrichum puniceum var. puniceum</i>	Purple-stemmed Aster					X						S5			G5T?	X
<i>Taraxacum officinale</i>	Common Dandelion	X					X	X		3	-2	SE5			G5	IC
Balsaminaceae		Touch-me-not Family														
<i>Impatiens capensis</i>	Spotted Touch-me-not					X			4	-3		S5			G5	C
Berberidaceae		Barberry Family														
<i>Podophyllum peltatum</i>	May-apple				X				5	3		S5			G5	C
Brassicaceae		Mustard Family														
<i>Alliaria petiolata</i>	Garlic Mustard				X		X			0	-3	SE5			G5	IC
<i>Capsella bursa-pastoris</i>	Shepherd's Purse	X								1	-1	SE5			G?	IC
<i>Hesperis matronalis</i>	Dame's Rocket					X	X	X		5	-3	SE5			G4G5	IC
Caryophyllaceae		Pink Family														
<i>Dianthus armeria</i>	Deptford Pink							X		5	-1	SE5			G?	IU
Chenopodiaceae		Goosefoot Family														
<i>Chenopodium album var. album</i>	Lamb's Quarters	X					X	X		1	-1	SE5			G5T5	IC
Convolvulaceae		Morning-glory Family														
<i>Calystegia sepium</i>	Hedge Bindweed						X		2	0		S5			G5	
Cornaceae		Dogwood Family														
<i>Cornus obliqua</i>	Silky Dogwood					X			5	-4		S5			G5T?	X
<i>Cornus foemina ssp. racemosa</i>	Red Panicked Dogwood			X					2	-2		S5			G5?	X
Cucurbitaceae		Gourd Family														
<i>Echinocystis lobata</i>	Prickly Cucumber		X			X			3	-2		S5			G5	X
Dipsacaceae		Teasel Family														
<i>Dipsacus fullonum ssp. sylvestris</i>	Wild Teasel							X		5	-1	SE5			G?T?	IC

BOTANICAL NAME	COMMON NAME	ELC Polygons								COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	OMNR STATUS	COSEWIC STATUS	GLOBAL STATUS	LOCAL STATUS ELGI
		SOURCE:	OAGM1	THDM3	THDM2-6	FODM5-2	FODM7-4	MAMM3-1	MEFM1								
Fabaceae	Pea Family																
<i>Medicago lupulina</i>	Black Medick							X			1	-1	SE5			G?	IC
<i>Trifolium repens</i>	White Clover							X			2	-1	SE5			G?	I
Fagaceae	Beech Family																
<i>Fagus grandifolia</i>	American Beech				X					6	3		S5			G5	C
Geraniaceae	Geranium Family																
<i>Erodium cicutarium ssp. cicutarium</i>	Stork's-bill	X									5	-1	SE3			G4G5?	IR
Grossulariaceae	Currant Family																
<i>Ribes rubrum</i>	Red Currant		X								5	-2	SE5			G4G5	IR
Guttiferae	St. John's-wort Family																
<i>Hypericum perforatum</i>	Common St. John's-wort						X	X			5	-3	SE5			G?	IC
Juglandaceae	Walnut Family																
<i>Juglans nigra</i>	Black Walnut		X	X		X	X	X		5	3		S4			G5	C
Lamiaceae	Mint Family																
<i>Glechoma hederacea</i>	Creeping Charlie		X		X		X	X			5	-2	SE5			G?	I
<i>Leonurus cardiaca ssp. cardiaca</i>	Common Motherwort							X			5	-2	SE5			G?T?	IC
Malvaceae	Mallow Family																
<i>Abutilon theophrasti</i>	Velvet-leaf	X						X			4	-1	SE5			G?	IC
Oleaceae	Olive Family																
<i>Fraxinus americana</i>	White Ash							X		4	3		S5			G5	C
<i>Syringa vulgaris</i>	Common Lilac							X			5	-2	SE5			G?	IR
Onagraceae	Evening-primrose Family																
<i>Epilobium hirsutum</i>	Great Hairy Willow-herb						X				-4	-2	SE5			G?	I
<i>Epilobium leptophyllum</i>	Narrow-leaved Willow-herb						X	X		7	-5		S5			G5	X
Polygonaceae	Smartweed Family																
<i>Polygonum persicaria</i>	Lady's-thumb		X								-3	-1	SE5			G?	IC
<i>Rumex crispus</i>	Curly-leaf Dock							X	X		-1	-2	SE5			G?	IC
<i>Rumex obtusifolius ssp. obtusifolius</i>	Bitter Dock							X			-3	-1	SE5			G5	I
Primulaceae	Primrose Family																
<i>Lysimachia nummularia</i>	Moneywort					X					-4	-3	SE5			G?	I
Ranunculaceae	Buttercup Family																
<i>Thalictrum pubescens</i>	Tall Meadow-rue					X				5	-2		S5			G5	C

