Level 1 & 2 Natural Environment Report; Cornwall Quarry MacLeod III and MacLeod V Properties, Cornwall Gravel Co.

Lot 6 - Concession 4 (MacLeod III) and Lot 2 - Concession 4 (MacLeod V), Township of Cornwall, United Counties of Stormont, Dundas and Glengarry.

Prepared for:
Cornwall Gravel Co. Ltd.
390 Eleventh St,
West Cornwall, ON
K6J 3B2

Prepared by:
McIntosh Perry Consulting Engineers Ltd.
1-1329 Gardiners Road
Kingston, ON
K7P 0L8

August 10, 2017

Level 1 & 2 Natural Environment Report Cornwall Quarry MacLeod III and MacLeod V Properties, Cornwall Gravel Co.

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August 10, 2017

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APPENDICES

1.0 INTRODUCTION

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) was retained by Cornwall Gravel Company Ltd., to provide services in support of a Licence application under the *Aggregate Resources Act* (ARA) for a Category 1 and 2 – Class "A" Pit and Quarry Below Water for lands described as Lot 6 - Concession 4 (MacLeod III) and Lot 2 - Concession 4 (MacLeod V), Township of Cornwall, United Counties of Stormont, Dundas and Glengarry.

As part of these services, McIntosh Perry has conducted a Level 1 & 2 Natural Environment Assessment in accordance with an application for a new quarry license as per the Ministry of Natural Resources and Forestry (MNRF) *Aggregate Resources Act and Standards, Version 1.0.*

2.0 PURPOSE OF ASSESSMENT

According to the *ARA* Policy, a Natural Environment Level 1 Study entails determining whether any of the following features exist on or within 120 metres of the site:

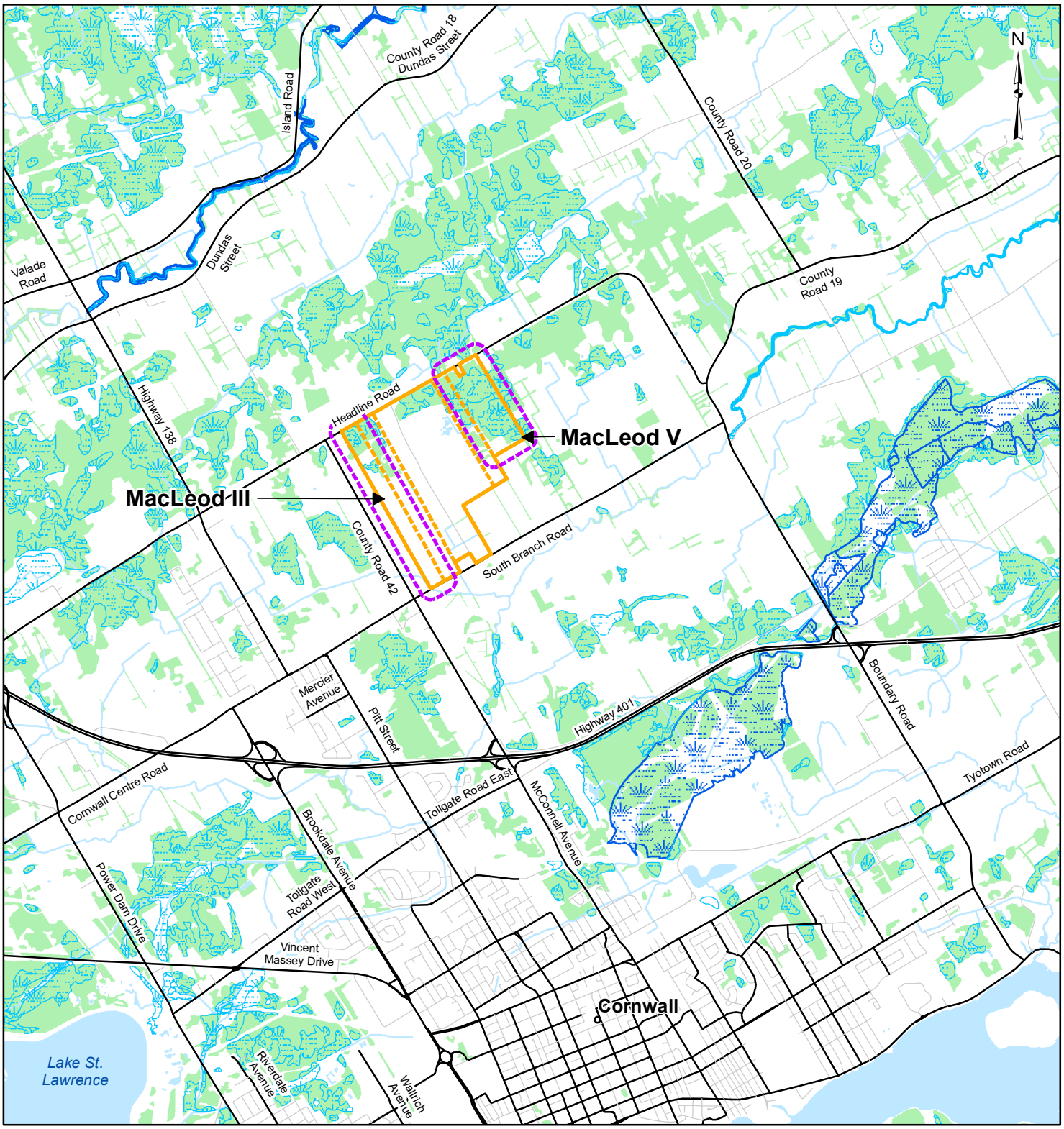
a) Significant Wetlands (i.e. Provincially Significant Wetlands [PSW]);
b) Significant Habitat of Endangered and Threatened Species;
c) Significant Areas of Natural and Scientific Interest (ANSIs);
d) Significant Woodlands (south and east of the Canadian Shield);
e) Significant Valley lands (south and east of the Canadian Shield);
f) Significant Wildlife Habitat; and
g) Fish Habitat.

The Level 1 report must clearly identify whether any of the above natural features exist on or within 120 m of the site and provide sufficient information on the methodology and findings. Should any of the noted features be identified on or within 120 m of the site, an impact assessment (also known as a Natural Environment Level 2 assessment) is required to determine any negative impacts on the natural features or ecological functions, and recommend any preventative, mitigation or remedial measures. Assessment of impacts and recommended mitigation measures have been based on conditions outlined in this report. Aggregate extraction operations generally have a long lifespan and impacts associated with phases of extraction may not occur for many years.

