

NATURAL ENVIRONMENT LEVEL 1 and 2 REPORT

PROPOSED FLANAGAN PIT

**PART OF LOTS 3 AND 4
CONCESSIONS 15 AND 16
TOWNSHIP OF SOUTHGATE
(FORMER TOWNSHIP OF EGREMONT)
COUNTY OF GREY**

July, 2012

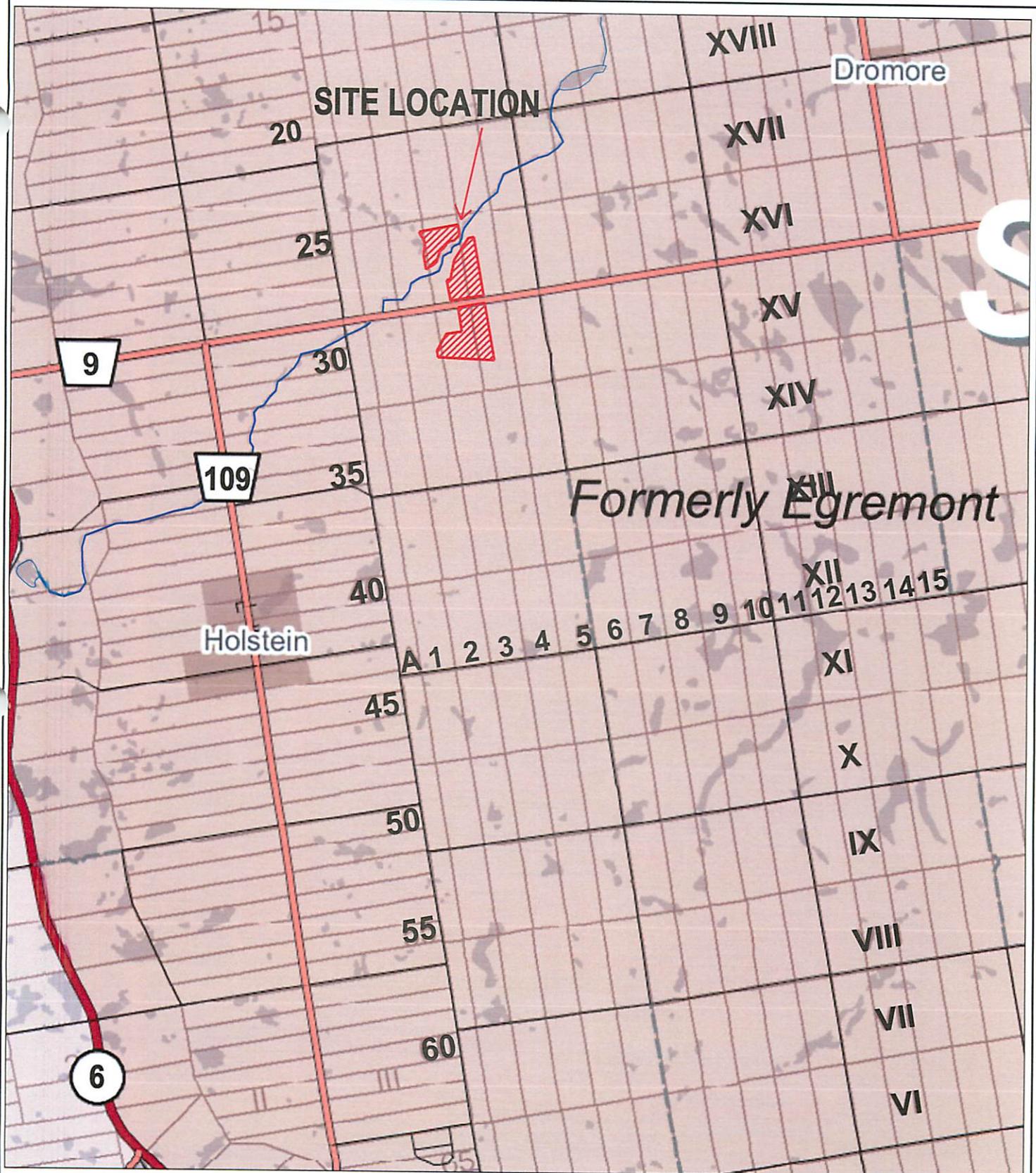
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THE MURRAY
GROUP LIMITED
1926-2012

STOVEL
and Associates Inc.

FLANAGAN PIT
LOCATION OF SUBJECT
LANDS

**MAP
1**

FILE: 30-06

2.0 METHODS

2.1 Background Data

A variety of background information sources were reviewed during the course of this study. Among these sources were:

- *Physiography of Southern Ontario* (Chapman and Putnam 1984);
- *Soil Survey of Grey County - Report No. 17 of the Ontario Soil Survey* (Gillespie and Richards, 1954);
- *Life Science Areas of Natural and Scientific Interest in Site District 6-5* (Ministry of Natural Resources, 1994);
- on-line data base queries at the Ontario Natural Heritage Information Centre (NHIC) web site;
- aerial photography of the subject land and surrounding area;
- Letter of Opinion - Water Table Conditions and,
- *County of Grey Official Plan* (final approval by OMB August 16th, 1999) - Schedule A Land Use Designation and Constraint Mapping, Scale of 1:200,000.

2.2 Operational Definitions

For the purposes of this study, the definitions of the significant natural heritage features referenced in Section 1.1 are taken from the *Provincial Policy Statement (2005)*. These are described as follows:

- *Significant Wetlands* - The term *wetland* means lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. Significant wetlands means a wetland identified as provincially significant by the Ontario Ministry of Natural Resources (MNR) using evaluation procedures established by the Province as amended from time to time.
- *Significant Habitat of Endangered and Threatened Species* - The term *endangered species* means any native species, as listed in the Regulations under the *Endangered Species Act*, that is at risk of extinction throughout all or a significant portion of its Ontario range if the limiting factors are not reversed. *Threatened species* means any native species that is at risk of becoming endangered through all or a portion of its Ontario range if the limiting factors are not reversed.

- *Fish Habitat* - The term *fish habitat* means the spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes.
- *Significant Woodlands* - *woodlands* means treed areas that provide environmental and economic benefits such as erosion prevention, water retention, provision of habitat, recreation and the sustainable harvest of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance. The determination of a *Significant Woodland* is the responsibility of the local or County/Regional planning authority.
- *Significant Valley Lands* - The term *valley land* means a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of time.
- *Significant Wildlife Habitat* means wildlife habitats that are ecologically important in terms of features, functions, representation or amount, and their contribution to the quality and diversity of an area.
- *Significant Areas of Natural and Scientific Interest (ANSI's)* - The term *area(s) of natural and scientific interest* mean areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education. For the purposes of the Provincial Policy Statement (PPS), only provincially significant ANSI's are considered *significant* (i.e., the PPS does not apply to regional ANSI's).

2.3 Field Surveys

An initial reconnaissance of the site and study area was undertaken in May and June, 2009. The visit provided Stovel and Associates Inc. with a general overview of the site and surrounding area. A Vegetation Communities Map was initially prepared based on the results of the 2009 surveys, and subsequently refined based on 2011 and 2012 surveys. Potential issues pertaining to site development, extraction limits, depth of extractable resource and potential impacts related to extraction were discussed with the proponent and study team members.

Following this initial site visits in 2009, site-specific investigations were completed by Stovel and Associates Inc. (and its subconsultants) from June 2010 to July 2012 to determine the potential for some Species at Risk to be present on or adjacent to the study area. In some cases, targeted field surveys were undertaken using the standardized protocol as set out by the MNR.

- May 27, 2010 – breeding bird survey, general wildlife survey

- June 25, 2010 – breeding bird survey, general wildlife survey
- June 10, 2011 – Bobolink survey, general wildlife survey
- June 21, 2011 – Bobolink survey, general wildlife survey
- June 30, 2011 – Bobolink survey, general wildlife survey
- June 14, 2012 – Common Nighthawk and Eastern Whip-poor-will survey,
- June 20, 2012 – refinement of vegetation communities,
- July 02, 2012 – refinement of vegetation communities.

Vegetation communities were mapped and described in general accordance with the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 2008). Natural heritage information collected during the field investigations was evaluated to determine potential significance. The delineation of wetland communities was compared to the wetland mapping provided by the Ministry of Natural Resources, Saugeen Valley Conservation Authority and County of Grey mapping of natural features.

Breeding bird surveys were conducted on May 27 and June 25, 2010. The first survey started at 0635 and concluded at 0830 hours while the second survey extended from 0613 to 1202 hours. Surveys were conducted on days when the wind was calm and there was no precipitation.

In 2011, three surveys were conducted for the Bobolink. These consisted of a walking transect through the study area and completing five 10-minute point counts. The density of point counts was greater than recommended by the MNR protocol (many point counts were closer than 250 m to each other) but this was done to compensate for the topography and to ensure that full coverage was obtained.

The Bobolink surveys were undertaken on June 10, June 21, and June 30, 2011, starting at 0745, 0753, and 0743 hours, respectively and concluding prior to 0900 hours. Weather on June 10 was sunny with temperatures of 12 to 15°C and wind 2 to 3 on the Beaufort wind scale. On June 21, it was sunny with temperatures of 16 to 20°C and wind 1 to 3 on the Beaufort wind scale. On June 30, it was sunny with temperatures of 10 to 12 °C and wind 0 to 2 on the Beaufort wind scale.

A crepuscular and nocturnal survey was undertaken for the Common Nighthawk (*Chordeiles minor*) and Eastern Whip-poor-will (*Caprimulgus vociferus*) on the evening of June 14, 2012. This consisted of a single point count from 2042 to 2240 hours, covering the period before sunset to a full hour after dark. Official sunset was at 2113 hours that evening and the full moon occurred on the following evening. This date was selected because these two species are known to be most vocal during the periods close to the full moon, and on nights when the moon is not obscured by clouds (Mills 1986, 1995). During full moonlight, the whip-poor-will calls all night. At the time that this survey was undertaken, there was no protocol for surveying for this species. A new protocol for the whip-poor-will by Bird Studies Canada (2012) suggests that a 3-minute

point count completed any time between half an hour after sunset and before the moon sets is sufficient. A longer count was undertaken to catch the dusk period when nighthawks are most active and to ensure that the whip-poor-will was absent. The Bird Studies Protocol involves completing a series of point counts along a pre-determined route to get an index of numbers occurring within an atlas square. Using such a short point count could conceivably result in some birds that were present not being detected. The weather on the night of the count was initially sunny turning to full moonlight, and the temperature dropped from 20 to 15°C. Prior to dark, the wind registered 1 to 2 on the Beaufort wind scale and became completely calm after dark.

The MNR noted that several other Species of Risk could potentially occur on or near the site. These included the Chimney Swift (*Chaetura pelagica*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Olive-sided Flycatcher (*Contopus flaviventris*), Golden-winged Warbler (*Vermivora chrysoptera*), Canada Warbler (*Cardellina canadensis*), Henslow's Sparrow (*Ammodramus henslowii*), and eastern milksnake (*Lampropeltis triangulum*). There is a previous record of the Henslow's Sparrow from the site.

For the bird species, a standard breeding bird survey combined with knowledge of their habitat requirements was considered adequate to determine their presence or absence. The site was visited from 0747 to 1318 hours on June 21, 2011 to conduct breeding bird surveys and evaluate habitat for bird Species at Risk. In addition, two breeding bird surveys had been completed in 2010.

Incidental observations of other wildlife groups were made while completing the breeding bird surveys. These included dragonflies and damselflies, butterflies, amphibians, reptiles and mammals.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designations were used to determine national significance and S-ranks and other designations ascribed by the Natural Heritage Information Centre (NHIC) were used to determine provincial status. Regional and local significance was determined by the various atlases (Cadman et al. 2007; Dobbyn 1994; Holmes et al. 1989; NHIC 2005).

3.0 DESCRIPTION OF THE ENVIRONMENT

3.1 Terrain Setting

This section provides an overview of three aspects of the terrain setting: geology, physiography and soils.

The Guelph Formation underlies the subject land. The Guelph Formation consists of tan to brown, even-textured, fine- to medium-crystalline dolostone which appears vuggy and porous in reefal complexes (Liberty. 1966). The Guelph Formation together with the underlying Amabel Formation are the major aquifers in south-central Ontario.

A large network of outwash gravel deposited along the present course of the Saugeen Beatty River occurs in the former Township of Egremont. This outwash system is one of the most important sources of good-quality gravel and sand in the Township.

The subject land is located in a branch of this outwash deposit.

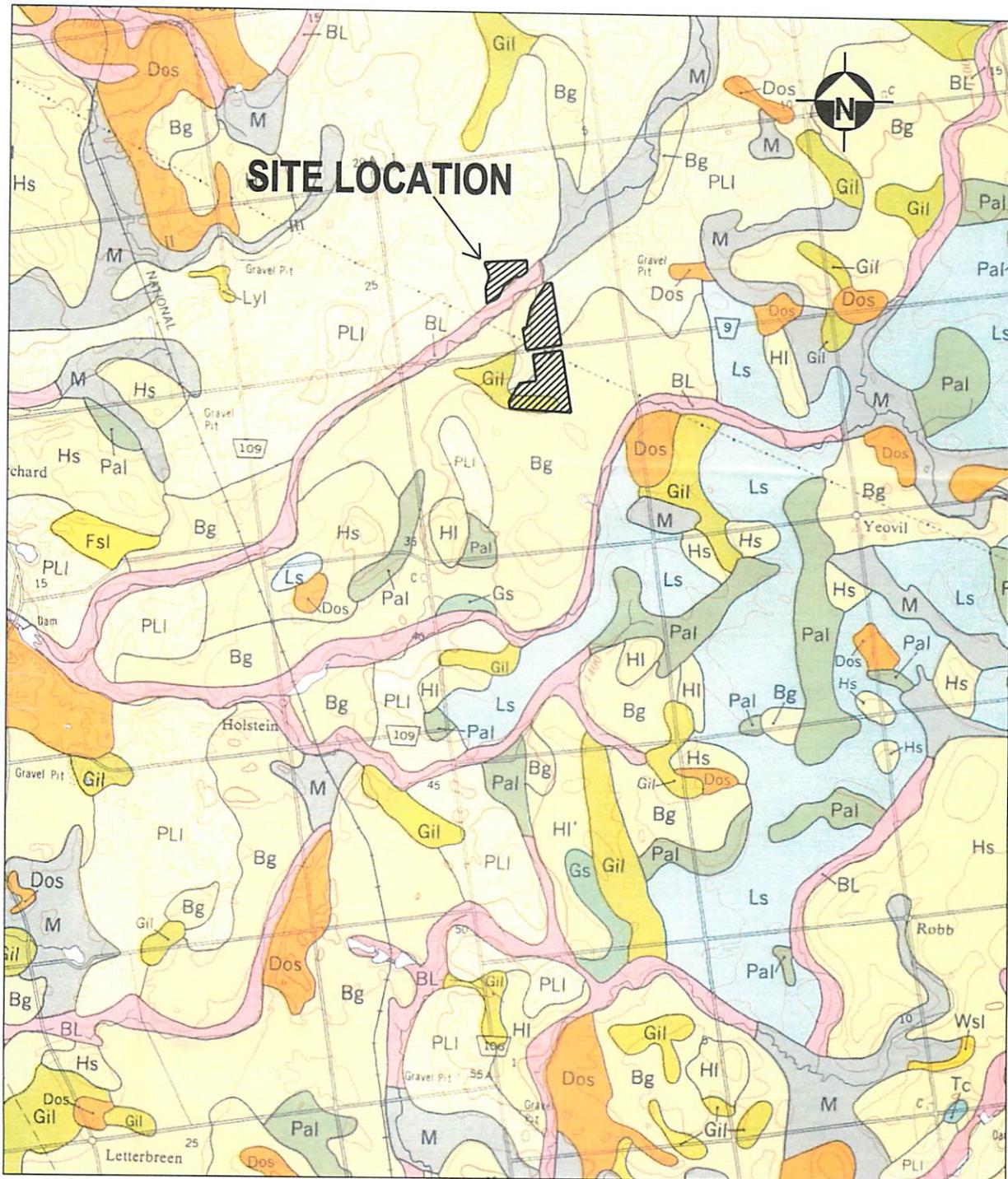
The southern portion of the site is mapped as Burford loam (Map 2). Burford soils are well drained, very dark grey loams over well sorted gravelly outwash. Limitations of the soil include low inherent fertility, and poor moisture-holding characteristics. The southern limits of the site are mapped as Gilford loam. The Gilford soils are a poorly drained mineral soils developed from calcareous well-sorted sands and gravels. Gilford soils are mapped in depressional areas having a high water table.