BOTANICAL NAME	COMMON NAME	ELC Polygons								COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	OMNR STATUS	COSEWIC STATUS	GLOBAL STATUS	LOCAL STATUS ELGI
		SOURCE:	OAGM1	THDM3	THDM2-6	FODM5-2	FODM7-4	MAMM3-1	MEFM1								
<i>Carex bebbii</i>	Bebb's Sedge						X			3	-5		S5			G5	C
<i>Carex vulpinoidea</i>	Fox Sedge						X			3	-5		S5			G5	C
<i>Scirpus atrovirens</i>	Dark-green Bulrush						X			3	-5		S5			G5?	C
<i>Scirpus cyperinus</i>	Wool-grass						X			4	-5		S5			G5	C
Liliaceae	Lily Family																
<i>Erythronium americanum ssp. americanum</i>	Yellow Dog's-tooth Violet						X			5	5		S5			G5T5	C
Poaceae	Grass Family																
<i>Agrostis gigantea</i>	Red-top						X			0	-2		SE5			G4G5	IC
<i>Bromus inermis ssp. inermis</i>	Awnless Brome			X				X		5	-3		SE5			G4G5?	IC
<i>Echinochloa crusgalli</i>	Common Barnyard Grass	X							X	-3	-1		SE5			G?	IC
<i>Elymus repens</i>	Quack Grass							X	X	3	-3		SE5			G?	IC
<i>Festuca arundinacea</i>	Tall Fescue						X			2	-1		SE5			G?	IC
<i>Festuca pratensis</i>	Meadow Fescue						X	X		4	-1		SE5			G5	IU
<i>Phalaris arundinacea</i>	Reed Canary Grass						X			0	-4		S5			G5	C
<i>Phleum pratense</i>	Timothy						X			3	-1		SE5			G?	IC
<i>Phragmites australis</i>	Common Reed						X	X		0	-4		S5			G5	C
<i>Poa compressa</i>	Canada Blue Grass		X				X		X	0	2		S5			G?	C
<i>Setaria viridis</i>	Green Foxtail	X									-1		SE5			G?	IC
Typhaceae	Cattail Family																
<i>Typha angustifolia</i>	Narrow-leaved Cattail						X			3	-5		S5			G5	C
<i>Typha latifolia</i>	Broad-leaved Cattail						X			3	-5		S5			G5	C

APPENDIX 3

C.V.s of E.I.S.

Authors:

K.W. Dance, M.Sc.

K.S. Dance, M.E.S.

EDUCATION

- M.Sc., Biology, 1977; University of Waterloo
- B.Sc., Honours Biology, 1975; University of Waterloo

COURSES

- Butternut Health Assessment Workshop & Update – OMNR, 2010 & 2013
- Preparation of E.I.S. Reports – OMNR, 1995
- Bioassessments & Biological Criteria for Warmwater Streams – AFS 1993
- Ontario Wetland Evaluation System, 3rd Edition – OMNR, 1993
- Creating and Using Wetlands – University of Wisconsin, 1992
- Fluvial Geomorphology – University of Guelph and AFS, 1992

PROFESSIONAL EXPERIENCE

1991 to date. Consulting Biologist and President, Dance Environmental Inc.
The firm has completed over 425 assignments.