3.0 SITE DESCRIPTION

3.1 Legal Description

The site is legally described as, Lot 6 - Concession 4 (MacLeod III) and Lot 2 - Concession 4 (MacLeod V) in the Geographic Township of Cornwall, now the Township of South Stormont, and within the United Counties of Stormont, Dundas and Glengarry (**Figure 1**).



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LEGEND

- Site Location
- Permit Boundary
- Study Area and 120m Buffer
- Local Road
- Major Road
- Watercourse
- Waterbody
- Provincially Significant Wetland
- Unevaluated Wetland
- Wooded Area

REFERENCE

Basedata provided by the Ontario Ministry of Natural Resources and Forestry, 2016.

CLIENT: CORNWALL GRAVEL CO. LTD.

PROJECT: NATURAL ENVIRONMENT STUDY - MacLEOD QUARRY

TITLE: SITE LOCATION

McINTOSH PERRY
115 Walgreen Rd., RR#3, Carp, ON K0A1L0
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PROJECT NO: CP-16-0280	FIGURE: 1
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GIS	JD
Checked By	CH

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4.0 DATA COLLECTION METHODOLOGY

4.1 Background Information

A desktop review was undertaken by McIntosh Perry to collect background data and document species at risk (SAR) potentially present on the subject properties. Information was obtained from the following sources of existing baseline information:

- The MNRF overview of the ecosystems of Ontario (Crins et al. 2009);
- The Atlas of the Breeding Birds of Ontario (OBBA) (Bird Studies Canada et al. 2008);
- The Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature 2016);
- Personal communication with the MNRF – Kemptville District (**Appendix A**); and
- The Land Information Ontario (LIO) database (MNRF 2016).

Background data collected by McIntosh Perry included:

- Species at risk (SAR) occurrence data;
- Designated areas (i.e. Provincial Parks, ANSI, PSW);
- Natural heritage features; and,
- Environmentally sensitive areas (i.e. fish habitat, local wetlands, etc.).

The following reports prepared for the sites were reviewed to understand the natural heritage features on and within 120 m of the sites:

1. WSP Canada Inc.: *Existing Conditions Assessment: Bird Surveys 17631 South Branch Road, Cornwall, ON Cornwall Gravel Co. Ltd.* July 2016; and
2. Niblett Environmental Associates Inc.: *Natural Environment Level 2 Technical Report MacLeod Quarry 3 East ½ Lot 6, Conc. IV South Stormont Township (Formerly Township of Cornwall) United Counties of Stormont, Dundas and Glengarry,* August 2001. (Appendix C)

4.2 Field Assessment

In order to complete the Natural Environment report, a field visit was conducted on September 13, 2016 by Chris Heffernan, a Biologist with McIntosh Perry. The field review included the following work at the site and within 120 metres of the site:

- Full walk-through of both sites and review of adjacent habitats, where possible;
- Identification of vegetation and classification of vegetation communities using the MNRF Ecological Land Classification method for Southern Ontario;
- Delineation of wetland boundary adjacent to proposed aggregate extraction areas;

- Bird and wildlife identification; and
- Identification and assessment of wildlife habitat, breeding, nesting and feeding areas.

An additional field visit was also conducted on November 1, 2016 by C. Heffernan and M. Wheeler (ecologist) of McIntosh Perry to assess fish and fish habitat associated with an unnamed drain (tributary of the Eastman Drain) located on the MacLeod III property. Other studies completed at the site are included in **Appendix B** and **Appendix C** of this report. The pertinent data from previous studies can be found in the appended reports (i.e. date, purpose, methods, results, conclusions, etc.)

4.2.1 *Breeding Bird Surveys*

Breeding bird surveys were conducted during the 2016 field season by WSP Canada Inc. (**Appendix B**). The methodology, results and conclusions documented by WSP Canada Inc. are detailed in the appended report.

Incidental bird observations were recorded based on sight and sound during the 2016 field investigations conducted by McIntosh Perry.

4.2.2 *Wildlife*

Wildlife species noted during the field investigations conducted in 2016 by McIntosh Perry were identified by signs, visual observations, and vocalizations. For the purpose of this assessment, all wildlife observed within and adjacent to the study limits were recorded and considered to be residents or visitors of the area.

4.2.3 *Targeted Species at Risk Surveys*

During the 2016 field season targeted SAR surveys were completed by WSP Canada Inc. for:

- Eastern Whip-poor-will and Common Nighthawk;
- Eastern Meadowlark; and
- Bobolink;

Survey methodologies and results are provided in **Appendix B** of this report. Due to the timing of the field surveys conducted by McIntosh Perry in 2016, additional targeted SAR survey were not completed as part of this project. McIntosh Perry documented the GPS coordinates of all Butternuts observed during 2016 field investigations on and adjacent to the sites (MacLeod III and V). Due to the timing of the 2016 field investigations conducted by McIntosh Perry, a Butternut Health Assessment was not conducted for the Butternuts observed. A Butternut Health Assessment (BHA) was conducted by Shaun St. Pierre of Bowfin Environmental Consulting on June 15, 2017 (BHA report found in **Appendix E**).

4.2.4 *Fish and Fish Habitat Assessment*

A field survey of aquatic habitat and fish communities was carried out November 1, 2016 by C. Heffernan and M. Wheeler of McIntosh Perry. The survey included, where possible, identification of:

- Watercourse morphology;
- Habitat features (e.g. riffles, pools, woody debris, undercut banks, boulder clusters);
- Water quality parameters;
- Groundwater seepage areas, watercourse substrate, bank stability, riparian and aquatic vegetation;
- Important/exceptional habitat areas (spawning, nursery, rearing, migratory and food supply areas);
- Physical migration barriers; and
- Potential habitat compensation or enhancement opportunities.

Additional information pertaining to fish and fish habitat on and within 120 m of the sites can be found in the *Natural Environment Level 2 Technical Report McLeod Quarry 3 East ½ Lot 6, Conc. IV South Stormont Township (Formerly Township of Cornwall) United Counties of Stormont, Dundas and Glengarry,* prepared by Niblett Environmental Associates Inc. August 2001 (**Appendix C)**.