The northern portion of the site is mapped largely as Pike Lake loam. Pike Lake loam is a mineral soil developed on calcareous gravelly materials containing pockets of till. This soil is well drained to excessively drained. The main limiting factors associated with this soil are low inherent fertility and droughtiness, in conjunction with steep slopes, erosion and stoniness.

The northern portion of the site is divided by a watercourse, called the Beatty-Saugeen River. Lands associated with the watercourse are mapped as Bottom Lands. Organic soils associated with the watercourse and riverine wetlands are mapped as Muck.

3.2 Water Table

ARL Groundwater Resources Ltd. provided an interpretation of the shallow water table; the southern portion of the site appears to be in the range of approximately 425-427 masl and the northern portion appears to be in the range of 418-425 masl.



LEGEND

Bg

BURFORD LOAM

BOTTOM LAND

1

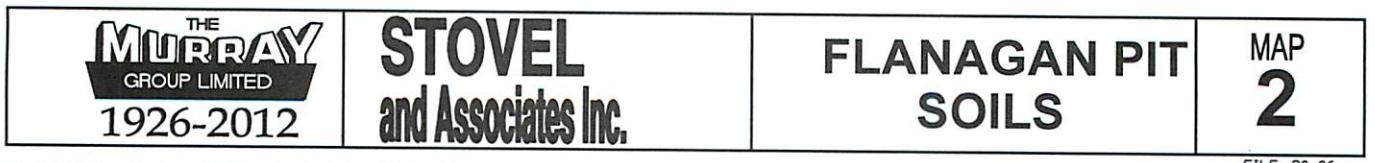
MUCK

Gil

GILFORD

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PIKE LAKE LOAM



3.3 Biologic Setting

The subject land is located within Site Region 6 (*Life Science Areas of Natural and Scientific Interest in Site District 6-5*. Ministry of Natural Resources. 1994). A site region is an area of land within which the response of the vegetation to the features of the landform follows a relatively consistent pattern.

Specifically, the site is located in the middle to west portion of Site District 6-5. This portion of Site District 6-5 is described as a complex pattern of till moraine ridges, kame moraine hills, broad swampy spillway, till plains and drumlin fields. The vegetation patterns in Site Region 6-5 include headwater wetlands, forested eskers, upland forests on till and kame moraine, kettle lakes and wetland complexes, and upland till plain forests.

The Beatty-Saugeen River is the primary watercourse in the local area. This River is located in the northern portion of the site. A riparian swamp wetlands flank both sides of the River, in proximity to the site. The wetlands are not mapped as a provincially significant wetland.

3.4 General Description of Onsite and Offsite Land Uses

The proposed pit licence is approximately 50.5 ha in size. The pit area is part of a larger mixed farm owned by the Flanagans. The pit lands form three distinct parts:

- North of the Beatty Saugeen River,
- South of the Beatty Saugeen River but north of Grey Road 109, and
- South of Grey Road 109.

For the most part, agricultural lands comprise the proposed pit. Lands adjacent to the proposed pit are dominated primarily by active agricultural land uses. The exception to this occurs north of Grey Road 109 where there are two features, the forested riparian zone of the Beatty-Saugeen River and along the northern extent of the property where there is an upland, broadleaf woodlot.

The following provides a more detailed description of the natural heritage features adjacent to the three parts of the proposed pit.

North of the Beatty-Saugeen River

The northernmost portion of the pit represents a triangular, isolated farm field. The field is used for common field crop purposes. The Beatty-Saugeen River, marks the southerly limits, and separates this field from the remainder of the farmstead.

Adjacent to the watercourse are lowland/wetland vegetation communities. These

communities are seasonally flooded.

To the north and west of this agricultural field is an upland broadleaf woodlot. Butternut trees have been found along the northwesterly portion of this woodlot.

South of the Beatty-Saugeen River

This section of the Flanagan farmstead includes three small fields that are used to pasture cattle and one field that is used for common field crop production. Immediately north of Grey Road 9, a hydro line and a newly constructed hydro tower are located. The area proposed for extraction includes a large hill. The upper portion of the hill is cultivated and/or grazed by cattle. Along the western slope of the hill, a coniferous plantation and cedar woodland have been mapped.

South of Grey Road 109

This portion of the proposed pit consists of agricultural fields that are cultivated for common field crop production. A newly constructed hydro tower is located in the northeastern limits along Grey Road 109.

The southerly limits of this portion of the proposed pit are marked by an agricultural drain. Flow in this drain is intermittent. A coniferous swamp is located south and west of this portion of the proposed pit.

3.5 Vegetation Communities

As previously stated, the proposed extraction area is comprised mostly of agricultural land and cultural communities such as hedgerows. Natural/semi-natural communities are located beyond the limits of the proposed site.

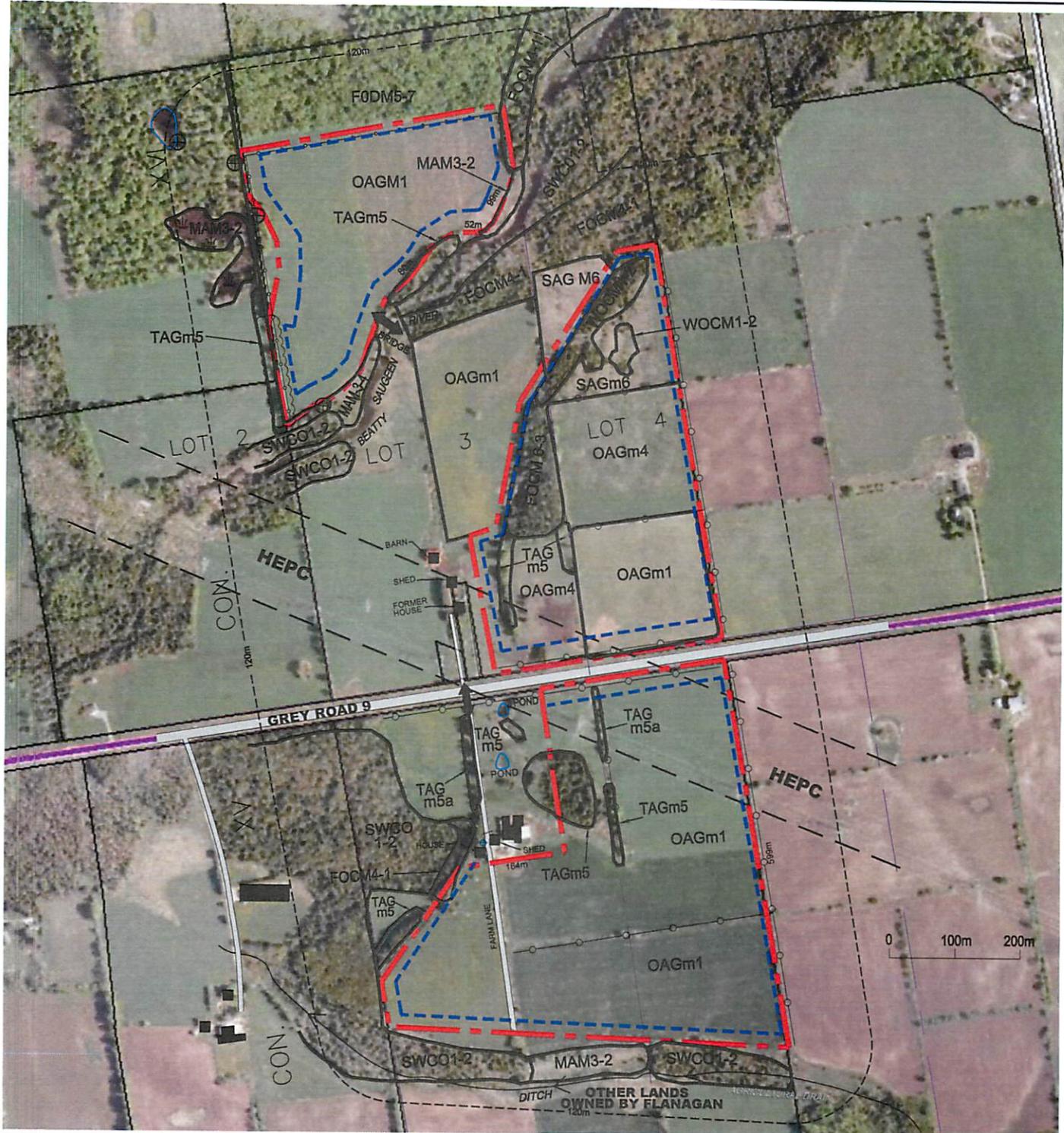
There are three wetland units mapped (see Map 3 – Vegetation Communities) adjacent to the area to be licensed:

- a small isolated wetland located approximately 30 m from the proposed area to be extracted,
- a narrow riverine wetland that follows the Beatty-Saugeen River, and
- a coniferous swamp located west of the pit, south of Grey Road 109.

The vegetation communities are described in the following paragraphs.

Proposed Licensed Area

A total of two natural/semi-natural terrestrial vegetation communities occur within the proposed licensed area, not including hedgerows. These communities occur within the portion of the pit immediately north of Grey Road 109 and are described below.



LEGEND

- - - 120m SETBACK
- SUBJECT LAND
- - - EXTRATION LIMITS
- ⊕ APPROXIMATE LOCATIONS OF BUTTERNUT TREES

Forest/Woodland

- F0DM5-7 Dry-Fresh Sugar Maple - Black Cherry Deciduous Forest Ecosite
 F0CM4-1 Fresh-Moist White Cedar Forest type
 F0CM6-3 Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type
 WOCM1-2 Dry-Fresh White Cedar Coniferous Woodland Type

Wetland

- MAM3-2 Reed Canary Grass Organic Meadow Marsh Type
 MAM3-4 Fowl Manna Grass Graminoid Organic Meadow Marsh Type
 SWC01-2 White Cedar Coniferous Swamp Type

Cultural

- SAGM6 Shrub Pasture
 OAGM1 Annual Row Crop
 OAGM2 Perennial Cover Crops
 OAGM4 Open Pasture - very gravelly
 TAGM1 Coniferous Plantation - very gravelly
 TAGM5 Coarse Mineral Fencerow
 TAGM5a Coarse Mineral Fencerow - Norway Spruce

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FLANAGAN PIT
VEGETATION COMMUNITIES
PART OF LOTS 3 AND 4 CONCESSIONS 15 AND 16 (FORMER TOWNSHIP OF EGREMONT) TOWNSHIP OF SOUTHGATE, COUNTY OF GREY

MAP NO:
3

WOCM1-2 Dry-Fresh White Cedar Coniferous Woodland Type

A small woodland has been mapped along the westerly slope face. The woodland is less than 100 m wide and is comprised almost entirely of eastern white cedar. The cedars are less than 6 m in height. This unit occurs on steep slopes, in excess of 30%, with limited topsoil cover. Cattle have grazed extensively through this woodland creating several trails and limiting the growth of the undercanopy.

This woodland grades into a larger, contiguous white cedar forest to the north and a naturalized coniferous plantation to the southwest.

FOCM6-3 Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type

This plantation is located on the westerly slope of a large hill, north of Grey Road 9 and south of the Beatty-Saugeen River. The canopy in this community is dominated by Scotch pine averaging 20-30 cm dbh. Several deciduous trees have grown into this plantation including white ash, black cherry, and sugar maple that were mostly in the 20 to 40 cm dbh range. The canopy closure was approximately 80% except in the southern end where it has been opened up due to cattle grazing. As a result, the canopy in this location is approximately 50% closed. The subcanopy was comprised mostly of hawthorn, white ash, with limited numbers of black cherry and sugar maple. The ground coverage including herb-Robert, inserted Virginia-creeper, and a variety of forage grasses.

Adjacent Lands - Terrestrial

In large part, the adjacent lands are comprised mainly of agricultural systems, including common field crop systems, pasture lands and forage lands. Several semi-natural and natural terrestrial vegetation communities have been mapped adjacent to portions of the proposed pit.

FODM5-7 Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest Ecosite

A dry-fresh broadleaf forest is mapped along the northerly and northwesterly limits of the site. This forest has been harvested for commercial purposes in the past and evidence of skidder haul roads are noted throughout the forest community. An existing fence marks the limit between the proposed pit and the forest community.

In the northwestern portion of this forest, four specimens of the endangered butternut were found outside of the proposed licensed area. These are discussed in more detail in Section 5 under significant habitat for endangered and threatened species.

This forest community is dominated by sugar maple averaging 25 to 40 cm dbh, with black cherry as the subdominant species. All of the large specimens of maple and cherry had been removed from the forest. White ash, ironwood, basswood, and beech were also found in the forest but these species do not occur in significant numbers within the canopy. Overall canopy closure was estimated to be about 80%, however several small sections and trails were cleared leaving small pockets with no canopy cover. The northwesterly portion of the forest contained several small hemlock trees. The understory was dominated by blue cohosh, trillium and grey dogwood.

The easterly portion of this community grades into a lowland forest community dominated by eastern white cedar.

The forest community occurs in hummocky topography. Depressions of up to 5 m in depth were noted, but these depressions were not dominated by hydrophytic vegetation.

Adjacent Lands - Wetlands

SWC01-2 White Cedar – Organic Coniferous Swamp Type

Two coniferous swamp communities have been mapped adjacent to the subject property. One community is located south of Grey Road 9 and the other community has been mapped along the riparian zone of the Beatty-Saugeen River.

These coniferous swamp communities are underlain by organic soils in excess of 40 cm.

The primary species in these swamps are eastern white cedar. Other species present include yellow birch, trembling aspen, white spruce, and balsam fir. The overall crown closure is variable, ranging from almost open to 80%. In closed canopy areas, there was very little ground coverage under dense cedars, but in more open areas, there was coverage by red-osier dogwood, marsh marigold, tall meadow-rue, joe-pye-weed and sensitive fern. Along the edges, especially adjacent to the Grey Road 109, evidence of blow-down was present.

Along the Beatty-Saugeen River, at the eastern extent of the Flanagan property, evidence of beaver activity was noted. Eastern white cedar was the primary tree being culled by the beavers. Hummocks around tree stumps provided upland microhabitats that supported inserted Virginia-creeper, dwarf raspberry, and red-osier dogwood.