Mr. Dance has been consulting for 41 years and has gained extensive experience on the following types of studies: ecological inventory, biological monitoring, environmental planning, Species at Risk Overall Benefit and Management Plans, watershed management, no net loss of fish habitat, tree saving plans, vegetation management, wetland Environmental Impact Studies, non-game wildlife and environmental assessments.

He also has experience in biological resource inventory, impact prediction, management option development and comparison, attendance at public information centres and as an expert witness before boards and tribunals.

- 1988-1991 Senior Biologist, Ecologistics Limited. As Senior Biologist, Ken was responsible for review of all biological projects. He consulted to private and public sector clients on management of fish, vegetation, and wildlife resources. Including projects for First Nations.
- 1985-1988 Associate and Manager of Biological Services, Gartner Lee Limited. Mr. Dance consulted to industrial and government clients.
- 1982-1985 Senior Biologist and Project Manager, Gartner Lee Limited.
- 1977-1982 Biologist and Project Manager, Ecologistics Limited. Including projects for First Nations Bands.
- 1975-1976 Research Technician, University of Waterloo. Mr. Dance acted as a research technician on a PLUARG contract study of two streams.

PROJECT EXAMPLES

E.I.S. Reports

Undertook inventory, site assessments and reporting for over one thousand sites relating to residential, industrial, aggregate and waste management proposals.

Highways and Roads

Examples of Environmental Assessment and highway construction projects, which Mr. Dance has worked on follow.

- Parkhill Road and Bridge, Cambridge – inspection of in-water construction to minimize erosion and sedimentation and construction of fish pool habitat.
- Highway 60 at Huntsville – inspection of in-water work during replacement of 4 culverts, including trout habitat; inspection of tree and shrub plantings.
- Highway 35 Minden – inspection of stream habitat restoration construction and inspection of tree and shrub plantings.
- Wellington County Roads – fisheries assessments for 3 culvert replacements.

Aggregate NETR and EIS Projects

Several aggregate studies in Bruce, Huron and Grey Counties. Detailed snake hibernaculum and snake population monitoring study of three snake species at an old quarry.

Wastewater Management

- Thunder Bay Water Pollution Prevention Study – biological consultant addressing fish, wildlife, forests, wetlands and Lake Superior near shore habitat.
- Cincinnati and Cleveland, Ohio – CSO Review Studies: biological consultant addressing existing impacts on aquatic ecosystems and advice regarding solution options.
- Wastewater Treatment Plant Class E.A.s: biological consultant for Ayr, Flesherton, Ingersoll, Keswick, Lambeth, Tavistock and Wellesley plant upgrades/expansions.

Water Supply

Biological/fisheries assessment regarding water taking and/or facility siting for projects in Elmira, Georgetown, Acton, Cambridge, Caledon and Brampton.

Publications

Published chapters in three books. Over forty papers on fish, wildlife, wetland and vegetation management, as well as water quality and fisheries. Articles in publications such as Ontario Birds, Ontario Field Biologist, Newsletter of the Field Botanists of Ontario, Recreation Canada, Landscape Architectural Review and the Water Research Journal of Canada.

03/18



EDUCATION

- M.E.S., Masters of Environment and Resource Studies, 2011; University of Waterloo.
Thesis Title: "Raptor Mortality and Behavior at Wind Turbines Along the North Shore of Lake Erie During Autumn Migration 2006-2007"
- B.E.S., Honours Bachelor of Environment and Resource Studies with Parks Option, 2006; University of Waterloo.