4.2.5 *Bat Habitat Assessment*

A bat habitat suitability assessment was conducted on April 28, 2017 prior to leaf emergence. The habitat assessment survey followed the Phase 1 guidelines for Bat Habitat Suitability Assessment and Phase 2 Identification of Suitable Maternity Roost Trees, as outlined in the Survey Protocol for Species at Risk Bats within Treed Habitats (Little Brown Myotis, Northern Myotis, and Tri-colored Bat) prepared by Guelph District MNRF April 2017 (**Appendix D**).

- Surveys were conducted at the appropriate time of year (e.g. leaf off);
- Surveys were conducted with binoculars;
- Transects were walked through each woodland parcel 5 to 20 m apart (depending on site conditions);
- The location of all snag/cavity trees identified during the survey was marked using GPS;
- The survey was conducted on a day with no precipitation or recent snowfall; and
- The following information was collected on individual Snag/cavity trees:
  - Relative height;
  - Type of cavity (cracks, scars, knot holes or woodpecker cavities);
  - Diameter at breast height (DBH);
  - Presence of loose or peeling bark;
  - Tree species; and
  - Decay Class:
    1. Healthy, live tree;
    2. Declining live tree, part of canopy lost;
    3. Very recently dead, no canopy, bark intact, branches intact;
    4. Recently dead, bark peeling, only large branches intact;
    5. Older dead tree, 90 percent of bark lost, few branch stubs, broken top;
    6. Very old dead tree, advanced decay, no branches, parts of the stem have rotted away.

5.0 BACKGROUND INFORMATION

MNRF Kemptville District provided background information pertaining to both MacLeod III and MacLeod V during a pre-consultation meeting held on August 10, 2016 at the Kemptville District office (**Appendix A**). MNRF also provided a follow up letter for both MacLeod III and MacLeod V to the pre-consultation meeting on December 6, 2016 (**Appendix A**).

An Element is considered by the MNRF to represent a species, natural community, or other non-taxonomical biological entity (e.g. a bat hibernacula, migratory species aggregation, etc.). An Element Occurrence (EO) is an area of land and/or water in which an Element is, or was, present. In addition to the information provided by MNRF, a search of the LIO database for EO records was completed for the sites to document natural heritage features and species. The LIO database was queried using 1 km^2 grid squares intersecting the sites to generate a list of SAR EOs and identify designated areas (i.e. ANSI and PSW) on the sites and within 120 meters of the sites.

5.1.1 *Fish and Fish habitat*

An unnamed tributary of the Eastman Drain is located in the southwest corner of MacLeod III. Based on information provided by MNRF (August 10, 2016) this drain is known to contain Bluntnose Minnow (*Pimephales notatus*), Brassy Minnow (*Hybognathus hankinsoni*), Brook Stickleback (*Culaea inconstans*), Central Mudminnow (*Umbra limi*), Common Shiner (*Luxilus cornutus*), Creek Chub (*Semotilus atromaculatus*), Johnny Darter (*Etheostoma nigrum*), Pumpkinseed (*Lepomis gibbosus*), and White Sucker (*Catostomus commersonii*). The in-water timing restriction for this watercourse prohibits in-water works from March 15 to June 30 of any year.

5.1.2 *Woodlands*

MNRF Kemptville District indicated in their December 6, 2016 letter that the official plan for Stormont, Dundas and Glengarry identifies *Significant Woodlands* within the general vicinity of the MacLeod III and MacLeod V sites. MNRF Kemptville District also indicated that based on their mapping the woodlands located within the site are potentially significant based on the following: woodland interior, interior support and proximity. (MNRF, 2016).

5.1.3 *Wildlife Habitat*

Though *Significant Wildlife Habitat* has not been identified on or within 120 m from the MacLeod III or MacLeod V sites, MNRF indicated that an evaluation of the potential presence of *Significant Wildlife Habitat* be completed and any identified *Significant Wildlife Habitat* mapped accordingly. Due to the location of the sites within the province of Ontario, the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* will be followed.

5.1.4 *Wetlands*

MNRF and LIO mapping information identified several unevaluated wetlands on and within 120 metres of the MacLeod III and MacLeod V sites. MNRF indicated in their December 6, 2016 investigation that a wetland evaluation using the *Ontario Wetland Evaluation System* (OWES) should be completed for all unevaluated wetlands **OR** all unevaluated wetlands be treated as *Provincially Significant Wetlands*.

5.1.5 *Species at Risk*

Table 1 below outlines SAR which may be found within the general vicinity of the sites. Though a large number of SAR may be found in the general study area, habitat found on and within 120 m from the sites is not necessarily suitable for the life processes of many species. **Table 1** includes a column which outlines, based on desktop and field review, whether suitable habitat exists on or adjacent to the sites which may support the life processes of individual SAR. If potential habitat is not found on or within 120 m to the sites the species will not be discussed further in this report.

Table 1: SAR potentially found on or within 120 m from the sites.

Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Other Applicable Legislation	Habitat Protection	Source*	Potentially Suitable Habitat Present
Birds							
Barn Swallow	*Hirundo rustica*	Threatened	N/A	Migratory Birds Convention Act (1994)	Yes	5	No
Bald Eagle	*Haliaeetus leucocephalus*	Special Concern	Special Concern	Fish and Wildlife Conservation Act (1997)	No	5	Yes (winter only)
Bank Swallow	*Riparia riparia*	Threatened	No Status (Threatened under COSEWIC)	Migratory Birds Convention Act (1994)	Yes	7	No
Bobolink	*Dolichonyx oryzivorus*	Threatened	N/A	Migratory Birds Convention Act (1994)	Yes	1	Yes
Black Tern	*Chlidonias niger*	Special Concern	No Status (Not at risk under COSEWIC)	Migratory Birds Convention Act (1994)	No	5	No
Eastern Meadowlark	*Sturnella magna*	Threatened	N/A	Migratory Birds Convention Act (1994)	Yes	1	Yes
Eastern Wood-Pewee	*Contopus virens*	Special Concern	Special Concern	Migratory Birds Convention Act (1994)	No	7	Yes
Chimney Swift	*Chaetura pelagica*	Threatened	Threatened	Migratory Birds Convention Act (1994)	Yes	5	No

Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Other Applicable Legislation	Habitat Protection	Source*	Potentially Suitable Habitat Present
Golden Eagle	*Aquila chrysaetos*	Endangered	Endangered	Fish and Wildlife Conservation Act (1997)	Yes	5	Yes (winter only)
Peregrine Falcon	*Falco peregrinus*	Special Concern	Special Concern	Fish and Wildlife Conservation Act (1997)	No	7	No
Eastern Whip-poor-will	*Caprimulgus vociferus*	Threatened	Threatened	Migratory Birds Convention Act (1994)	Yes	1	Yes
Canada Warbler	*Wilsonia canadensis*	Special Concern	Threatened	Migratory Birds Convention Act (1994)	No	5	No
Golden-winged Warbler	*Vermivora chrysoptera*	Special Concern	Threatened	Migratory Birds Convention Act (1994)	No	5	No
Grasshopper Sparrow	*Ammodramus savannarum*	Special Concern	No status (Special concern under COSEWIC)	Migratory Birds Convention Act (1994)	No	5	No
Common Nighthawk	*Chordeiles minor*	Special Concern	Threatened	Migratory Birds Convention Act (1994)	No	5	Yes
Wood Thrush	*Hylocichla mustelina*	Special Concern	Threatened	Migratory Birds Convention Act (1994)	No	5	No
Plants							
Butternut	*Juglans cinerea*	Endangered	Endangered	N/A	Yes	1	Yes
Reptiles and Turtles							
Snapping Turtle	*Chelydra serpentina*	Special Concern	Special Concern	Fish and Wildlife Conservation Act (1997)	No	1	Yes
Blanding's Turtle	*Emydoidea blandingii*	Threatened	Threatened	Fish and Wildlife Conservation Act (1997)	Yes	5	Yes
Milksnake	*Lampropeltis triangulum*	Not at Risk	Special Concern	N/A	No		Yes
Amphibians							
Western Chorus Frog	*Pseudacris triseriata*	N/A	Threatened	N/A	No	4	Yes
Fish							
Cutlip Minnow	*Exoglossum maxillingua*	N/A	Threatened	Fisheries Act (1985)	Yes	1	Yes
Mammals							
Northern Myotis	*Myotis septentrionalis*	Endangered	Endangered	Fish and Wildlife Conservation Act (1997)	Yes	5	Yes

Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Other Applicable Legislation	Habitat Protection	Source*	Potentially Suitable Habitat Present
Little Brown Myotis	*Myotis lucifugus*	Endangered	Endangered	Fish and Wildlife Conservation Act (1997)	Yes	1	Yes
Eastern Small-footed Myotis	*Myotis leibii*	Endangered	Endangered	Fish and Wildlife Conservation Act (1997)	Yes	5	No
Tri-colored Bat	*Perimyotis subflavus*	Endangered	Endangered	Fish and Wildlife Conservation Act (1997)	Yes	5	Yes

***Sources for SAR data in Table 1 are numbered as follows: 1. MNRF, 2. LIO, 3. Ontario Breeding Bird Atlas, 4. Ontario Reptile and Amphibian Atlas, 5. General Range and 6. DFO SAR maps, 7. Field Observations from Past Studies.**

6.0 EXISTING CONDITIONS

The following section outlines existing environmental conditions on and within 120 m of the sites.

6.1 Fish and Fish habitat

No watercourses or fish habitat are found within the MacLeod V parcel.

During the November 1, 2016 field investigation, the following fish species were observed within the unnamed drain (tributary of the Eastman Drain) located within the southwestern portion of the MacLeod III parcel:

- White Sucker;
- Bluntnose Minnow;
- Brook Stickleback; and
- Tessellated Darter (*Etheostoma olmstedi*).

Water temperatures were observed to be 4.9^{o}C and dissolved oxygen levels within the drain were observed to be 12.24 mg/L. Vegetation found within the watercourse riparian zone included: Manitoba maple (*Acer negundo*), red currant (*Ribes triste*), riverbank grape (*Vitis riparia*), hawthorn (*Crataegus* spp.), beggar-tick (*Bidens* spp.), giant bur-red (*Sparganium eurycarpum*) and pondweed (*Potamogeton* spp.). Substrate was comprised of clay, boulders, cobble, muck and detritus. The watercourse was found to contain a series of riffles, pools and runs. Riffle areas appeared to provide suitable conditions for baitfish such as the White Sucker and Bluntnose Minnow to spawn. Several young of year White Suckers (**Photo 1**) were captured during the survey, suggesting the drain may be used as nursery habitat for this and other baitfish species.

Photo 1: one of several young of year (YOY) White Sucker's observed within the Eastman Drain during the November 1, 2016 field visit. Other baitfish such as the Brook Stickleback (also shown in this photo) were identified within the drain.

6.1.1 *Cutlip Minnow*

MNRF has identified the Cutlip Minnow (*Exoglossum maxillingua*) as occurring within the general vicinity of the sites. The Cutlip Minnow was not encountered within the Eastman Drain tributary found within MacLeod III parcel during fisheries surveys undertaken by Niblett (2001 survey) **or** by McIntosh Perry (2016 survey). Based on observations made during the November 1, 2016 field investigation, habitat conditions found within the drain appear suitable for the life processes of the Cutlip Minnow and the species may use the drain for portions of its lifecycle.

6.2 Woodlands and Vegetation Communities

The following sections identify vegetation communities as per ELC classification within each subject parcel. The significance of woodlands adjacent to the properties cannot be evaluated as these woodlands were not accessible during the site visits. *Significant Woodlands* have been mapped based on Stormont, Dundas and Glengarry mapping within 120 m of each site as per the Natural Heritage Reference Manual (2010). **Figure 2** outlines the extent and location of vegetation communities within each parcel while **Figure 3** identifies woodlands and *Significant Woodlands* (as identified by MNRF and Stormont, Dundas and Glengarry) within and adjacent to each parcel.

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Scale 1:15,000 Metres

LEGEND

- Site Location
- Permit Boundary
- Local Road
- Major Road
- Watercourse
- Wetland
- AG - Corn Field
- FOM - Mixed Forest
- ME - Meadow
- SWD - Deciduous Swamp
- TH - Thicket
- WOD - Deciduous Woodland
- Cleared Area

REFERENCE

Basedata provided by the Ontario Ministry of Natural Resources and Forestry, 2016.

CLIENT: CORNWALL GRAVEL CO. LTD.