MAM3-2 Reed Canary Grass Organic Meadow Marsh Type

Two small marsh wetland pockets were mapped west and northwest of the proposed license. These small wetland communities occur at the bottom slope areas. The wetland

areas were dominated by reed canary grass. Along the edge of the wetland were bittersweet nightshade, red-osier dogwood, willows, American elm, and basswood.

MAM3-4 Fowl Manna Grass Graminoid Organic Meadow Marsh Type

Two small meadow marsh communities were mapped along the western portion of the Beatty-Saugeen River. These areas are within the floodway of the river and will inundate during high water events, such as the spring freshet. These marshes were dominated by fowl manna grass and awl-fruited sedge.

Other Cultural Communities – Onsite and Adjacent Lands

Several hedgerows, identified as TAGm5 on the Vegetation Communities Map, have been mapped within the proposed licensed area. The most noteworthy of these hedgerows is located north of the Beatty-Saugeen River, along the western portion of the farm field. This hedgerow has several large (over 15 m in height) deciduous trees – sugar maple, black cherry, American elm, basswood, white ash. As well, several smaller trees and shrubs were noted, common buckthorn, apple, staghorn sumac and trembling aspen. Specimens of butternut were noted along the edge of this hedgerow (as the hedgerow grades into the adjacent forest community).

The understory of the hedgerows included mostly weedy and herbaceous plants typical of old-field vegetation, goldenrods, wild carrot, common burdock, thistle, New England aster, Queen Anne's lace, bird's foot trefoil, field horsetail, oxe-eye daisy, fleabane and thimbleberry.

South of the Beatty-Saugeen River, along the eastern portion of the proposed pit, a cultural community has been mapped, SAGm6 – Shrub Pasture. This area is actively pastured by cattle but several small trees (eastern white cedar, American elm) and shrubs (staghorn sumac, buckthorn, hawthorn) have survived this grazing activity. The ground cover is primarily limited to pasture grasses and weedy species.

3.6 Wildlife

A list of wildlife species seen on and adjacent to the subject lands is provided in Appendix 2. A total of 99 species were seen, including 9 odonates, 18 butterflies, 4 amphibians, 2 reptiles, 58 birds, and 8 mammals. In the text of the report, scientific names for wildlife species are presented only for those species that are not listed in Appendix 2. Scientific and common names are presented in that appendix.

A higher diversity of species was found on the adjacent lands than on the subject lands. A total of 78 species were seen on adjacent lands (4 odonates, 11 butterflies, 4 amphibians, 2 reptiles, 53 birds, and 4 mammals) compared with 69 species on site (6 odonates, 14 butterflies, 1 amphibian, 0 reptiles, 41 birds, and 7 mammals). It should be noted that the subject lands also include areas that will not be part of the extraction

footprint, so that the preceding numbers are an overestimate of the number of species that occur within the proposed extraction areas.

All but one of the nine odonate species observed are abundant in southern Ontario and locally. Habitat for odonates is limited within the study area due to the lack of permanent ponds and water bodies. The majority of odonates prefer still water so that the Beatty Saugeen River on site provides limited habitat for dragonflies and damselflies. An exception is the ebony jewelwing which is typically associated with streams with wooded banks. The river provides excellent habitat for this species and it was common on site.

The amber-winged spreadwing was observed on adjacent lands, and this species has an S-rank of S3 indicating that it is rare and vulnerable in Ontario. This species is discussed in more detail under Species of Conservation Concern in Section 3.8 under significant wildlife habitat.

The NHIC database search revealed that a provincially significant dragonfly has been recorded within the two 1 km squares in which the study area is located. This was the clamp-tipped emerald (*Somatochlora tenebrosa*) which has an S-rank of S2S3 indicating that it is imperiled to vulnerable in Ontario. The flight period for this species is from early July until the end of August (Jones et al. 2008), so it would not likely have been detected during the time when the inventories were undertaken. The potential for this species to occur on or adjacent to the subject lands is discussed in Section 3.8 under significant wildlife habitat.

The 18 species of butterflies that were observed are all common provincially and locally. Two of the species (European skipper and cabbage white) are not native to North America. An exception is the monarch, which was observed on adjacent lands. This species has been designated special concern and is discussed in more detail in Section 3.8 under significant wildlife habitat.

The 4 amphibian species detected are all very common provincially and locally. There is no amphibian breeding habitat on the subject lands, with the river providing breeding habitat for local amphibian species. The northern leopard frog was the only amphibian species that was found on the subject lands.

Two reptile species were observed, but none were seen on the subject lands. The eastern gartersnake was observed on adjacent lands and probably occurs on the subject lands as well. This is the most abundant and widespread snake species in the province and it is likely to occur in the riparian areas along the river, around the existing barns and houses, in the fence lines, and occasionally in agricultural land.

The second reptile species that was observed was the snapping turtle, which occurred in an off-site wetland. This species has been designated special concern and is discussed in more detail in Section 3.8 under significant wildlife habitat.

Of the 58 bird species observed, 55 were considered breeding species. The three nonbreeding species were the Turkey Vulture, Belted Kingfisher, and the Common Raven. The Turkey Vulture was observed on one occasion only flying over the site. Although the woodlands adjacent to the site may potentially provide nesting habitat for this species, the fact that it was seen on only one survey suggests that it does not nest locally.

The kingfisher was observed along the river where it was foraging for fish. This species nests in earthen banks along watercourses and in road cuts and gravel pits. The banks of the river within the study area are shallow and do not provide any suitable nesting habitat for the Belted Kingfisher. Although the stretch of the river that is within the study area may be important foraging habitat for a pair of kingfishers, it is not breeding habitat.

A single Common Raven was observed flying over the adjacent lands. As it continued out of sight, it was assumed that it was a nonbreeding individual, or at least a bird that did not have a territory within the study area. The subject lands definitely do not have any suitable breeding habitat for this species.

A total of 41 bird species were seen on the subject lands, and four of these were considered to be nonbreeders. In addition to the Turkey Vulture and Common Raven, these included the Barn Swallow and Bobolink.

The Barn Swallow was observed foraging over the site, but there is no suitable nesting area for this species present on the subject lands. It was, however, breeding in association with the barn north of Grey County Road 9 on the adjacent lands. The Barn Swallow nests predominantly on artificial structures such as barns and outbuildings and bridges.

The Bobolink was observed on the subject lands only on the June 25th visit in 2010. A single male was seen perched on a fence between two habitats that were unsuitable for breeding for this species: a wooded area and a very heavily grazed pasture. During the 2011 targeted Bobolink surveys, this species was observed on site during the first visit but not on subsequent visits. On the last visit, a male from an adjacent property landed on the fence separating the two land holdings, but its territory was obviously associated with adjacent lands. In neither year was there any indication of nesting by the Bobolink on the subject lands. The Bobolink is discussed in more detail in Section 3.8, which deals with significant habitat of endangered and threatened species.

The Barn Swallow nested in the adjacent barn, and this species is now designated threatened. Although it foraged over the site, it does not nest within the proposed extraction footprint. This species is discussed in more detail in Section 3.8 under significant habitat of endangered and threatened species.

With the exception of the Bobolink and Barn Swallow, none of the bird species observed are significant. They all have an S-rank of S5, which means that they are common to abundant and secure in the province, or S4, which means that they are apparently secure. Even the Bobolink and Barn Swallow have an S-rank of S4 as they are common to abundant in Site Region 6, but have recently been designated Threatened.

All eight of the mammal species observed are abundant provincially and locally.

3.7 Summary of Significant Natural Heritage Features

The following provides a brief summary of the significant natural heritage features on the site or within 120 m of the subject land.

Significant Wetlands

The subject land does not include portions of a classified wetland or wetland complex. There are no significant wetlands located within 120 m of the subject land.

Significant Habitat of Endangered or Threatened Species

This section of the report deals with endangered and threatened species that were confirmed within the study area. It also addresses species that were identified as having the potential to occur in the general area by the Ministry of Natural Resources.

The three confirmed endangered and threatened species within the study area include the butternut (*Juglans cinerea*) (endangered), Barn Swallow (threatened), and Bobolink (threatened). Other endangered and threatened species identified as potentially being present by MNR include Eastern Whip-poor-will, Chimney Swift, and Henslow's Sparrow.

It should be noted that the Eastern Meadowlark (*Sturnella magna*) has recently been designated threatened. This species has habitat requirements that are fairly similar to those of the Bobolink and the targeted Bobolink surveys would have detected this species if it had been present. The Eastern Meadowlark was not detected within the study area.

Confirmed Species

Butternut

Four specimens of the butternut were found. These were all north of the Beatty Saugeen River. Two were on adjacent lands and two were within the proposed setbacks to the pit. None were within the proposed extraction area. A brief description of these trees is provided below.

Butternut #1 was a sapling approximately 1.4 m tall. Originally, it had two stems but one had died and broken off; the remainder of the tree looked healthy. This butternut would be considered retainable, but is unlikely to survive because it is in full shade.

Butternut #2 was a sapling 0.5 m tall with a forked stem. This tree appeared to be healthy and would be retainable at this point.

Butternut #3 had three stems with diameter at breast height (dbh) of 8, 8, and 6 cm. The 6-cm stem was dead. The centre stem had a large canker or deer rub that was 60 cm long and covered a quarter of the total circumference of the tree. Both living stems had cankers completely around the stem at a height of approximately 1.5 cm, but there were no obvious signs of disease above 2 m. There were two major cankers near the roots of the three shoots.

Butternut #4 was a single-stemmed sapling that was 1.5 m tall. This tree showed no signs of disease and would be considered retainable at this time.

In summary, butternuts #1, 2, and 4 are retainable, although butternut #1 may not survive due to being in complete shade. For the purposes of planning, butternut #3 is also considered retainable although it shows signs of advanced stages of the disease.

Barn Swallow

The Barn Swallow nested within the barn west of the proposed extraction area north of County Road 109. It is possible that some of the swallows that were observed may also have been associated with the farm buildings to the south of the road, although this was not confirmed. The Barn Swallow was not designated threatened at the time that the surveys were undertaken.

It is concluded that the barn north of County Road 109 that is west of the proposed extraction area provides significant habitat for a threatened species. This species may forage at considerable distances from its nesting area. Although foraging may often occur within 100 m of the nesting area, birds frequently forage 0.4 to 1.2 km from the nest site and may occasionally travel as far as 6 km to find suitable foraging sites (Fitch 1958; Samuel 1971; Shields 1984). Because the Barn Swallow has a very large home range for foraging during the nesting season, the area that is proposed for extraction is not considered essential to this species and is not considered significant habitat for it.

Bobolink

The Bobolink was designated threatened by MNR in September 2010 after the original fieldwork was completed. This species is now protected by the *Endangered Species Act, 2007* (ESA), and the PPS policy on the significant habitat of endangered and threatened species applies in general to it. Although it is currently listed as threatened nationally, it is not listed on any of the federal *Species at Risk Act* schedules and is also not listed as having any status. However, it appears inevitable that it will be formally listed as threatened federally as well.

2010 Results

The Bobolink was observed on both visits to the site, but both observations were of a single male in different locations. On the May 27th visit, it was observed in the alfalfa field on adjacent lands south of the river and west of the proposed pit. On the June 25th visit, it was seen on site on a fence line between a small woodlot and a heavily grazed pasture north of Grey County Road 9.

It is unlikely that the Bobolink bred in either of these locations, but the adjacent lands location is a more likely breeding area than the on-site location. The following discussion summarizes the habitat requirements of the Bobolink and whether the adjacent lands or site should be considered habitat for this species under the ESA or significant habitat of a threatened species under the PPS.

The Bobolink is a grassland species that nests in fields with a mixture of grasses and broad-leaved forbs. Originally it was a prairie species. With the onset of European settlement, its original habitat was mostly destroyed and it adapted to using agricultural land. Consequently, it is much more abundant in Ontario now than it was prior to conversion of forests to agricultural land.

Despite its designation of threatened, the Bobolink is still abundant in southern Ontario south of the Canadian Shield. During the second Ontario Breeding Bird Atlas, it was the 12th most abundant species detected on point counts in Site Region 6, and the 24th most abundant in the Carolinian Zone (Site Region 7) (Gahbauer 2007).

The Bobolink prefers fields with relatively low amounts of total vegetative cover, low coverage by alfalfa (*Medicago sativa*), and low total legume cover, but with high litter cover and grass-to-legume ratios (Bollinger and Gavin 1992; Martin and Gavin 1995). Vegetation 6-15 cm tall is preferred (Wiens 1969). These habitat conditions generally occur in fields that are 8 or more years old. The Bobolink may be somewhat area sensitive. Fields larger than 30 ha support nearly twice the density of Bobolinks as fields

smaller than 10 ha, but it is known to inhabit fields as small as 2 ha (Bollinger and Gavin 1992).

The current decline of the Bobolink is linked to changes in agricultural practices. These include declining areas in hay, increasing use of alfalfa as the primary forage crop, earlier hay-cropping dates, earlier rotation of hayfields to other crops, and declines in the amount of pasture (Bollinger and Gavin 1992; Savignac 2010). Other factors contributing to its decline are natural succession, planting of marginal agricultural land to plantations, and urban development.

Habitat for the Bobolink was considered marginal on the adjacent lands in 2010. Alfalfa fields have been demonstrated to be relatively poor habitat that is frequently mowed before the birds can successfully raise their first brood. The presence of a single male within the hayfield is not an indication that any young were successfully reared on the adjacent lands. Furthermore, the lack of any Bobolinks in this field in late June also suggests that either nesting did not take place or that attempted nesting was unsuccessful. The earliest egg date for Ontario is May 19, but most eggs are present in Ontario nests from June 2 to July 12 (Peck and James 1987). Thus, the observation of the single male on May 27 may have been before egg laying commenced or near the start of the nesting cycle. This male may have been unsuccessful in attracting a mate. Once fledged, the young remain in the vicinity of the breeding site until late July or mid-August, with flocks leaving breeding fields shortly thereafter as a cohesive unit (Martin and Gavin 1995).

The subject lands were considered unsuitable habitat for the Bobolink in 2010. A single, non-singing male was observed on a fence post adjacent to a field that was heavily grazed. This field had grass that was only about 5 cm in height and provided no cover for nesting Bobolinks. The grass in this field was considerably shorter and sparser than that required by the Bobolink. Any attempts at nesting in this field would undoubtedly have failed due to either trampling by cattle or exposure of the nest to predators.

The adjacent lands and subject lands are not considered to provide significant habitat for the Bobolink and therefore do not constitute significant portions of the habitat of an endangered or threatened species. The reasons for not considering this significant habitat are:

- ◆ The site and adjacent lands support a low population, with only one male present in 2010. A single male was seen on two different occasions in two locations which suggests that this bird was not on territory. It is unknown if the same male was involved;
- ◆ If the species nested in the alfalfa field on the adjacent lands, the likelihood of successfully rearing young is low. Consequently, the adjacent lands contribute little if anything to the overall Bobolink population;

- ◆ The lack of birds in the alfalfa field during the June visit when adults and possibly young should have been present is a strong indication that successful breeding did not take place;
- ◆ The alfalfa habitat is transitional and would eventually be removed as part of normal agricultural rotational practices; and
- ◆ The on-site habitat is heavily grazed pasture with grass that is too short and sparse to support nesting Bobolinks.