CERTIFICATIONS & PROFESSIONAL ASSOCIATIONS

Workshops/Certifications:

- Bat Survey Solutions LLC. Bat Acoustic Fieldwork and Data Management Workshop. Instructors: Janet D. Tyburec and Joseph M. Szewezak (creator of SonoBat and Professor at Humboldt State University, California). February 2016, Punta Gorda, Florida.
- Wildlife Acoustics: Bat Acoustics Training with Dr. Lori Lausen, February 2015, Miami, Florida
- Butternut Health Assessment Workshop, BHA #486, July 16, 2014.
- Dragonfly and Damselfly Identification Workshop, 2013, Guelph Arboretum.
- OMNR, Ontario Wetland Evaluation System, Northern Manual and Southern Manual. North Bay, 2012
- OMNR Ecological Land Classification for Southern Ontario, Lindsay, 2010
- Diploma of Environmental Assessment, University of Waterloo, 2006
- Transportation of Dangerous Goods, Safety Services Canada, 2008
- Member, Bird Studies Canada (BSC)
- Member, Ontario Field Ornithologists (OFO)
- Member, Kitchener-Waterloo Field Naturalist Club (KWFN)

AREAS OF PROFESSIONAL EXPERIENCE

Kevin Dance has over 10 years of consulting experience on a wide range of projects throughout Ontario. Kevin specializes in inventories, evaluations, research, and impact studies of natural resources. He is experienced in identifying important natural features and evaluating the significance and sensitivity of these features. Kevin regularly works with multidisciplinary study teams focusing on the management of terrestrial and wetland ecosystems.

Terrestrial Vegetation and Wildlife Studies

Kevin has worked on various studies investigating a variety of wildlife habitats, determining wildlife populations including numbers and seasonal trends and monitoring of long-term impacts of developments on species. Kevin has conducted a wide range of monitoring surveys and inventories to identify the presence of wildlife on study sites as well as species specific guided surveys for Species at Risk and Species of Conservation Concern including:

Bobolink, Barn Swallow, Bank Swallow, Eastern Meadowlark, American Badger, Eastern Milksnake, Blanding's Turtle, Wood Turtle, Jefferson Salamander, Common Nighthawk, Whip-poor-will, Henslow's Sparrow, Short-eared Owl, Least Bittern, Eastern Milksnake, and all Endangered *Myotis* bat species.

He has completed numerous detailed vegetation community mapping inventories and conducted vegetation monitoring at permanent sample plots, as well as transects and random sample

quadrats to assess short-term and long-term impacts of developments on vegetation. Kevin is trained and experienced in applying the Ecological Land Classification System in projects in Southern Ontario to delineate, describe and map vegetation communities.

Kevin's specific terrestrial expertise includes:

- wildlife and vegetation habitat mapping, evaluations, and research.
- surveys of plants, birds, mammals: including bats, reptiles, amphibians, dragonflies and butterflies.
- identification of rare and sensitive species and habitats.
- bat acoustic monitoring and data analysis for Ontario bat species
- development of monitoring methodologies for Species at Risk
- preparing Overall Benefit Plans and Management Plans for Species at Risk
- obtaining permitting from MNR to conduct Jefferson Salamander trapping surveys, and snake coverboard surveys
- over 15 years of bird identification experience
- identification and analysis of potential wildlife corridors.
- short-term and long-term monitoring techniques for flora and fauna

Wetland Studies

Kevin is certified to conduct Ontario Wetland Evaluations and has worked in habitats throughout Ontario using the Ontario Wetland Evaluation System for Wetlands in Southern and Northern Ontario. Kevin has also participated in numerous studies focusing on the impact of development on wetland ecology and function.

Kevin's specific wetland expertise includes:

- inventories and mapping of wetland flora and fauna.
- wetland evaluations using the Ontario Wetland Evaluation System (OWES).
- wetland boundary delineation, and regularly working with relevant Conservation Authority staff to obtain approval of boundaries
- wetland Environmental Impact Studies (EISs).

Aquatic Studies

Kevin has assisted with numerous long-term fish monitoring programs using electrofishing to sample reaches of streams to assess and monitor development impacts to cold water streams. Kevin has experience collecting fish during electrofishing sampling, fish identification, marking and measuring. He also has experience identifying aquatic and wetland vegetation as well as collection of aquatic habitat data including stream depth, temperature, stream bed composition, flow speed and invertebrate sampling. Kevin has assisted with electrofishing surveys and aquatic habitat assessments within Wellington County and the Region of Waterloo.