PROJECT: NATURAL ENVIRONMENT STUDY - MacLEOD QUARRY

TITLE: VEGETATION COMMUNITIES

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115 Walgreen Rd., RR#3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742

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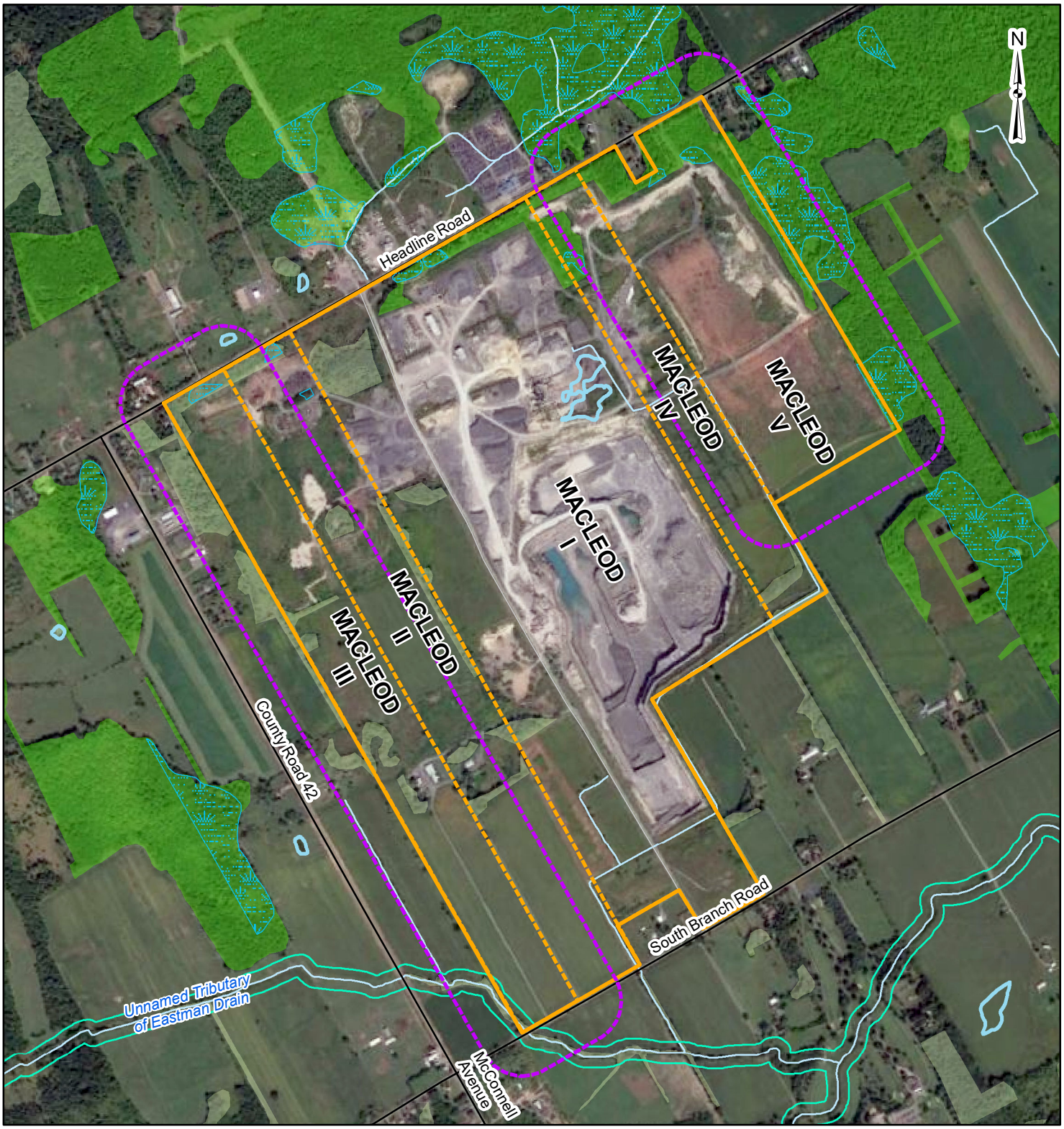

500 250 0 500

Scale 1:15,000 Metres

LEGEND

- Site Location
- Permit Boundary
- Study Area and 120m Buffer
- Local Road
- Major Road
- Fish Habitat and 30m Buffer
- Watercourse
- Waterbody
- Wetland
- Significant Woodland
- Wooded Area

REFERENCE

Basedata provided by the Ontario Ministry of Natural Resources and Forestry, 2016.

CLIENT: CORNWALL GRAVEL CO. LTD.

PROJECT: NATURAL ENVIRONMENT STUDY - MacLEOD QUARRY

TITLE: CONSTRAINTS AND OPPORTUNITIES

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6.2.1 *MacLeod III*

Vegetation communities found within MacLeod III parcel during the September 13, 2016 and November 1 2016 site visits by McIntosh Perry include the following:

- AG – Agricultural (Corn Field);
- WOD – Deciduous Woodland (**Photo 3**);
- SWD – Deciduous Swamp (**Photo 4**);
- TH – Thicket; and
- ME – Meadow (**Photo 2**).

Photo 2: A typical view of the Meadow (ME) habitat found within MacLeod III (Figure 2) taken on September 13, 2016.

Photo 3: View of Deciduous Woodland (WOD) taken on November 1, 2016.

Photo 4: View of small Deciduous Swamp (SWD) area within the northern portion of MacLeod III (Figure 2) November 1, 2016.