It is also concluded that the alfalfa field on the adjacent lands and the grazed pasture on the site do not constitute habitat for the Bobolink under the ESA. The alfalfa field is more of an ecological trap than habitat. Birds may be attracted to the area to nest but reproductive success is highly unlikely to be successful due to early cutting of hay. The literature also confirms that alfalfa fields are poor habitat for this species. The on-site habitat is completely unsuitable for nesting Bobolinks.

In summary, although a single male Bobolink was seen on both visits to the site in 2010, it was seen in two different locations. The site on adjacent lands was marginal habitat and the on-site habitat was unsuitable for nesting. It is concluded that the adjacent lands and the site do not provide significant habitat for an endangered or threatened species, or habitat under the *Endangered Species Act, 2007*.

2011 Results

Prior to discussing the 2011 results, a summary of the habitat available for the Bobolink is provided.

The alfalfa field west of the northern portion of the site in which a Bobolink had been observed in 2010 was planted to corn in 2011 and did not provide any habitat for this species.

The southeastern field within the proposed extraction area north of County Road 109 was planted to hay in 2011. On June 10, the vegetation in this field was about 60 cm tall and consisted of approximately 90% alfalfa with scattered timothy (*Phelum pratense*), Philadelphia fleabane (*Erigeron philadelphicus*), and bull thistle (*Cirsium vulgare*). The hay in this field had been cut by the time of the next visit to the site on June 14th.

The southwestern field within the proposed extraction area north of the county road was 90% grass, predominantly orchard grass (*Dactylis glomerata*) and smooth brome (*Bromus inermis*). There were scattered tall buttercups (*Ranunculus acris*) and bull thistles within this field. The vegetation within this field was 70 to 80 cm tall. By June 30th, this field had been heavily grazed.

The central field north of the county road was grazed by cattle. The southern portion of the field consisted of grass 5 to 7 cm tall with scattered taller grasses and buttercups. In the northern portion of this field, there was approximately 50% coverage by orchard grass that was 70 to 80% tall. By June 21st, this field was much more heavily grazed with about 60% of the field cropped almost to the ground. Canada thistle and bull thistle were more prevalent then and the remainder was mostly orchard grass 60 to 70% tall. This field was cut by the farmer in the afternoon of June 21st.

The northern fields north of the county road that were on site consisted of a heavily grazed pasture on the east side that was vegetated with grass that was mostly 5 cm tall with small patches of bull thistle and orchard grass. The field west of it was also heavily grazed, but had about 30% coverage by white cedar (*Thuja occidentalis*).

The adjacent field to the east of the site at the north was a dense mix of approximately 40% timothy, 10% witch grass (*Elymus repens*), 10% smooth brome, 20% red clover (*Trifolium pratense*), and 20% rough daisy fleabane (*Erigeron strigosus*). Vegetation in this field was approximately 1 m tall.

South of County Road 109, the subject lands continued to be in row crops, thus providing no potential habitat for the Bobolink. A field fronting on the road west of the proposed extraction area was vegetated with grass. This field was heavily grazed with approximately 70% of it cropped closely to the ground. The remainder of the vegetation was 30 to 40 cm tall.

During the first survey on June 10th, Bobolinks were heard singing at great distances from the site on both the western and eastern sides. The only Bobolinks seen on this date were observed from the point count conducted at the northern end of the central field. One male flew from west of the site and landed east of the site. A minute later it flew back to the west and was met by another male flying east. The first bird turned back toward the east and the two landed in the on-site field singing, where they remained for less than 10 minutes. I left and returned 12 minutes later, and there were no sign of the birds. This morning seemed unusual, as the Bobolinks were wandering around considerably.

On the June 21st survey, the only Bobolinks seen were on adjacent lands east of the most northern field north of County Road 109. One male was observed singing in the fence line on the south side of the adjacent timothy-clover field approximately 150 to 200 m from the site. After 6 to 7 minutes, it flew to the property boundary, briefly landed on a fence post, displayed over the timothy field and then landed in it where it remained for the next 5+ minutes while the observer was still there.

No Bobolinks were seen or heard on the June 30th survey.

Based on the 2011 results, it is concluded that the Bobolink did not breed on site that year. The only observation was of 2 males that temporarily landed within the central field. They did not appear to be territorial on site and subsequent surveys failed to find the species on site again. In the meantime, this field had become more heavily grazed and was finally mowed on June 21st. Even early in the season, habitat for this species on site was marginal at best. The two males seen on the first survey were wandering considerably and may have been displaced from another field due to hay cutting. Haying occurred before June 14th on the subject lands.

The field adjacent to the northern field appeared to support one territorial male on the second survey. This point was not surveyed on the first survey, so there is a good possibility that a Bobolink was also present here earlier in the season. This field still had not been cut by June 30th, so Bobolinks had the potential to successfully raise a brood in this field.

It is concluded that the subject lands do not provide significant habitat for the threatened Bobolink. It is possible that the field east of the northern on-site field provides significant habitat for this threatened species. However, the number of Bobolinks here was low (apparently only a single breeding male) and the 1-m tall vegetation was significantly higher than the height of grasses preferred by this species. Therefore, even the adjacent field appears to be marginal habitat for the Bobolink.

Endangered and Threatened Species Not Found Within the Study Area

Eastern Whip-poor-will

The Eastern Whip-poor-will nests in forested habitat where it is usually associated with openings. It avoids deep forest and extensive open areas, however. In Ontario, preferred habitats include rock and sand barrens with scattered trees, savannahs, old burns with early successional forest growth, and large, open coniferous plantations, especially those dominated by pines (Mills 2007; Peck and James 1983).

The whip-poor-will appear to avoid areas of pure conifers, except for plantations, and prefers young poplar-birch stands, early successional areas, and hardwood and mixed-wood forests as mature as pole stage. Mature stands are seldom used, and it shows a preference for even-aged stands. Pastures, shrubby meadows, pipeline and hydro rights-of-way, and rock outcrops adjacent to or in extensive forest may provide good nesting habitat. Key habitat features are shade, proximity to open areas for foraging, and fairly sparse ground cover. Most nesting occurs in dry habitat (Cink 2002; Cooper 1981; Raynor 1941; Taylor and Taylor 1979; Tyler in Bent 1940).

Although it is associated with forest edges and openings, the whip-poor-will is an area-sensitive species that requires extensive forest. It may occasionally nest in smaller

woodlots, but only where there is a high percentage of forest cover in the general region. In Maryland, it continued to nest in woodlots as small as 40 ha, but only after the amount of forest cover increased from 38% to 51%. In agricultural southern Ontario, it appears to be restricted to areas of contiguous forest that are at least 100 ha in area; 500-1,000 ha may be necessary to support more than a very few pairs (Bushman and Therres 1988; Cooper 1981; Robbins 1979; Robbins et al. 1989).

The survey results for the whip-poor-will were negative. The survey was undertaken under ideal conditions at a time when this species should have been singing all night long.

Based on the survey results and the on-site habitat conditions, it is concluded that the Eastern Whip-poor-will is absent from the study area. Although this species occasionally nests in pastures, the on-site pastures are too heavily grazed to provide suitable habitat.

Chimney Swift

In southern Ontario south of the Canadian Shield, the Chimney Swift nests predominantly in urban areas. Its ancestral habitat was mature forest or forest containing trees with suitable nest cavities, typical of its current range on the southern Shield. After European settlement, the Chimney Swift quickly adapted to human-made structures for nesting, particularly chimneys. In the south, it appears to have abandoned its ancestral habitat and is associated almost entirely with developed areas. In natural habitat, it requires trees with cavities. Trees with a minimum dbh of 30-40 cm are necessary, but much larger trees are preferred, typically 60 cm dbh or larger. In developed areas, chimneys, barns, and other human-made structures provide suitable nesting habitat. In urban and agricultural areas, human-made structures appear to be used almost exclusively now. Nesting in natural areas has not been documented recently in the province within regions where forests have been cleared for agriculture and in urban centres (Fischer 1958; Mayfield 1988; Peck and James 1983).

Chimneys that are suitable for nesting are larger than 28.5 cm in diameter with a rough inner surface of brick, cement, and tile offering protection against cold weather. Most suitable chimneys were built before 1960 with modern chimneys being smaller and suitable for supporting only a single nest (Gauthier et al. 2007).

The Chimney Swift is an easily detected species that would have been observed during the breeding bird surveys and other surveys on the site had it been present. There are no suitable chimneys in the study area for this species. It is also questionable if there are suitable nest trees present within the study area. There are no suitable nest trees within the proposed extraction area.

It is concluded that the Chimney Swift is absent from the study area and that there is no suitable habitat for it.

Henslow's Sparrow

The Henslow's Sparrow is a grassland species that may nest in native tallgrass prairie and anthropogenic old-field meadows, pastures, and hayfields; sedge marshes may also be inhabited. Fields that are used are frequently moist and have tall rank vegetation with scattered shrubs, although shrubs may not be essential if there are tall plants present that provide suitable singing perches (Herkert et al. 2002; Peck and James 1987; Tuininga 2007). Pruitt (1996) described the key breeding season habitat requirements as: tall, dense grass; a well-developed litter area; standing dead vegetation; availability of song perches; and sparse or no woody vegetation. The primary vegetation requirements for the Henslow's Sparrow are a deep litter area and abundant standing dead vegetation, tall dense herbaceous or graminoid vegetation, and little woody cover (Hands et al. 1989; Reinking and Hendricks 1993; Swanson 1996; Verser 1990; Wiens 1969; Zimmerman 1988).

The Henslow's Sparrow is an area-sensitive species that probably requires fields 40-100 ha in area (OMNR 2000). Earlier information (Austen et al. 1994) suggested that fields as small as 10-30 ha were adequate to support this species in Ontario. The recovery plan for the Henslow's Sparrow suggested that restored grasslands should be larger than 50 ha, and preferably larger than 100 ha (Environment Canada 2006).

The Henslow's Sparrow has declined significantly in Ontario and most records in the NHIC database are historical. During the second atlas, this species was found in only 9 squares within the province. Breeding was not confirmed in the province during the second atlas, and probable breeding was documented in only 2 squares (Tuininga 2007).

According to MNR, the Henslow's Sparrow formerly bred on the proposed Flanagan pit site. However, it was not detected during the normal breeding bird surveys. This species has a rather weak song that may be overlooked or drowned out by other singing birds. The optimum time to detect it is at dusk or shortly thereafter because it continues to sing after other diurnal birds have become quiet. This species was also not detected during the nocturnal survey that was conducted on June 14, 2011, a date well within its breeding season. Therefore, it is concluded that the Henslow's Sparrow is absent in the study area.

The site is now unsuitable habitat for the Henslow's Sparrow. The tall, dense grassy cover with deep litter that it requires is absent due to a combination of heavy grazing and mowing.

Summary of Significant Habitat of Endangered and Threatened Species

The presence of one endangered and two threatened species was confirmed during the study. These were the butternut, Barn Swallow, and Bobolink.

A total of four butternuts were found, two on adjacent lands and two within the setbacks from the proposed extraction area. The fate of these trees relative to the butternut canker disease is uncertain, but it has been decided to retain all these trees.

The Barn Swallow is nesting within the barn north of County Road 109 and the barn is considered significant habitat for this threatened species. Foraging habitat for this species was not identified as being significant.

The Bobolink was observed both on and adjacent to the subject lands. No nesting appeared to be occurring on the site. A single male was seen on site in unsuitable habitat in 2010 and two males temporarily landed on site in 2011. These birds exhibited no signs of territoriality and were not defending an area on the subject lands. Habitat in the area where they landed was marginal at best on the first visit and was rendered unsuitable by the second visit through heavy grazing and mowing. It is concluded that the site does not provide significant habitat for the Bobolink.

A field east of the site may have supported a single breeding male Bobolink, although this field also appeared marginal due to the tall vegetation that was present.

Three endangered and threatened species that have previously been documented in the general vicinity of the subject lands were absent. The surveys for these species were all negative and there is no suitable habitat on site for any of them.

Fish Habitat

The Beatty-Saugeen River is mapped within 120 m of the subject property. This watercourse provides fish habitat.

Significant Woodlands (south and east of the Canadian Shield)

A review of the County of Grey Official Plan (Dated 2000) indicates that there are no Significant Woodlands located on the site. However, based on a review of OPA 80, significant woodlands are located on the site and within 120 m of the site. The communities that have been mapped within the Significant Woodland designation appear to include the Scotch Pine coniferous plantation (FOCM6-3) and the white cedar coniferous woodland (WOCM1-2).

Significant Valley Lands (south and east of the Canadian Shield)

There are no significant valley lands on the subject land or within 120 m of the site.

Significant Wildlife Habitat

The Natural Heritage Reference Manual (NHRM) (OMNR 2010) and the Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000) identify four main types of significant wildlife habitat: seasonal concentrations of animals; rare and specialized habitats for wildlife; habitats of species of conservation concern; and animal movement corridors. These are discussed below in relation to the natural features on and adjacent to the site.

Seasonal Concentration Areas

The SWHTG identifies 14 types of seasonal concentrations of animals that may be considered significant wildlife habitat. They are:

- winter deer yards;
- moose late winter habitat;
- colonial bird nesting sites;
- waterfowl stopover and staging areas;
- waterfowl nesting areas;
- shorebird migratory stopover areas;
- landbird migratory stopover areas;
- raptor winter feeding and roosting areas;
- Wild Turkey winter range;
- Turkey Vulture summer roosting areas;
- reptile hibernacula;
- bat hibernacula;
- bullfrog concentration areas; and,
- migratory butterfly stopover areas.

None of these seasonal concentration areas have been identified as occurring on or adjacent to the subject lands. The NHIC database does not identify any wildlife concentration areas within the 10 by 10 km square in which the study area is located.

Rare or Specialized Habitat

Rare habitats are considered to be those vegetation communities that are considered rare in Ontario. Generally, these are communities that have been ascribed an S-rank of S1 to S3 by the NHIC.

None of the vegetation communities on or adjacent to the site are rare in Ontario.

The SWHTG defines 14 specialized habitats that may be considered significant wildlife habitat. They are:

- habitat for area-sensitive species;
- forests providing a high diversity of habitats;
- old-growth or mature forest stands;
- foraging areas with abundant mast;
- amphibian woodland breeding ponds;
- turtle nesting habitat;
- specialized raptor nesting habitat;
- moose calving areas;
- moose aquatic feeding areas;
- mineral licks;
- mink, otter, marten, and fisher denning sites;
- highly diverse areas;
- cliffs; and
- seeps and springs.

The study area may potentially qualify as providing significant habitat for area-sensitive species, but none of the other specialized habitats are present. Seven species of birds that are considered area sensitive were determined to be breeding within the study area: Yellow-bellied Sapsucker, Black-throated Green Warbler, Black-and-white Warbler, American Redstart, Ovenbird, Mourning Warbler, and Scarlet Tanager. All of these occurred on adjacent lands, while only the Black-and-white Warbler and Mourning Warbler occurred on the subject lands.