Renewable Energy Projects:

Kevin has extensive experience conducting and organizing both pre-construction and post-construction studies at wind farms in Ontario, Manitoba and Alberta. Kevin has been developed monitoring methodologies for mortality searches, scavenger removal trials and searcher efficiency studies. Kevin has been involved in post-construction studies at four large scale wind farms and has conducted pre-construction studies at over a fifteen wind farms throughout Ontario, Manitoba and Alberta.

Kevin's specific renewable energy expertise includes:

- development of mortality search methodologies and conducting mortality searches, organizing and conducting scavenger removal studies and searcher efficiency trials
- identification of bird and bat fatalities
- developing study methods for pre-construction wind farm studies, including: migration surveys (dawn and dusk), daytime soaring surveys, waterfowl surveys, shorebird surveys, winter raptor and diurnal owl surveys, walking transect surveys, and driving transect surveys.

EMPLOYMENT HISTORY

Terrestrial Biologist and Project Manager

Dance Environmental Inc., Drumbo, Ontario. 2011 to present

Terrestrial and Wetland Biologist

Natural Resource Solutions Inc., Waterloo, Ontario. 2008 to 2011

Environmental Scientist

Stantec Ltd., Guelph, Ontario. 2006 to 2007

Avian Field Technician –Breeding ecology and impacts of urban development on Wood Thrush in the Region of Waterloo. Bird banding crew leader, nest searcher, nest monitoring.

Canadian Wildlife Service and University of Waterloo, Waterloo, Ontario 2003 to 2005

Terrestrial Biologist

Dance Environmental Inc., Drumbo, Ontario 2001 to 2003

PUBLICATIONS, PRESENTATIONS, AWARDS

Dance, K.S. 2017. Bats in Urban Natural Areas: A case Study of Kitchener Natural Areas. Oral Presentation. Nature in the City Speaker Series, Kitchener Public Library. November 15, 2017.

Dance, K.W., K.S. Dance, & M.B. Dance. 2012. Giant Ragweed (*Ambrosia trifida*) as a Food Source for Autumn Migrants and Winter Birds in the Grand River Basin. Ontario Birds 30(3):148-164.

Dance, K.S. 2012. Manipulation of Caterpillars for Consumption by Eastern Bluebirds. Ontario Birds 30(2):102-108.

Dance, K.W., K.S. Dance. 2012. Wetlands: What are they Good For? Oral Presentation. Princeton Historical Society. Princeton, Ontario. September 24, 2012.

Dance, K.S. 2011. "Raptors and Wind Farms". Oral Presentation. Ruthven Park 2nd Annual For The Birds Festival. September 17, 2011.

Dance, K. S. 2010. On the Wind: A Discussion of Raptors and the Wind Industry. Oral Presentation. Owen Sound Field Naturalist Club (OSFN). September 9, 2010.

Dance, K. S., Dance, K. W. 2010. "Raptors on the Wind". Oral Presentation. Kitchener-Waterloo Field Naturalist Club (KWFN). March 22, 2010.

Dance, K. S., Dance, K. W. 2010. Review of Raptor and Turbine Interaction Literature: the Case of the Erie Shores Wind Farm. Oral Presentation. RARE Charitable Research Reserve, Cambridge, ON. January 23, 2010.

Dance, K. S., R. James, L. Friesen, S. Murphy. 2009. "Raptor Behavior and Mortality (Erie Shores Wind Farm)". Poster Presentation. Canadian Wind Energy Association Annual Conference & Exhibition. September 20-23, 2009.

Dance, K. S., R. James, L. Friesen, S. Murphy. 2009. "Migrant Raptor Behavior and Mortality (at the Erie Shores Wind Farm)". Poster Presentation, 3rd place winner. A.D. Latornell Conservation Symposium. Nottawasaga, Ontario.