Woody vegetation species found within MacLeod III based on the September and November site visits conducted by McIntosh Perry include: wild raisin (*Viburnum nudum*), Bebb's willow (*Salix bebbiana*), European buckthorn (*Rhamnus cathartica*), staghorn sumac (*Rhus typhina*), shrub willow (*Salix* spp.), balsam poplar (*Populus balsamifera*), bur oak (*Quercus macrocarpa*), trembling aspen (*Populus tremuloides*), tartarian honeysuckle (*Lonicera tatarica*), eastern white-cedar (*Thuja occidentalis*), riverbank grape, green ash (*Fraxinus pennsylvanica*), round-leaved dogwood (*Cornus rugosa*), grey dogwood (*Cornus racemosa*), silky dogwood (*Cornus amomum*), alternate-leaved dogwood (*Cornus alternifolia*), bitternut hickory (*Carya cordiformis*), sugar maple (*Acer saccharum*), black willow (*Salix nigra*), hawthorn, common apple (*Malus pumila*), white ash (*Fraxinus americana*), American elm (*Ulmus americana*), black ash (*Fraxinus nigra*), red osier dogwood (*Cornus stolonifera*), black locust (*Robinia pseudoacacia*), prickly ash (*Zanthoxylum americanum*), narrow-leaved meadowsweet (*Spiraea alba*) sour cherry (*Prunus cerasus*), choke cherry (*Prunus virginiana*), ironwood (*Ostrya virginiana*), prickly gooseberry (*Ribes cynosbati*), Virginia creeper (*Parthenocissus quinquefolia*), and steeplebush (*Spiraea tomentosa*). Herbaceous vegetation observed includes: Queen Ann's lace (*Daucus carota*), common ragweed (*Ambrosia artemisiifolia*), bull thistle (*Cirsium vulgare*), blue-eyed grass (*Sisyrinchium montanum*), green amaranth (*Amaranthus retroflexus*), blue vervain (*Verbena hastata*), boneset (*Eupatorium perfoliatum*), sensitive fern (*Onoclea sensibilis*), zig-zag goldenrod (*Solidago flexicaulis*), dwarf scouring rush (*Equisetum scirpoides*), lady's thumb (*Persicaria maculosa*), beggars-tick, coltsfoot (*Tussilago farfara*), wool grass (*Scirpus cyperinus*), reed canarygrass (*Phalaris arundinacea*), Philadelphia fleabane (*Erigeron philadelphicus*), bittersweet nightshade (*Solanum dulcamara*), panicled aster (*Symphyotrichum lanceolatum*), cow vetch (*Vicia cracca*), red clover (*Trifolium pratense*), common milkweed (*Asclepias syriaca*), wild parsnip (*Pastinaca sativa*),tall goldenrod (*Solidago altissima*), New-England Aster (*Symphyotrichum novae-angliae*), grass-leaved goldenrod (*Euthamia graminifolia*), wild strawberry (*Fragaria vesca*), selfheal (*Prunella vulgaris*), eastern black nightshade (*Solanum ptycanthum*), hop medic (*Medicago lupulina*), purple loosestrife (*Lythrum salicaria*), prickly sow thistle (*Sonchus asper*), white clover (*Trifolium repens*), sunflower (*Helianthus* spp.), wormseed mustard (*Erysimum cheiranthoides*), alfalfa (*Medicago sativa*), foxtail grass (*Alopecurus* spp.), common reed (*Phragmites australis*), viper's bugloss (*Echium vulgare*), broad-leaf cattail (*Typha latifolia*), enchanters nightshade (*Circaea lutetiana*), evergreen wood fern (*Dryopteris intermedia*), Christmas fern (*Polystichum acrostichoides*), spotted jewelweed (*Impatiens pallida*), narrow-leaved cattail (*Typha angustifolia*), common evening primrose (*Oenothera biennis*), barnyard grass (*Echinochloa s*pp.), spotted Joe-Pye weed (*Eutrochium maculatum*), common burdock (*Arctium minus*), elecampane (*Inula helenium*), northern water horehound (*Lycopus uniflorus*), marsh horsetail (*Equisetum palustre*), mugwort (*Artemisia vulgaris*), and nodding thistle (*Carduus nutans*).

No rare plant species or vegetation communities were observed within the MacLeod III parcel during the September 13 or November 1, 2016 site visits. The northern third of the parcel was observed to have been cleared (**Figure 2** and **Photo 5**). This area exhibited signs of recent disturbance and as such was not considered a vegetation community identified in the ELC community class/codes based on the site visits conducted by McIntosh Perry. Based on the findings of McIntosh Perry's field investigations and desktop review of Stormont Dundas and Glengarry mapping, no *Significant Woodlands* exist on or within 120 m of the

MacLeod III property (**Figure 3**). Though wooded areas do exist within the parcel, these wooded areas ***do not*** represent *Significant Woodlands* as they do not contain interior forest habitat and do not provide interior support to interior forest habitat (e.g. not connected to parcels of woodland which contain interior forest habitat).

Photo 5: View of cleared area within MacLeod III (Figure 2) September 13, 2016.

6.2.2 *MacLeod V*

Vegetation communities observed by McIntosh Perry within the MacLeod V site during the September 13 and November 1 2016 site visits include the following:

- AG – Agricultural (Corn Field);
- SWD – Deciduous Swamp; and
- FOM – Mixed Forest.

Photo 6: View of young Deciduous Swamp (SWD) habitat found within the MacLeod V site (Figure 2) November 1, 2016.

Photo 7: View of young Mixed Forest (FOM) habitat found within the MacLeod V site (Figure 2) November 1, 2016.

Woody vegetation species found within MacLeod V based on the September and November site visits conducted by McIntosh Perry include: prickly ash, riverbank grape, green ash, bur oak, wild red raspberry (Rubus idaeus), eastern white-cedar, Butternut (*Juglans cinerea*), dwarf raspberry (*Rubus pubescens*), common blackberry (*Rubus allegheniensis*), sugar maple, American beech (*Fagus grandifolia*), eastern hemlock (*Tsuga canadensis*), black raspberry (*Rubus occidentalis*), soft maple (*Acer* spp.), shrub willow, black cherry (*Prunus serotina*), round-leaved dogwood, white ash, blue beech (*Carpinus caroliniana*), red maple (*Acer rubrum*), bitternut hickory, American elm, choke cherry, Virginia creeper, grey dogwood, virgin's bower (*Clematis virginiana*), staghorn sumac, European buckthorn, hawthorn, trembling aspen, American basswood (*Tilia americana*), tartarian honeysuckle, Manitoba maple, Bebb's willow, black ash, balsam poplar (*Populus balsamifera*), grey birch (*Betula populifolia*), Herbaceous vegetation observed included: bull thistle, mugwort, sweet clover (*Melilotus* spp.), large-leaved aster (*Eurybia macrophylla*), wild parsnip, eastern black nightshade, common dandelion (*Taraxacum officinale*), Queen Ann's lace, red clover, cow vetch, black-eyed Susan (*Rudbeckia hirta*), violet (*Viola spp*.), common burdock, green amaranth, beggar-tick, Canada fleabane (*Conyza canadensis*), bull thistle, common ragweed, spike rush (*Eleocharis spp.*), blue vervain, selfheal, evergreen wood fern, Christmas fern, zig-zag goldenrod, avens (*Geum* spp.), bracken fern (*Pteridium aquilinum*), common reed and boneset.