Although the Mourning Warbler is occasionally considered an area-sensitive species, it may occur in smaller wooded parcels and even shrubby areas on occasion. It nests mostly in deciduous and mixed forests, occasionally in coniferous forests (Peck and James 1987) and usually nests at forest edge, either in forested habitat or adjacent shrubland (Peck and James 1987); it prefers canopy closure of 40 to 77% (Pitocchelli 1993). One Ontario nest was in a residential garden (Peck and James 1987). It was not considered to be area sensitive by James (1984), OMNR (2000), or Pitocchelli (1993). Freemark and Collins (1992) considered it area sensitive but gave no estimate of forest size requirements. A single singing male Mourning Warbler was observed in the southeast corner of the site in a small stand of trees and it occurred both on site and in the adjacent lands. It was probably breeding in this area, but the habitat patch was small and did not support any other area-sensitive breeding birds. Consequently, this small wooded area is not considered significant for area-sensitive breeding birds.

The woodland adjacent to the northeast portion of the site is extensive and consequently only a small proportion of it was surveyed. Sites that contain significant assemblages of area-sensitive species in Grey County typically have in the order of 18 or more area-sensitive species with multiple pairs of each. Although only 6 area-sensitive species were found during the survey, it is likely that a survey of the entire

woodland would reveal several more area-sensitive species. Consequently, this woodland is considered significant wildlife habitat for area-sensitive breeding birds.

Species of Conservation Concern

Three groups of wildlife may be considered species of conservation concern:

- species that are rare or designated significant at some level;
- species that have a significant proportion of their population in Ontario and that are rare in the planning area; and
- species that are exhibiting a statistically significant decline in Ontario.

Rare or Significant Species

Significance is defined at six levels:

- globally significant (with a G-rank of G1 to G3);
- nationally significant (designated Endangered, Threatened, or Special Concern by the Committee on the Status of Endangered Wildlife in Canada);
- provincially significant (with an S-rank of S1 to S3 and S3?, if the latter type of species is being tracked by the OMNR; species designated Special Concern by the OMNR);
- regionally significant (within a Site Region, or within one of the old OMNR administrative regions);
- locally significant (within a Site District);
- within a planning authority's jurisdiction.

The above is the order of priority that should be given to protection of species of conservation concern.

No species were found during the inventories that were significant globally, regionally, locally, or within Grey County. The butternut, Barn Swallow, and Bobolink are nationally and provincially significant and are discussed above under significant habitat of endangered and threatened species as opposed to significant wildlife habitat.

Confirmed Rare or Significant Species

Two species were discovered that are significant nationally and provincially. Both the monarch and snapping turtle are designated special concern. Both species were seen on adjacent lands only. In addition, the amber-winged spreadwing is considered rare in Ontario. These are discussed in more detail below.

Monarch

The monarch is considered vulnerable because of several facets of its life history. It is a migratory species that spends the winter in a small area in Mexico. The wintering habitat is not fully protected, and many of its key migration stopover locations are unprotected. In addition to its migratory habits, it relies extensively on plants in the milkweed family in North America. Eggs are laid on milkweeds and the larvae feed and pupate on these plants. Given that plants of the milkweed family may be toxic to livestock, milkweeds are considered noxious weeds (Crolla and Lafontaine 1997). In Ontario, milkweed is designated as a noxious weed and landowners that do not eradicate it on their properties may be in contravention of the Weeds Act.

In Canada and Ontario, the only areas that are considered significant for monarch butterflies are those that support large concentrations of milkweeds. Adults are frequently observed in a wide variety of open habitats, as they are not dependent on milkweeds. They feed on the nectar of goldenrods and asters, and other wildflowers that are typically found in old-field habitats. Feeding areas for adults are not a limiting factor and are not considered significant.

The monarch was seen only on June 21, 2011. In addition, only a single individual was observed and it was on adjacent lands. Given the low numbers of the monarch, it is concluded that there is no significant habitat for this species within the study area.

Snapping Turtle

The snapping turtle is a highly aquatic species that leaves water only to lay eggs and rarely to bask. Even when it basks, it usually does so on standing or floating timber in water. It occurs in lakes, large ponds, rivers, and swamps that retain water year-round. Nesting usually occurs in gravel or sand deposits, often in anthropogenic sites such as roadsides and along railways (Cameron 2008).

A single snapping turtle was found in a wetland on adjacent lands west of the northern extraction parcel. Given that this is a relatively sedentary species, it is likely that this wetland supports the snapping turtle on a regular basis. There are a number of wetlands within this general area, and it is possible that they all function to provide habitat for the snapping turtle.

The wetland in which the snapping turtle was found is considered significant wildlife habitat for this species.

Amber-winged Spreadwing

The amber-winged spreadwing is associated with small bog-margined lakes and temporary ponds (Jones et al. 2008).

It was observed on adjacent lands west of the parcel of the extraction area that is north of the river, near the shoreline of the large, more southerly wetland. This particular wetland appeared to be a permanent water body that was a marsh with 90% vegetation coverage by reed canary grass (*Phalaris aundinacea*) and soft-stemmed bulrush (*Schoenoplectus tabernaemontani*).

It is possible that this pond was providing breeding habitat for the amber-winged spreadwing. Consequently, the wetland may be considered candidate significant wildlife habitat for this species.

Unfortunately, the significance of this species was not realized at the time that the fieldwork was conducted, so no notes were taken on the numbers of amber-winged spreadwings that were present. Given that no numbers were documented and the fact that adult damselflies may travel considerable distances from the breeding area, this wetland is not being identified as significant wildlife habitat at this time. Further work may confirm that this species is breeding within this wetland on a sustainable basis and, in that event, its habitat should be considered to be significant wildlife habitat.

Unconfirmed Rare or Significant Species

Hart's-Tongue Fern

The hart's-tongue fern is a strict calciphile that is generally found only at sites on or near dolomitic limestone. In Ontario, it is associated with hardwood forests (predominantly those dominated by sugar maple) and is generally found on steep, moderately moist slopes with a north to northeast exposure. It also occurs in rocky areas where rivers have cut through the glacial deposits and exposed underlying limestone and/or dolomite bedrock (Environment Canada 2007). It is frequently associated with moist slopes or hillsides, especially bouldery talus slopes and crests of escarpments (Soper 1954) and sinkholes (Short 1979).

There is no suitable habitat for this species within the study area. There are no exposed bedrock outcrops or limestone boulders that could potentially support this species.

Clamp-tipped Emerald

The NHIC search revealed that the clamp-tipped emerald had been recorded in the two 1-km squares in which the subject lands are located. This species also has a later flight

period such that it would not likely have been detected even if it were present given the timing of the inventories.

The habitat of the clamp-tipped emerald is shady forest streams with intermittent rapids and pools. The males patrol over the water near riffles in small shady streams while the females oviposit in water near debris or on stream banks (Jones et al. 2008). The habitat described closely matches conditions found along the Beatty Saugeen River through the study area. Consequently, it is concluded that the study area provides significant habitat for the clamp-tipped emerald. The key habitat is the river itself as well as adjacent tree cover that provides shade.

Eastern Milksnake

The milksnake is somewhat of a habitat generalist. It may occur in fields, swamps, and open woodlots. In Ontario, it is more common in heavily wooded landscapes than areas with a low percentage of forest cover. It is, however, common in rural pastures and hayfields, and frequently occurs in and around barns, agricultural outbuildings, and houses. Its association with buildings is due to its preferred diet of small mammals, especially young mice, voles, and rats. It also eats young birds, other snake species, and slugs (Fischer 2002).

The milksnake is an egg-laying species, so presence of suitable nesting sites is important. However, a wide variety of sites may be used for egg laying, including rotting logs, stumps, mammal burrows, manure piles, leaf mounds, compost, sawdust piles, sand, under boards, or in loose soil (Fischer 2002).

Hibernation sites for milksnakes include mammal burrows, old foundations, crawl spaces and building basements, old wells and cisterns, stone walls, gravel and dirt banks, hollow logs, rotting stumps, and rock crevices (Fischer 2002).

The best potential habitat for this species within the study area is around the existing barns and other buildings. If the species is present, these areas are most likely to provide food and nesting and wintering sites. The area that is proposed for extraction may be used on a casual basis by the milksnake if it occurs at all within the general vicinity of the study area. However, the site does not appear to provide any important habitat for the milksnake, such as wintering or nesting areas.

Common Nighthawk

The Common Nighthawk nests in three distinct habitats in Ontario. In the Canadian Shield and Hudson Bay Lowland, it nests in forest openings and on rock outcrops, in burnt and clear-cut forests, and in bogs and fens. In the agricultural south, it nests in both rural and urban areas. In rural areas, it nests in grasslands, pastures, agricultural

fields, gravel pits, prairies and alvars, and at airports. In urban areas, it nests mostly on flat, graveled roofs, occasionally on railways and footpaths, and it has been documented nesting on coal piles (Peck and James 1983). In southern, off-Shield Ontario, the Common Nighthawk appears to have almost abandoned nesting in natural forest clearings and rural areas with most nesting occurring in cities or communities where there are flat roofs. It does continue to nest in the south in some areas of heavy tree cover such as the Bruce Peninsula (Sandilands 2007).

The survey for the Common Nighthawk was negative. The on-site habitat for this species is unsuitable due to the heavy grazing and mowing. The adjacent habitat is marginal for it as there are few openings within the forest cover and these were usually in wetland habitat. It is concluded that the nighthawk is absent within the study area.

Red-headed Woodpecker

In Ontario, the Red-headed Woodpecker has been documented nesting in and at the edge of deciduous and occasionally mixed woodlots; in dead trees flooded by beavers; in trees in fields, pastures, fencerows, and roadsides; in city parks, ravines, golf courses, and residential yards; and at the edges of ponds, rivers and riverine floodplains (Peck and James 1983).

The Red-headed Woodpecker is a conspicuous and noisy species that would not have been overlooked during the normal breeding bird surveys. It is concluded that it is absent within the study area.

Olive-sided Flycatcher

In Ontario, the Olive-sided Flycatcher nests in coniferous and mixed forests, usually in wetlands, but occasionally in upland habitat. It has been documented nesting in black spruce bogs and burns, jack pine stands and burns, mixed woods, and treed margins of beaver ponds and cattail marshes (Peck and James 1987). It is most frequently associated with coniferous stands that are nutrient poor and are near water (Altman and Sallabanks 2000).

The Olive-sided Flycatcher is a conspicuous species that sings from the top of tall trees. It would not have been overlooked during the breeding bird surveys. In addition, there is no suitable habitat for this species within the proposed extraction area and the adjacent habitat is marginal at best.

Golden-winged Warbler

In Ontario, the Golden-winged Warbler has nested in fields of tall grasses and weeds overgrown with rose bushes and raspberries, shrubs, and small trees; in or at the edges

of open coniferous plantations; in overgrown clearings and edges of deciduous and mixed woods; near roadsides and hedgerows; and at the edges of wet areas of alder growth and in an alder-willow-dogwood thicket swamp. Most nests were found in dry habitats, but 9% were in wet habitats (Peck and James 1987). It also nests on hydro corridors. Confer (1992) stated that the Golden-winged Warbler appears to initially thrive with the appearance of shrubby, early succession fields that follow logging, fire, or abandoned farmlands. Local declines subsequently occur with advancing succession and reforestation. Although the general type of habitat that is used is very broad and common, and despite using a wide variety of vegetation communities for nesting, the habitat within Golden-winged Warbler territories have a consistent pattern. They include patches of herbs, shrubs, and scattered trees, plus a forested edge (Confer 1992). Consequently, few areas provide suitable habitat for this species.

The Golden-winged Warbler was not detected during the breeding bird surveys. The exacting habitat requirements that this species needs are absent within the study area. It is concluded that the Golden-winged Warbler is absent from the study area.

Canada Warbler

The Canada Warbler nests in upland and lowland mixed, coniferous, and deciduous forests, and it may also nest in shrubby areas. It frequently nests in coniferous swamps, especially those dominated by white cedar south of the Canadian Shield. It generally nests in open stands or clearings, but may be present in dense cedar swamps. It prefers dense shrub or sapling undergrowth and is often associated with cedar or balsam fir regeneration under forest canopy (Conway 1999; Peck and James 1987).

The Canada Warbler was not detected during the breeding bird surveys. Although the upland cedar forest and cedar swamp adjacent to the site are potential habitat, the understorey conditions are unsuitable. The upland cedar forest is dense with no shrub or understorey cover, making it completely unsuitable for this species. The canopy of the cedar swamp is structurally suitable, with scattered small opening with approximately 10 to 20% shrub layer coverage by white cedar and balsam fir. This is generally too open of a shrub layer to be suitable for the Canada Warbler.

It is concluded that the Canada Warbler is absent from the study area. It was not detected during the breeding bird surveys and the habitat on adjacent lands is marginal for it. There is no suitable habitat within the proposed extraction area.

Summary of Rare or Significant Species

Three significant species were documented on adjacent lands, but none were seen on the subject lands. The three species were the monarch butterfly, snapping turtle, and amber-winged spreadwing. It was concluded that there was no significant habitat for the

monarch, but that an off-site wetland provided significant habitat for the snapping turtle. There may be significant habitat for the amber-winged spreadwing in another off-site wetland, but this would need further confirmation.

The NHIC search revealed that the clamp-tipped emerald had been documented from the square in which the subject lands are located. The river running through the northern portion of the site provides ideal habitat for this species. No visits were made to the study area during the flight period of this species. To err on the conservative side, it was assumed that it was present and significant habitat was identified for the clamp-tipped emerald. This habitat is outside of the proposed extraction area.

Seven additional significant species were identified by MNR as potentially occurring within the study area. None of these species were detected. It was concluded that six of these species were absent. There is a possibility that the milksnake is present, but it would most likely be associated with the buildings if it were present. Since the time of writing this report, one of the buildings was removed by Hydro One. The remaining barn is actively used for livestock purposes and it is located well beyond the limits of the proposed extraction area. It was concluded that there is no significant habitat for the milksnake within the proposed extraction area.

Species with a Significant Proportion of their Global Population in Ontario

There are numerous species in Ontario that have limited representation outside of the province. Habitat for these species may be considered significant wildlife habitat if the species is also rare or significantly declining within the planning area.

No species with a significant proportion of their global population in Ontario occur within the study area.

Species Declining Significantly in Ontario

Generally, good data are currently only available for birds, and there are four sources of information that track changes over time. These include the Breeding Bird Survey (BBS), which is a roadside survey; the Forest Bird Monitoring Program, which samples forest interiors; the Migration Monitoring Program, which is based predominately on birds captured in mist nets; and the Ontario Breeding Bird Atlas, which studies the distribution and abundance of birds at 20-year intervals.

Some of the bird species observed within the study area are considered to be declining significantly in Ontario based upon BBS results and also the two breeding bird atlases. The NHIC has taken this into account in recent revisions to the S-ranks that it has ascribed various species. Some of the declining species have recently had their S-ranks changed from S5 (secure) to S4 (apparently secure) to reflect these declines. Examples

of such species that were breeding within the study area are Eastern Wood-Pewee, Great Crested Flycatcher, Eastern Kingbird, Barn Swallow, Wood Thrush, Gray Catbird, Brown Thrasher, Ovenbird, Mourning Warbler, Vesper Sparrow, Savannah Sparrow, Scarlet Tanager, Rose-breasted Grosbeak, Indigo Bunting, Bobolink, Brown-headed Cowbird, and Baltimore Oriole. Habitat for these species is not considered significant wildlife habitat because these species are still abundant and widespread in the province and Grey County.

Animal Movement Corridors

The SWHTG defines animal movement corridors as elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another. To qualify as significant wildlife habitat, these corridors should be a critical link between habitats that are regularly used by wildlife.

No critical linkages were found within the study area, but it is likely that some wildlife movement occurs along the Beatty Saugeen River. The riparian areas along the river have not been identified as significant wildlife habitat for their corridor function simply because there does not appear to be any critical movement areas for any species along the river. However, general linkages along the river will be maintained by protecting the river and its floodplain.

Summary of Significant Wildlife Habitat

The fieldwork and analysis revealed that there were no significant seasonal concentrations of animals, no rare habitat, no species that have a significant proportion of their global population in Ontario, no species that are declining significantly, and no significant animal movement corridors within the study area.

Significant wildlife habitat has been identified on adjacent lands for area-sensitive breeding birds, the clamp-tipped emerald, and the snapping turtle.

Significant Area of Natural and Scientific Interest (ANSI)

There are no Significant Areas of Natural and Scientific Interest on the subject land or within 120 m of the site.

Summary

The subject property is located within 120 m of fish habitat, habitat for endangered and threatened species, significant wildlife habitat and significant woodland. Given these findings, a Level 2 environmental investigation is required.

4.0 DESCRIPTION OF PROPOSED DEVELOPMENT

The stages and form of the proposed operation methods are described in the Site Plans. A synopsis of the proposed development is provided below:

- the area proposed for the pit is approximately 50.5 ha in size, and the area proposed to be extracted is approximately 41.3 ha in size;
- the area to be extracted is comprised mainly of agricultural lands;
- access to the pit will be through a proposed entrance on Grey Road 9;
- hydraulic power equipment, including loaders and excavators will be used to extract the site;
- extraction will not occur below the water table. The effective limit of excavation will be set at a depth of 1.5 m above the water table;
- aggregate will be extracted progressively and processed using portable processing plants, e.g. portable crusher and screening plant;
- fuel will not be permanently stored on the site.

The Site Plan has been developed to address the specifications of the ARA.

Extraction should be viewed as an interim land use. A reforestation plan has been implemented on the Site Plans to ensure that there is no net loss of woodland as a result of the proposed extraction program.

Disturbance, including extraction, has been setback a minimum of 30 m from the mapped limits of the wetland communities adjacent to the proposed pit. Siltation control measures have been implemented on the Site Plan to reduce the potential for erosion and sedimentation. This will ensure that there is no impact on the wetland features as a result of extraction.

5.0 POTENTIAL IMPACTS AND MITIGATION

This component of the environmental study provides a summary of the following key considerations related to potential impacts on the significant natural heritage features – fish habitat, habitat for threatened and endangered species, significant forest and significant wildlife habitat - associated with the subject land and adjacent lands:

- a description of the ecological features and functions associated with the natural heritage features in question;
- an examination of the potential sensitivity of these natural heritage features to the proposed development;
- an evaluation of the potential impacts that could be caused by the proposed pit development; and
- an assessment of possible mitigation measures that could be implemented to ensure that potential environmental impacts are minimized.

5.1 Fish and Fish Habitat

The Beatty-Saugeen River is located within 120 m of the site. In the northern portion of the site, it is estimated that the River is approximately 15-30 m from the licence limits and 45-60 m from the proposed extraction limits.

The Beatty-Saugeen River is recognized as a cold water fishery.

Extraction-related impacts on this watercourse are not anticipated, given the following reasons:

- the watercourse is well separated from the proposed pit extraction area, and
- extraction is to remain 1.5 m above the water table.

The Beatty-Saugeen River is considered to be potentially sensitive to nearby development. The sensitivity of the watercourse is related primarily to three important factors:

- maintenance of existing groundwater flow characteristics,
- maintenance of water clarity and existing suspended sediment load in the watercourse, and
- maintenance of the existing thermal regime of the watercourse.

These three factors will determine whether the adjacent watercourse can provide appropriate habitat for fishes.

The sensitivity of a watercourse could be affected by the following types of pit activities:

- extraction that would intercept or affect the ground water regime,
- in-stream activities, such as construction of an in-stream access road, that would have a direct disruptive impact on the stream,
- the removal of vegetation near the stream.

Fish and aquatic habitat can be potentially disrupted by a number of activities such as:

- Direct physical impacts on habitat due to in-stream construction, channel re-alignment, construction of barriers, roads, dams etc.;
- Reduced surface water quality due to direct input of effluent, washwater containing elevated loads of suspended solids, chemical, input of high water temperature, etc.;
- Elevated groundwater temperature due to creation of surface ponds which trap solar energy and subsequently warm groundwater, and subsequently the nearest surface water; and
- Reduced stream baseflow due to direct water removal or due to local groundwater resources being diverted.

A summary of the potential impacts to fisheries resources associated with the Beatty-Saugeen River is provided discussed below.

Table 2: Predicted Impacts on Fish Habitat - Proposed Flanagan Pit

Potential Habitat Effect	Beatty-Saugeen River
Direct Disruption	No impact, since the Beatty-Saugeen River is located approximately 60 m from the extraction limit. A water-crossing structure will need to be constructed. Approvals from the SVCA will be required to permit the crossing. Appropriate conditions can be appended to the permit to ensure no direct or secondary impacts on the watercourse.
Reduced Surface Water Quality	No impact, since runoff from the site will be internalized to the pit area. Siltation control measures will be employed to reduce the potential for sedimentation.

Reduced Ground Water Quality	No impact, since standard mitigation measures will be implemented as a condition of licence (i.e. fuel storage and Spills Control Plan) to ensure the protection of ground water quality. Thermal impacts should not occur as the proposed pit is limited to extraction a minimum of 1.5 m above the water table. The River is well buffered from the proposed pit by adjacent land uses including a lowland woodland/wetland.
Reduced Base Flow	No impact, since extraction will not occur below the water table. Extraction will be separated approximately 60 m from the closest portion of the watercourse. Base flow impacts on the watercourse are not anticipated.

Additional protection is gained through the Provincial Standards of the Aggregate Resources Act. These standards outline several mandatory Prescribed Conditions that must be attached to the licence. The conditions that relate to the protection of water resources are as follows:

- 3.5 *A Spills Contingency Program will be developed prior to site preparation.*
- 3.6 *Fuel storage tanks will be installed and maintained in accordance with the Gasoline Handling Act.*
- 3.8 *If required, a Certificate of Approval will be obtained for processing equipment to be used on site.*
- 3.9 *If required, a Permit to Take Water will be obtained for utilizing ground and/or surface water.*

Given these statements, it is reasonable to predict that the risk of potential negative impacts on fish and aquatic habitat will be minimal.

5.2 Threatened and Endangered Species

Four butternut specimens were identified adjacent to the northern portion of the proposed pit. These butternut trees are well separated from the proposed extraction area of the pit, i.e. over 30 m setback from the extraction area.

The habitat associated with the butternut trees is not considered to be particularly sensitive to pit activities. The proposed pit is well separated from these specimens, i.e. over 30 m. This extraction setback from the edge of the adjacent woodland will eliminate any potential direct impacts related to root zone disturbance.

5.3 Significant Forest

The County of Grey Official Plan, dated 2000, does not identify any significant forest on the subject property or within 120 m of the site. However, based on a review of the County of Grey's Official Plan Amendment No. 80, a small portion of the site has been mapped as "Significant Forest".

Map 4 illustrates the location of significant forest in relation to the proposed pit.

There are three woodland patches mapped on the site or within 120 m of the site. These woodlands are as follows:

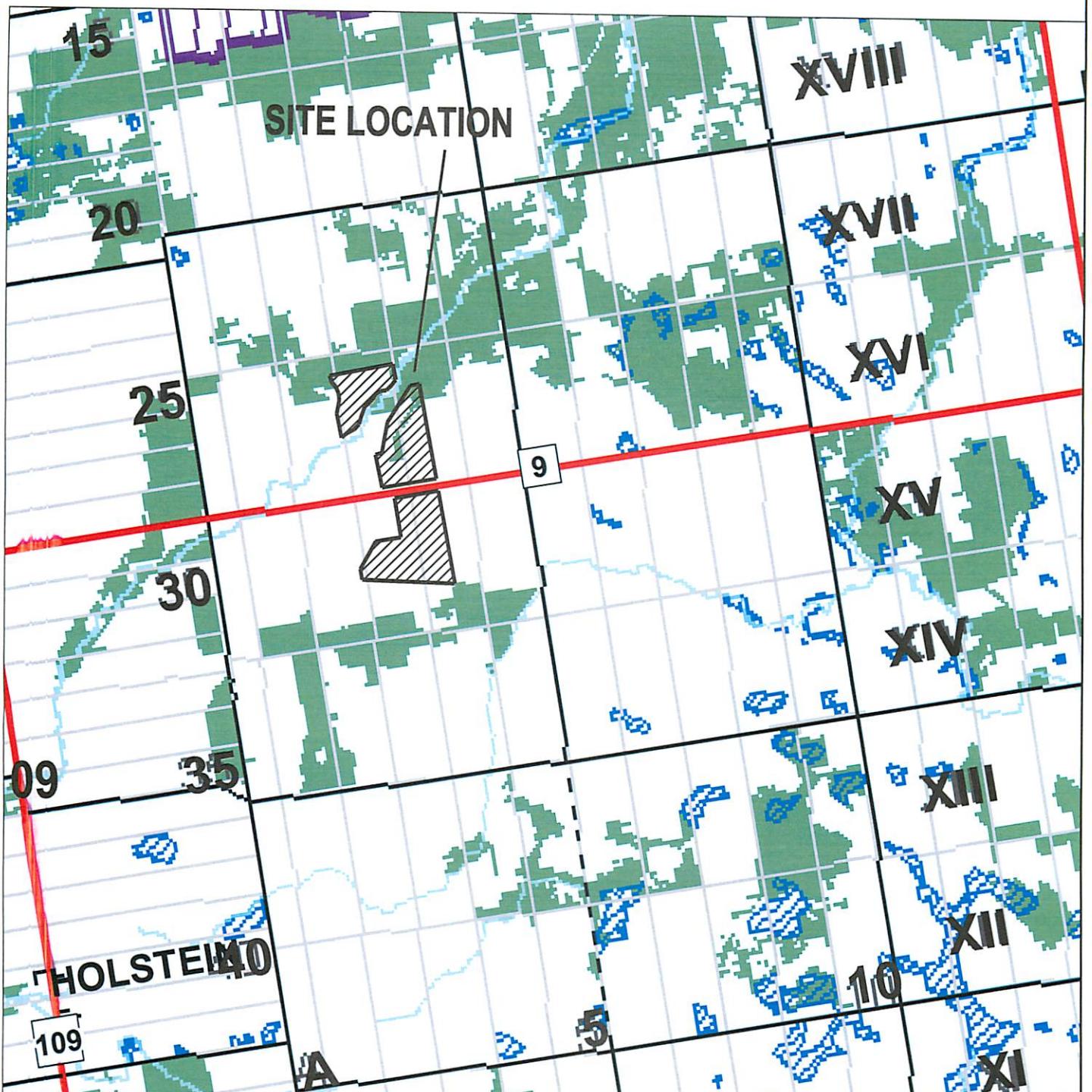
- a) FODM5-7 an upland broadleaf forest is located immediately north of the northernmost extraction area;
- b) SWCO1-2 and FOCM4-1 a lowland coniferous woodland/coniferous swamp is located adjacent to the Beatty Saugeen River; and
- c) WOCM1-2 and FOCM6-3 - a coniferous woodland and plantation follows the slope face of a large hill located immediately north of Grey Road 109.

Two of these woodlands, i.e. a) and b) above, are located adjacent to the proposed licence. FODM5-7 is located a minimum of 15 m from the northerly extraction limit. SWCO1-2, as it follows the Beatty-Saugeen River, is located a minimum of 30 m from the extraction area. FOCM4-1 is located 15-55 m from the extraction area. Impacts on these woodland systems are not anticipated as they are well set

The coniferous woodland/naturalized plantation described in c) above is located on the subject property. This woodland will be progressively removed as a result of extraction. This woodland is of limited timber value. However, the woodland will be harvested and used for firewood or sold by the landowner. This woodland does not provide interior habitat for birds and the woodland does not provide habitat for threatened or endangered species. Given the proximity of this woodland to the riparian woodlands associated with the Beatty-Saugeen River, it is reasonable to infer that a limited corridor function is provided by this woodland.

This portion of the significant forest is not considered to be sensitive to development. These areas have been extensively grazed by cattle and the woodland units provide little habitat benefits.

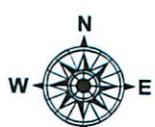
It is anticipated that there will be no significant impacts on the forest resources. It is recognized that a portion of the coniferous woodland/naturalized plantation will be removed as a result of extraction. However, the habitat functions associated with these communities is considered to be relatively low. A reforestation plan has been prepared to ensure no net loss of woodland.



LEGEND:



SIGNIFICANT WOODLANDS



**STOVEL
and Associates Inc.**

**FLANAGAN PIT
SIGNIFICANT FOREST**

**MAP
4**

Impacts on the adjacent forest communities can be easily remedied through the implementation of appropriate setbacks and siltation control measures.

5.4 Significant Wildlife Habitat

Based on the fieldwork described in Section 3 of this report, there is no significant wildlife habitat on the subject property. Significant wildlife habitat has been identified on adjacent lands for area-sensitive breeding birds, the clamp-tipped emerald, and the snapping turtle.

The habitat for these three aforementioned species is well separated from the proposed extraction area. The protection of the forest/woodland systems and wetland systems adjacent to the proposed pit will ensure that the habitat for these species is maintained.

No impacts on significant wildlife habitat are anticipated to occur as a result of this proposed pit application.

5.5 Recommended Mitigation Measures

The proposed development concept was designed to be well separated from adjacent natural heritage features. Additional setbacks are not necessary to ensure that there will be no negative impact on the adjacent natural heritage features.

The following Technical Recommendations have been prepared to state and/or reiterate the environmental mitigation measures for the proposed Flanagan Pit:

General:

- The setbacks along the wetland/woodland limits will be staked in the field prior to site disturbance within the respective area. The stakes will be a minimum of 1.2 m in height and will be coloured, e.g. orange paint, such that they are readily identifiable in the field. The stakes will be installed every 30 m (or at a shorter distance to allow for easy identification).
- The setbacks adjacent to wetlands/woodlands will have a silt fence installed at the outset of operations within the respective pit phase. The silt fence will be inspected regularly and maintained immediately should a portion of the fence fail.
- No stockpiling or pushing of material, including topsoil, into setback areas adjacent to wetlands will be permitted. In addition, no storage of equipment will be permitted in setback areas associated with wetland or aquatic systems.
- There shall be no additional runoff from the property during the operation of the pit or following the rehabilitation of the pit.
- Should drainage management activities, not including agricultural drainage, be proposed on the site, amendments to the Site Plan will be required. The SVCA, Township of Southgate and County of Grey will be circulated and asked to

comment on the merits of such an amendment request.