No rare vegetation communities were observed within the MacLeod V site during McIntosh Perry's September 13, 2016 or November 1, 2016 site visits. The endangered Butternut will be discussed in Section 6.5.3 of this report. The majority of this MacLeod V site was observed to have been cleared (**Figure 2** and **Photo 8**). This area exhibited signs of recent disturbance and as such was not considered a vegetation community based on the site visits conducted by McIntosh Perry. Based on desktop review of Stormont, Dundas, and Glengarry mapping, *Significant Woodlands* exist adjacent to the MacLeod V property (**Figure 3**). As the remaining treed area located within the MacLeod V property is directly connected to the adjacent *Significant Woodlands*, the treed area within the MacLeod V property provides support to interior forest habitat present east of the site and property boundary. The existing open condition of the MacLeod V site creates an edge effect which influences the area within 100 m of the woodland edge (e.g. edge effect). Based on this edge effect, no interior forest habitat exists within 120 m of the MacLeod V property. However, woodlands to the north and east of the MacLeod V property do contribute to the function of interior forest habitat within the larger adjacent woodland parcel based on their supporting function and proximity (e.g. connectedness).

Photo 8: view of cleared area within MacLeod III (Figure 2) September 13, 2016.

6.3 Wildlife Habitat

During the September 13, 2016 and November 1, 2016 site visits the following wildlife species were observed within the MacLeod III and MacLeod V parcels (*as wildlife are mobile and the parcels are located in close proximity to one another it is assumed for the purposes of this report that wildlife species observed may travel between the properties*).

Bird species observed include: Red-tailed Hawk (*Buteo jamaicensis*), Mourning Dove (*Zenaida macroura*), Blue Jay (*Cyanocitta cristata*), American Goldfinch (*Spinus tristis*), Wild Turkey (*Meleagris gallopavo*), Black-capped Chickadee (*Poecile atricapillus*), Song Sparrow (*Melospiza melodia*), Hairy Woodpecker (*Picoides villosus*), Northern Flicker (*Colaptes auratus*), American Crow (*Corvus brachyrhynchos*), Herring Gull (*Larus argentatus*), Common Yellowthroat (*Geothlypis trichas*), Gray Catbird (*Dumetella carolinensis*), Cooper's Hawk (*Accipiter cooperii*), Yellow-bellied Sapsucker (*Sphyrapicus varius*), Cedar Waxwing (*Bombycilla cedrorum*), Eastern Phoebe (*Sayornis phoebe*), Indigo Bunting (*Passerina cyanea*), American Kestrel (*Falco sparverius*), Common Raven (*Corvus corax*), White-breasted Nuthatch (*Sitta carolinensis*), Northern Cardinal (*Cardinalis cardinalis*), Dark-eyed Junco (*Junco hyemalis*), and White-throated Sparrow (*Zonotrichia albicollis*).

Amphibians observed include: Green Frog (*Rana clamitans*) and Northern Leopard Frog (*Rana pipiens*). Mammals observed include: white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), red squirrel

(*Tamiasciurus hudsonicus*), Grey Squirrel (*Sciurus carolinensis*) and racoon (*Procyon lotor*). Invertebrate species observed include: Monarch (*Danaus plexippus*), cabbage white (*Pieris rapae*), black swallowtail (*Papilio polyxenes*), and greater fritillary (*Speyeria cybele*).

Two provincially listed species of Special Concern, the Eastern Wood-Pewee (*Contopus virens*) (observed within MacLeod V by WSP) and Monarch (observed by McIntosh Perry within MacLeod III), were observed during the 2016 field investigations. Suitable habitat for the Monarch is limited to the area of Meadow habitat present within MacLeod III (**Figure 2**).

The Eastern Wood-Pewee is known to use edge habitat (e.g. woodland and fencerows which do not contain interior forest habitat). However forest parcels containing interior forest habitat are generally considered higher quality habitat for the species. Limited areas of woodland (**Figure 3**) exist within the MacLeod V parcel and these woodland areas provide functional support to interior forest habitat located north and east of the parcel. At this time it is unknown whether *Significant Wildlife Habitat* for the Eastern Wood-Pewee exists within the MacLeod V parcel though woodland within this parcel represents *Candidate Significant Wildlife Habitat* for this species. For detailed information pertaining observations of the Eastern Wood-Pewee collected during the summer of 2016 see **Appendix B** of this report.

6.4 Wetlands

6.4.1 *MacLeod III*

Background information indicated that unevaluated wetlands are located within the MacLeod III property. Field review during the September 13, 2016 and November 1, 2016 site visits revealed that a small wetland area exists in the northern portion of the study lands. This area represents swamp habitat identified through ELC mapping as SWD – Deciduous Swamp (See **Photo 4** above). The wetland parcel is approximately 0.22 hectares in size and represents the only wetland parcel within the MacLeod III lands.

6.4.2 *MacLeod V*

Background information indicated that unevaluated wetlands are located within the MacLeod V property. Field review during the September 13, 2016 and November 1, 2016 site visits revealed that four separate parcels of wetland habitat currently exist within the MacLeod V property (**Figure 3**). These wetland parcels are currently separated from one another (e.g. not connected by overland flow) and are all comprised of SWD – Deciduous Swamp habitat. Two of the wetland parcels are located entirely within the subject lands with areas of 0.12 hectares and 0.27 hectares (**Photo 6**) respectively.

Two additional wetland areas exist along the eastern boundary of the parcel with the majority of the wetland area (as outlined from baseline GIS layers obtained from the LIO database) being located adjacent to the MacLeod V property. The areas of these two wetland areas are as follows:

- Approximately 5.24 hectares with approximately 0.57 hectares being located within the subject lands; and
- Approximately 1.87 hectares with approximately 0.23 hectares (**Photo 9**) being located within the subject lands.

It is important to note that these two wetland areas (**Figure 3**) are bordered by an existing laneway which separate the wetland area from the remaining lands of the MacLeod V property.