Lands north of the Beatty-Saugeen River:

- Access to these lands will require a crossing of the Beatty-Saugeen River. The existing bridge is not sufficient to handle trucks associated with the pit operation. Permission from the Saugeen Valley Conservation Authority (SVCA) will be required to construct such a structure.
- An appropriate work window will be required to construct the future access over the River.
- Construction specifications will be appended to the SVCA permit to ensure that impacts on the watercourse do not occur.
- Silt fencing will be required to ensure that silt from the extraction operation and the construction operation does not enter the River.
- Silt fencing will be required along the entire southerly portion of this phase. Similarly, silt fencing will be required along a portion of the westerly limits of this phase (in proximity to the wetland feature shown on the Site Plan) and the easterly limits of this phase. The silt fencing will need to be inspected and maintained during the course of extraction operations within this pit phase. Should maintenance of the silt fence be required, such maintenance will be completed immediately by the licensee.
- Soil shall not be stockpiled or located in berms along the easterly and westerly portions of the pit, adjacent to wetland systems.
- Should the licensee identify an alternative haul route that does not require a crossing of the River, approvals from the SVCA may not be required.
- Setbacks for this portion of the proposed pit are as follows:
 - 30 m along the southerly and easterly limit of the pit as this portion of the site is located adjacent to a wetland and the Beatty-Saugeen River,
 - 30 m along the westerly limit of the site, next to the wetland system,
 - 15 m along the westerly limit of the site, next to the hedgerow,
 - 15 m along the northerly limit of the site, next to the woodlot.

Lands north of Grey Road 109:

- Extraction operations will be oriented such that the existing plantation and cedar woodland (that extends along the side slope of the hill) will be removed during the later stage of this operational phase.
- As part of the progressive rehabilitation plan associated with this phase, the eastern side slope will be reforested with appropriate native species.

Lands south of Grey Road 109:

- Silt fencing will be required along the westerly (adjacent to the lowland coniferous

woodland/swamp) and southerly portions of the pit (adjacent to the agricultural drain). The silt fencing will need to be inspected and maintained during the course of extraction operations within this pit phase. Should maintenance of the silt fence be required, such maintenance will be completed immediately by the licensee.

- Silt fencing will be installed prior to stripping activities occurring within 100 m of the westerly and southerly extraction limits.
- Soil shall not be stockpiled or located in berms along the westerly and southerly extraction limits.

6. CONCLUSION

As part of the licensing process, a Natural Environment Level 1 Report is a mandatory documentation requirement. This study has been prepared based on relevant background information and field reconnaissance. Field surveys to document ecological features and functions associated with the subject land were conducted as part of this project.

As per the requirements of the *Aggregate Resources of Ontario. Provincial Standards (Version 1.0)*, the proximity of *significant wetlands, habitats of endangered or threatened species, fish habitat, significant woodlands, significant valley lands, significant wildlife habitat and significant areas of natural and scientific interest* to the subject land was considered.

As a result of the preceding evaluation, it was concluded that:

1. There are no *significant wetlands* located on the subject land, or within 120 m of the site;
2. There is no *significant habitat for endangered or threatened species* located on the subject land, however four butternut trees are located within 120 m of the site;
3. There is no *fish habitat* located on the site, however, *fish habitat* is located within 120 m of the site;
4. There are *significant woodlands* located on or within 120 m of the site;
5. There are no *significant valley lands* located on the subject land, or within 120 m of the site;
6. There is no *significant wildlife habitat* located on the subject land, however

- significant wildlife habitat* is located within 120 m of the site;
7. There are no provincially significant *areas of natural and scientific interest* located on the subject land, or within 120 m of the site; and
 8. Since *fish habitat and habitat for threatened or endangered species and significant forests and significant wildlife habitat* are located on the site or within 120 m of the subject land, a *Natural Environment Report (Level 2)* is required.
 9. A *Level 2 Natural Environmental Report* was completed. Technical recommendations, including the provision for reforestation of a portion of the site, were prepared. Based on the consideration of these recommendations, it is concluded that there will be no negative impacts on natural heritage features or their ecological functions.

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APPENDIX 1 - QUALIFICATIONS

ROBERT P. STOVEL, M.Sc., RPP, MCIP, P.Ag.

EDUCATION

M.Sc, Rural Planning, University of Guelph, 1988.

B.A. Geography, (Resources Management), Wilfrid Laurier University, 1986.

MEMBERSHIPS

Member of the Ontario Institute of Agrologists.

Member of the Ontario Professional Planners Institute and the Canadian Institute of Planners.

Member of the Aggregate Producers Association of Ontario.

POSITIONS HELD

1995 - Present: Stovel and Associates Inc., Fergus, Ontario - President.

1993 - 1995: Ecological Services For Planning Ltd., Guelph, Ontario - Senior Project Manager.

1988 - 1992: Ecological Services For Planning Ltd., Guelph, Ontario - Environmental Planner.

1986 - 1987: Environmental Consultant. Waterloo, Ontario.

EXPERIENCE

- extensive project experience in environmental assessments, environmental management plans and ecological enhancement plans in Ontario. These projects have required considerable government and non-government agency liaison, interdisciplinary team coordination and the integration of a variety of scientific disciplines.

Aggregate Applications

- certified to prepare site plans under Section 8.4 of the Aggregate Resources Act.
- prepared site plans for the Ospringe Pit, Mallet Pit, Flamboro Quarries, Henderson Pit, Holman Pit, Looby Pit, Albion Pit, Puslinch Pit and Extension Properties, and JeffBrett Pit.
- assisted in the preparation of environmental plans and agricultural rehabilitation plans for the proposed Batterman Pit (Grey County), Puslinch Pit, Caledon Sand & Gravel Inc. Pit and the proposed Shoemaker Pit.
- conducted environmental evaluations and agricultural appraisals for various aggregate operations in southern Ontario.

- assisted in the preparation of the Section 9 report for the proposed expansions of the Ospringe Pit, the Darrington Pit and Flamboro Quarries.
- prepared Level 1 & 2 Natural Environment and Environmental Impact Statements for aggregate developments in Simcoe County, Wellington County and the Regional Municipalities of York, Halton, Waterloo and Hamilton-Wentworth. These reports were prepared in accordance with the policy requirements of the Aggregate Resources Act (Technical Study Requirements), Wetland Policy Statement, Provincial Policy Statement and/or local/regional Official Plans.
- prepared applications for Certificate of Approvals for pit and quarry operations in southern Ontario.

Environmental Assessments

- prepared the ecological and agricultural components for municipal road projects in King Township and the City of Stratford.
- prepared agricultural impact assessments for provincial road projects in the County of Essex and the County of Peterborough.
- coordinated environmental assessment projects for waste management master plans in Victoria County, Essex County, Peterborough County and the Regional Municipality of Haldimand-Norfolk (agricultural component).
- prepared route selection reports for the proposed development of an 8" pipeline in Orillia. This project received provincial approval at the Ontario Energy Board in 1994.
- managed the environmental constraint mapping and geotechnical selection component of Ontario Hydro's construction of a 500 kV transmission line from Lennox to Bowmanville. This transmission line was constructed in 1992.

Environmental Inventories and Monitoring

- designed and implemented wetland vegetation monitoring programs for proposed aggregate and estate residential developments.
- designed a transplanting and propagation plan for Carex jamesii.
- completed the required seminar on the Ontario Wetland Evaluation System (3rd ed.) and the Wetland Environmental Impact Study; Technical Manual.
- completed surveys for the following wetlands: Orangeville Reservoir Wetland Complex, Hayesland-Christie Wetland Complex, Dalrymple Lake Wetland Complex, Star Wetland Complex, Eramosa River-Blue Springs Creek Wetland Complex, Orillia Filtration Swamp, Philips Lake Wetland Complex, Mossington Park Wetland Complex, Cranberry/Oil Well Bog, Humber River Marshes Wetland Complex, Speed River Wetland Complex and the Beaverton River Wetland Complex.
- managed deer wintering surveys in Ramara Township, Carden Township, Erin Township and

Puslinch Township.

- coordinated fisheries inventories for coldwater and warmwater systems in Ontario (e.g. Eramosa River, Speed River, West Credit River, Dalrymple Lake, Warnock Lake, Caledon Creek, Greenock Creek and Spencer Creek).
- prepared terrestrial enhancement plans for a deer wintering area in Puslinch Township.
- completed forestry evaluations for woodland areas in Wellington County, Simcoe County and the Regional Municipalities of York, Peel and Hamilton-Wentworth.
- managed bird surveys in various Southern Ontario municipalities.
- coordinated vegetation surveys for alvar communities in Simcoe County, Victoria County and the Regional Municipality of Hamilton-Wentworth.
- completed vegetation management plan for alvar communities and upland forest communities for a proposed quarry in the Regional Municipality of Hamilton-Wentworth.

Subwatershed Planning

- participated in subwatershed planning studies in Laurel Creek, Grindstone Creek and Nichol Drain No. 2.
- completed historic vegetation mapping programs in Caledon Creek Subwatershed.

Agricultural Impact Assessment

- completed several agricultural assessments in Wellington County, Simcoe County and the Regional Municipalities of Peel, Halton, York and Hamilton-Wentworth. These studies addressed the potential impacts of estate residential developments, urban expansions and golf courses (Mad River, Chestnut Hill and Cardinal Golf Courses) on the local agricultural community.
- prepared impact assessment and alternate site evaluation study for a proposed new town site in the Town of East Gwillimbury.
- calculated minimum distance separation requirements for various types of livestock operations.
- managed the agricultural component of the Victoria County Waste Management Master Plan.
- conducted viability appraisal for agricultural operations in Wellington County.



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AL SANDILANDS, B.SC.

EDUCATION

B.Sc., Biology, University of Waterloo, 1970
Temperate Wetlands Restoration Course, 1996

PROFESSIONAL AFFILIATIONS

Canadian Society of Ornithologists
American Ornithologists' Union
Ontario Field Ornithologists, Director and Editor of Ontario Birds, 1990
Wilson Ornithological Society
Bird Studies Canada, Trustee, James L. Baillie Fund, 1994-2006
Haldimand Bird Observatory, Director, 1998-2005
Ontario Breeding Bird Atlas: Chair, Publication Committee, 2002-2007
Member, Technical Committee, 2000-2004
Member, Significant Species Committee, 2000-2007
Species Account Editor, 2006-2007
Ontario Waterbird Conservation Plan: Member, Technical Working Group, 2007-2009

POSITIONS HELD

2003 to present: Gray Owl Environmental Inc., Principal, Senior Ecologist
1998-2003: ESG International, Guelph, Principal, Senior Ecologist
1995-1997: ESG International, Guelph, Senior Ecologist
1988-1995: Gore & Storrie Limited, Senior Biologist/Manager, Biology and Fisheries Section
1980-1988: Ecologistics Limited, Senior Biologist
1971-1979: Grand River Conservation Authority, Biologist

SELECTED EXPERIENCE

Ecosystem and Municipal Planning

- A Review of the Yellow Rail in Ontario. Prepared for the Canadian Wildlife Service. 2009.
- A Review of the King Rail in Ontario. Prepared for the Canadian Wildlife Service. 2009.
- Annotated Literature Review of the Least Bittern and Proposed Pilot Study for Least Bittern at St. Clair National Wildlife Area. Prepared for the Canadian Wildlife Service. 2009.
- Species at Risk Best Available Information Summaries for 11 bird species. Prepared for the Ontario Ministry of Natural Resources. 2008.

- Draft Northern Bobwhite Recovery Strategy. Prepared for the Canadian Wildlife Service. 2008.
- Castle Glen Environmental Constraints Impact Analysis. Prepared for Castle Glen Development Corporation. 2007-2008.
- Technical writer for the Ontario Waterbird Conservation Plan. Prepared for the Ontario Ministry of Natural Resources and the Canadian Wildlife Service. 2007-2009.
- Background Information for the Ontario Waterbird Conservation Plan. Prepared for the Ontario Ministry of Natural Resources and the Canadian Wildlife Service. 2007.
- Second Update of the Significant Wildlife Habitat Decision Support System. Prepared for the Ontario Ministry of Natural Resources. 2007.
- Smithville Strategic Growth Management Plan. Prepared for the Township of West Lincoln. 2007-2008.
- Castle Glen Official Plan. Prepared for the Castle Glen Development Corporation. 1999-2006.
- North Leslie Secondary Plan. Prepared for Emery Investments and the Bayview East Landowners Group. 2002-2006.
- Significant Wildlife Habitat Decision Support System. Prepared for the Ontario Ministry of Natural Resources. 2002.
- Significant Wildlife Habitat Technical Guide. Prepared for the Ontario Ministry of Natural Resources. 2000.
- Temperate Wetland Restoration Guidelines. Prepared for the Ontario Ministry of Natural Resources, Canadian Wildlife Service, and Ducks Unlimited Canada. 1996.

Watershed Planning Studies

- Halton and Hamilton Water Use Study. Prepared for Conservation Halton and the Hamilton Region Conservation Authority. 2006.
- Humber River Wet Weather Flow Master Plan. Prepared for the City of Toronto. 2002.
- Completion of the biological component of 13 other watershed and Master Drainage Plans. 1988 to 2001.

Wildlife

Mr. Sandilands is currently writing a book on the habitat requirements, limiting factors and status of the birds of Ontario. He also completed a four-year field study for Ontario Hydro to determine the effects of forest fragmentation on breeding birds. He has extensive experience with herptofauna; he completed morphological studies on Butler's garter snake at Luther Marsh and wrote the COSEWIC report on it. On Pelee Island, he identified significant habitat for the endangered blue racer and Lake Erie water snake, and for the threatened eastern fox snake, eastern massasauga, and eastern hognose snake on Giant's Tomb Island. He completed studies on Jefferson salamanders and other amphibians near Milton and Cambridge and several other southern Ontario locations.

Environmental Impact Assessment

- Dain City EIS, Region of Niagara. Prepared for Colville Consulting Inc. 2006.
- Eugenia EIS, County of Grey. Prepared for Stovel & Associates Inc. 2006.
- Fox Property EIS and Peer Review, Region of Niagara. Prepared for Colville Consulting Inc.

2006-2007.

- Walker Brothers Compost Facility, Region of Niagara. Prepared for Walker Brothers. 2005.
- Block 20, Vaughan. Prepared for Ages Consultants Limited. 2005.
- Gibbs Property EIS, Simcoe County. Prepared for RJ Burnside and Associates Limited. 2004.
- Brookville Golf Course, Halton Region. Prepared for RJ Burnside and Associates Limited. 2004.
- Cambridge Golf Course Severance, Region of Waterloo. Prepared for the Cambridge Golf Course. 2004.
- Aurora Golf Course, Region of York. Prepared for Ages Consultants Limited. 2004-2005.
- Blue Water Canoe Club Subdivision, Simcoe County. Prepared for Riverdale. 2003.
- Bayfield North ANSI EIS, Huron County. Prepared for Five Seasons Estates. 2003.
- Palgrave Estates West EIS and Oak Ridges Moraine Conformity Report, Peel Region. Prepared for the Equestrian Management Group. 2003-2004.

Aggregate Resources

- Preparation and implementation of an exemption under the *Endangered Species Act, 2007* for common hoptree, scarlet ammania, and eastern foxsnake on Pelee Island. Prepared for Pelee Quarries Ltd. 2009.
- evaluation of noise effects on wildlife for the Rockfort Quarry. Goodban Environmental Consulting. 2009.
- Cater Gravel Pit Wildlife Component. Prepared for The Miller Group Limited. 2008-2009.
- Preparation of a habitat enhancement plan for endangered species on Pelee Island under Section 58 of the *Endangered Species Act, 2007*. Prepared for Pelee Quarries Ltd. 2007-2008.
- Sayers and Sharp Gravel Pit Level 1 Natural Environment Report, Essex County. Prepared for Erie Sand & Gravel Limited. 2006.
- Reeb Quarry Woodland Restoration, Niagara Region. Prepared for M.A.Q. Aggregates Inc. 2006-2007.
- Acton Quarry Extensions Level 1&2 Natural Environment Report, Halton Region. Prepared for Dufferin Aggregates. 2005-2007.
- Inverhaven Gravel Pit Terrestrial Inventory, Wellington County. Prepared for the Murray Group. 2006, 2008.
- VicDom Gravel Pit Terrestrial Inventory, Durham Region. Prepared for Colville Consulting Inc. 2006.
- Dan Gravel Pit Level 1&2 Natural Environment Report, Essex County. Prepared for Erie Sand & Gravel. 2006.
- Preston Sand & Gravel Terrestrial Inventory, Wellington County. Prepared for Preston Sand & Gravel. 2005.
- Robinson-Kovacs Pit Expansion Level 1&2 Environment Report and Oak Ridges Moraine Conformity Report. Prepared for Skelton-Brumwell and Associates. 2005-2006.
- Manitoulin Island Quarry Input to Level 1&2 Natural Environment Report, Manitoulin Island. Prepared for Lafarge. 2004.

- Willroy-Brooks Pit Terrestrial Inventory, Halton Region. Prepared for J.C. Duff Sand and Gravel. 2004.
- Crystal Lake Vermiculite Mine EIS, Peterborough County. Prepared for Vermiculite Corporation of Canada. 2003-2004.
- McGill Pit Terrestrial Inventory, Kemptville. Prepared for LaFarge. 2003.
- Milton Quarry Extension Study on Jefferson Salamanders, Halton Region. Prepared for Dufferin Aggregates 2002-2004.
- Pelee Island Quarries Study on Blue Racers and Lake Erie Water Snakes, Essex County. Prepared for Pelee Quarries Limited. 1998-2004.
- Seres Pit Level 1&2 Natural Environment Report, Essex County. Prepared for Erie Sand & Gravel Limited. 2002-2003.

Environmental Assessment

- Smithville Wastewater Servicing Study. Prepared for XCG Consultants Ltd. and the Regional Municipality of Niagara. 2008.
- Former Camp Ipperwash Unexploded Ordnance Study, Search for Species at Risk. Prepared for Neegan Burnside Limited and the Department of National Defence. 2007-2009.
- Byersville/Harper Creek Flood Remediation EA, Peterborough. Prepared for the City of Peterborough. 2007.
- Bears Creek Flood Remediation EA, Peterborough. Prepared for the City of Peterborough. 2006-2007.
- Moose Deer Point First Nation Water Supply EA, District of Muskoka. Prepared for the Moose Deer Point First Nation. 2006.
- Wolfe Island Wind Farm Public Meetings. Prepared for Canadian Hydro Developers, Inc. 2006.
- Simcoe County Road 90 Upgrade, Simcoe County. Prepared for Simcoe County. 2005.
- Melancthon 1 Windfarm Bird Surveys, Dufferin County. Prepared for Canadian Hydro Developers, Inc. 2004-2005.
- Tay Area Water System, Simcoe County. Prepared for Tay Township. 2004.
- Howe Island Ferry Upgrade EA, Frontenac County. Prepared for the Ontario Ministry of Transportation. 2003.
- Feasibility Study for the Upgrade of Highway 24 between Highways 401 and 403, Brant County and Waterloo Region. Prepared for the Ontario Ministry of Transportation. 2002-2003.
- Cambridge Area Route Selection Study, Waterloo Region. Prepared for the Regional Municipality of Waterloo. 1999-2002.
- Lester B. Pearson International Airport Expansion and Airside Development EA. Prepared for Transport Canada. 1993-1994.

International Experience

Mr. Sandilands completed the natural environment component for the Qurum Beach Resort in the Sultanate of Oman. The proposal was to build a 150-room luxury hotel, a water park, and a new access road adjacent to a mangrove swamp. This required assessment of impacts on the

mangrove swamp, prawns, molluscs, fish, and birds. Opportunities for enhancing the existing swamp and creating an additional 10 ha of mangrove swamp were identified.

Other international work includes Mill Creek Restoration, Cincinnati, Ohio and opportunities to restore Upper Mill Creek Watershed in Butler County, Ohio.

Hearings

Mr. Sandilands has appeared as an expert witness before the Ontario Municipal Board, the Joint Board, the Ontario Environmental Assessment Board, the Niagara Escarpment Commission, and a federal Environmental Assessment and Review Process panel.

LIST OF SELECTED PUBLICATIONS AND PRESENTATIONS IS AVAILABLE UPON REQUEST

APPENDIX 2 – WILDLIFE SPECIES LIST

Wildlife Species Recorded from the Proposed Flanagan Pit

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	OMNR	COSEWIC	REGION	AREA	COMMENTS
ODONATES								
DAMSELFLIES								
Ebony Jewelwing	<i>Calopteryx aequabilis</i>	S5	G5					site, adjacent
Amber-winged Spreadwing	<i>Lestes eurinus</i>	S3	G4					adjacent
Familiar Bluet	<i>Enallagma civile</i>	S5	G5					adjacent
Skimming Bluet	<i>Enallagma germinatus</i>	S4	G5					site
Hagen's Bluet	<i>Enallagma hageni</i>	S5	G5					adjacent
DRAGONFLIES								
Dusky Clubtail	<i>Gomphus spicatus</i>	S5	G5					site
Twelve-spotted Skimmer	<i>Libellula pulchella</i>	S5	G5					site
Common Whitetail	<i>Plathemis lydia</i>	S5	G5					site
White-faced Meadowhawk	<i>Sympetrum obtrusum</i>	S5	G5					site
BUTTERFLIES								
European Skipper	<i>Thymelicus lineola</i>	SNA	G5					site, adjacent
Long Dash Skipper	<i>Polites mystic</i>	S5	G5					site
Black Swallowtail	<i>Papilio polyxenes</i>	S5	G5					adjacent
Canadian Tiger Swallowtail	<i>Papilio canadensis</i>	S5	G5					site, adjacent
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	S5	G5					site
Cabbage White	<i>Pieris rapae</i>	SNA	G5					site, adjacent
Great Spangled Fritillary	<i>Speyeria cybele</i>	S5	G5					adjacent
Pearl Crescent	<i>Phyciodes tharos</i>	S4	G5					site
Northern Crescent	<i>Phyciodes pascoensis</i>	S5	G5					site, adjacent
Mourning Cloak	<i>Nymphalis antiopa</i>	S5	G5					site
American Painted Lady	<i>Vanessa virginiensis</i>	S5	G5					site
Red Admiral	<i>Vanessa atalanta</i>	S5	G5					site
White Admiral	<i>Limenitis arthemis</i>	S5	G5					site, adjacent
Viceroy	<i>Limenitis archippus</i>	S5	G5					site, adjacent
Little Wood-Satyr	<i>Megisto cymela</i>	S5	G5					adjacent
Common Ringlet	<i>Coenonympha tullia</i>	S5	G5					site, adjacent
Common Wood-Nymph	<i>Cercyonis pegala</i>	S5	G5					site
Monarch	<i>Danaus plexippus</i>	S4B,S2N	G4	SC	SC			adjacent
AMPHIBIANS								
Northern Redback Salamander	<i>Plethodon cinereus</i>	S5	G5					adjacent
Tetraploid Gray Treefrog	<i>Hyla versicolor</i>	S5	G5					adjacent
Northern Green Frog	<i>Lithobates clamitans</i>	S5	G5					adjacent
Northern Leopard Frog	<i>Lithobates pipiens</i>	S5	G5	NAR	NAR			site, adjacent
REPTILES								
Snapping Turtle	<i>Chelydra serpentina</i>	S3	G5	SC	SC			adjacent

Wildlife Species Recorded from the Proposed Flanagan Pit

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	OMNR	COSEWIC	REGION	AREA	COMMENTS
Eastern Gartersnake	<i>Thamnophis sirtalis</i>	S5	G5					adjacent
BIRDS								
Wood Duck	<i>Aix sponsa</i>	S5	G5					adjacent: breeding
Mallard	<i>Anas platyrhynchos</i>	S5	G5					site: breeding; adjacent: breeding
Wild Turkey	<i>Meleagris gallopavo</i>	S5	G5					site: breeding; adjacent: breeding
Turkey Vulture	<i>Cathartes aura</i>	S5B	G5					site: overhead
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	G5	NAR	NAR			adjacent: breeding
Killdeer	<i>Charadrius vociferus</i>	S5B,S5N	G5					site: breeding; adjacent: breeding
Mourning Dove	<i>Zenaida macroura</i>	S5	G5					adjacent: breeding
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	S5B	G5					site: breeding; adjacent: breeding
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	S5B	G5					site: breeding; adjacent: breeding
Belted Kingfisher	<i>Megaceryle alcyon</i>	S4B	G5					site: breeding; adjacent: breeding
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	S4	G5					adjacent: foraging
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S5B	G5				30-50	adjacent: breeding
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5				10	adjacent: breeding
Northern Flicker	<i>Colaptes auratus</i>	S4B	G5					adjacent: breeding
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	G5					adjacent: breeding
Alder Flycatcher	<i>Empidonax alnorum</i>	S5B	G5					site: breeding; adjacent: breeding
Eastern Phoebe	<i>Sayornis phoebe</i>	S5B	G5					adjacent: breeding
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	S4B	G5					site: breeding; adjacent: breeding
Eastern Kingbird	<i>Tyrannus tyrannus</i>	S4B	G5					site: breeding; adjacent: breeding
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	G5					site: breeding; adjacent: breeding
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5					site: breeding; adjacent: breeding
American Crow	<i>Corvus brachyrhynchos</i>	S5B	G5					site: breeding; adjacent: breeding
Common Raven	<i>Corvus corax</i>	S5	G5				6	site: flyover; adjacent: flyover
Barn Swallow	<i>Hirundo rustica</i>	S4B	G5	THR	THR			site: foraging; adjacent: breeding
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	G5					site: breeding; adjacent: breeding
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5	G5					site: breeding; adjacent: breeding
House Wren	<i>Troglodytes aedon</i>	S5B	G5					site: breeding
Veery	<i>Catharus fuscescens</i>	S4B	G5				10-20	site: breeding
Wood Thrush	<i>Hylorchila mustelina</i>	S4B	G5					site: breeding; adjacent: breeding
American Robin	<i>Turdus migratorius</i>	S5B	G5					site: breeding; adjacent: breeding
Gray Catbird	<i>Dumetella carolinensis</i>	S4B	G5					site: breeding; adjacent: breeding
Brown Thrasher	<i>Toxostoma rufum</i>	S4B	G5					site: breeding; adjacent: breeding
European Starling	<i>Sturnus vulgaris</i>	SNA	G5					site: breeding; adjacent: breeding
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	G5					site: breeding; adjacent: breeding
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	G5				20	adjacent: breeding
Black-and-white Warbler	<i>Mniotilla varia</i>	S5B	G5				20-30	site: breeding; adjacent: breeding
Mourning Warbler	<i>Geothlypis philadelphica</i>	S4B	G5					site: breeding; adjacent: breeding
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B	G5					site: breeding; adjacent: breeding
American Redstart	<i>Setophaga ruticilla</i>	S5b	G5				20-30	site: breeding; adjacent: breeding
Yellow Warbler	<i>Setophaga petechia</i>	S5B	G5					adjacent: breeding
								site: breeding; adjacent: breeding

Wildlife Species Recorded from the Proposed Flanagan Pit

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	OMNR	COEWIC	REGION	AREA	COMMENTS
Black-throated Green Warbler	<i>Setophaga virens</i>	S5B	G5				30	adjacent: breeding
Chipping Sparrow	<i>Spizella passerina</i>	S5B	G5					site: breeding; adjacent: breeding
Vesper Sparrow	<i>Pooecetes gramineus</i>	S4B	G5					site: breeding; adjacent: breeding
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4B	G5					site: breeding; adjacent: breeding
Song Sparrow	<i>Melospiza melodia</i>	S5B	G5					site: breeding; adjacent: breeding
Swamp Sparrow	<i>Melospiza georgiana</i>	S5B	G5					site: breeding; adjacent: breeding
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5B	G5					adjacent: breeding
Scarlet Tanager	<i>Piranga olivacea</i>	S4B	G5			20		site: breeding; adjacent: breeding
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5	G5			5		adjacent: breeding
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4B	G5					site: breeding
Indigo Bunting	<i>Passerina cyanea</i>	S4B	G5					adjacent: breeding
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	G5	THR	THR			site: breeding; adjacent: breeding
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S5	G5					site: visitor; adjacent: breeding
Common Grackle	<i>Quiscalus quiscula</i>	S5B	G5					site: breeding; adjacent: breeding
Brown-headed Cowbird	<i>Molothrus ater</i>	S4B	G5					site: breeding; adjacent: breeding
Baltimore Oriole	<i>Icterus galbula</i>	S4B	G5					site: breeding; adjacent: breeding
American Goldfinch	<i>Spinus tristis</i>	S5B	G5					site: breeding; adjacent: breeding
House Sparrow	<i>Passer domesticus</i>	SNA	G5					adjacent: breeding
MAMMALS								
Eastern Chipmunk	<i>Tamias striatus</i>	S5	G5					site, adjacent
Woodchuck	<i>Marmota monax</i>	S5	G5					site, adjacent
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	S5	G5					site, adjacent
Beaver	<i>Castor canadensis</i>	S5	G5					site
Coyote	<i>Canis latrans</i>	S5	G5					site
Raccoon	<i>Procyon lotor</i>	S5	G5					site
Striped Skunk	<i>Mephitis mephitis</i>	S5	G5					adjacent
White-tailed Deer	<i>Odocoileus virginianus</i>	S5	G5					site
SUMMARY								
Total Odonates: 9	site: 6; adjacent: 4							
Total Butterflies: 18	site: 14; adjacent: 11							
Total Amphibians: 4	site: 1; adjacent: 4							
Total Reptiles: 2	site: 0; adjacent: 2							
Total Birds: 58	site: 41; adjacent: 53							
Total Breeding Birds: 55	site: 37; adjacent: 53							
Total Mammals: 8	site: 7; adjacent: 4							
Total Species: 99	site: 69; adjacent: 78							
SIGNIFICANT SPECIES								
Global:0	site:0;adjacent:0							
National:4	site:2;adjacent:4							
Provincial:5	site:2;adjacent:5							

Wildlife Species Recorded from the Proposed Flanagan Pit

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	OMNR	COSEWIC	REGION	AREA	COMMENTS
Regional: 0	site: 0; adjacent: 0							
Local: 0	site: 0; adjacent: 0							
Explanation of Status and Acronyms								
OMNR: Designations by the Ontario Ministry of Natural Resources								
COSEWIC: Committee on the Status of Endangered Wildlife in Canada								
REGION: Rare in an Ecoregion								
S2: Imperiled in Ontario								
S3: Vulnerable in Ontario								
S4: Apparently secure in Ontario								
S5: Secure in Ontario								
SB: Status during the breeding season								
SN: Status during the nonbreeding season								
SNA: Not Applicable, not a suitable target for conservation efforts								
G4: Common globally								
G5: Very common globally								
THR: Threatened								
SC: Special Concern								
NAR: Not At Risk								
5: Rare in Site Region 5								
6: Rare in Site Region 6								
7: Rare in Site Region 7								
Area: Minimum patch size for area-sensitive species (ha)								