Photo 9: view of Deciduous Swamp wetland habitat (though dry during the field investigation due to unseasonably dry conditions in 2016) found along the eastern boundary of MacLeod V, September 13, 2016.

6.5 Species at Risk

During the course of all 2016 field investigations several species at risk including the Bank Swallow, Peregrine Falcon, Eastern Wood-Pewee (observed by WSP) and the Butternut and Monarch (observed by McIntosh Perry) observed within or directly adjacent to the MacLeod III and MacLeod V study sites. Based on available habitat found within the study area no suitable habitat exists for the Peregrine Falcon or Bank Swallow within 120 m of the study sites though these species may utilize habitat found on adjacent lands. For detailed information pertaining observations of bird species at risk, see **Appendix B** of this report. Habitat suitable for the life processes of the Monarch and Eastern Wood-Pewee have been outlined in section 6.3 of this report. The following sections of this report discuss provincially listed Threatened and Endangered Species which are known or suspected to occur within or adjacent to the MacLeod III and MacLeod V study areas.

6.5.1 *Eastern Whip-poor-will and Common Nighthawk*

MNRF indicated the potential for both the Eastern Whip-poor-will and Common Nighthawk to occur within the study area. Targeted field surveys were conducted by WSP during 2016 for these species. No observations of the Eastern Whip-poor-will or Common Nighthawk were made during these surveys. For detailed information pertaining to methodology utilized and observations made during these surveys see **Appendix B** of this report. Based on existing site conditions, as of the September 13, 2016 and November 1, 2016 site investigations, habitat found within the MacLeod III and MacLeod V site does not appear suitable to support the life processes of these species in its current condition.

6.5.2 *Bobolink and Eastern Meadowlark*

MNRF indicated the potential for both the Bobolink and Eastern Meadowlark to occur within the study area. Targeted field surveys were conducted during by WSP in 2016 for these species. No observations of the Bobolink and Eastern Meadowlark were made during these surveys. For detailed information pertaining to methodology utilized and observations made during these surveys, see **Appendix B** of this report. Based on existing site conditions, as of the September 13, 2016 and November 1, 2016 site investigations, habitat found within the MacLeod V site does not appear suitable to support the life processes of these species in its current condition. Meadow habitat present within the MacLeod III study area may be suitable for the life processes of the Eastern Meadowlark as this species may utilize smaller grassland parcels to nest.

6.5.3 *Butternut*

The following section outlines considerations related to the Butternut within the MacLeod III and V parcels.

6.5.3.1 MacLeod III

No Butternuts were observed on or within 50 m of the MacLeod III property during the September 13, 2016 and November 1, 2016 field investigations conducted by McIntosh Perry.

6.5.3.2 MacLeod V

During the September 13, 2016 field investigation a total of 16 individual Butternuts were observed within the subject property (**Photo 10**). Due to the timing of the initial site visit, a Butternut Health Assessment was not conducted. **Table 2** outlines information pertaining to Butternut trees found within the MacLeod V property. During the April 28, 2017 site investigation Chris Heffernan of McIntosh Perry re-visited all identified butternut trees and re-flagged them with white flagging tape as necessary. During the 2017 site visit tree number six (6) was identified as a bitternut hickory (*Carya cordiformis,* identified by yellow buds) and not a butternut. This tree had been questionable as a butternut in 2016 due to its very small size. Two (2) other seedlings trees number one (1) and tree number 14 could not be re-located.

A notice of butternut impact form under Section 23.7 of O.Reg 242/08 was submitted to MNRF on July 19, 2017 and a Confirmation of Registration (**Appendix F**) was received which allows the kill, harm or take of ten (10) Category 2 outlined in **Table 2**.

Table 2: SAR MacLeod V Butternut Tree Locations

Tree #	Latitude	Longitude	McIntosh Perry 2016 Observations	McIntosh Perry 2017 Observations	June 15, 2017 BHA Results by Bowfin Environmental Consulting (Tree Category)	Included Under Notice of Butternut Impact Form
1	45.08604	-74.74229	seedling	could not locate		
2	45.08727	-74.74294	seedling	flagged	Category 2	Yes
3	45.08725	-74.74302	root collar sprout	flagged	Category 2	Yes
4	45.08723	-75.74303	root collar sprout	flagged	Category 1	No
5	45.08730	-74.74312	N/A	flagged	Category 1	No
6	45.08717	-74.74310	seedling	Not a butternut, bitternut hickory seedling (ID by buds)		
7	45.08720	-74.74319	seedling	flagged	Category 2	Yes
8	45.08727	-74.74324	seedling	flagged	Category 2	Yes
9	45.08735	-74.74329	root collar sprout	flagged	Category 2	Yes
10	45.08736	-74.74329	seedling	flagged	Category 2	Yes
11	45.08723	-74.74346	root collar sprout	flagged	Category 2	Yes
12	45.08713	-74.74344	N/A	flagged	Category 1	No
13	45.08710	-74.74343	root collar sprout	flagged	Category 2	Yes
14	45.08704	-74.73939	seedling	could not locate		
15	45.08329	-74.74125	N/A	flagged	Category 2	Yes
16	45.08332	-74.74121	root collar sprout	flagged	Category 2	Yes

Photo 10: Butternut #15 observed during the September 13, 2016 field investigation.

6.5.4 *Species at Risk Bats*

Based on field review of available habitat (2016 and 2017), surficial geology within MacLeod III and MacLeod V does not appear to provide conditions required to provide overwintering habitat (e.g. hibernacula) for at-risk bats.

Based on the findings of the September 13, 2016 and November 1, 2016 site investigations completed by McIntosh Perry much of the habitat found within MacLeod III and MacLeod V is currently open and without trees. A survey was conducted on April 28, 2017 within remaining treed habitat found within both MacLeod III (**Figure 4**) and MacLeod V (**Figure 5**) parcels to identify suitable maternity roost sites for bats. The survey indicated that suitable maternity roost features (e.g. snags, cavity trees) do exist within these wooded areas as outlined in **Table 3**.

Targeted acoustic surveys for at-risk bats have not been conducted at the MacLeod III or MacLeod V study sites as the remaining treed areas are not required as part of the extraction area at this time and will be retained.

Figure 4: Suitable Bat Maternity Roost Trees MacLeod III.

Figure 5: Suitable Bat Maternity Roost Trees MacLeod V.

Table 3: Potentially Suitable Maternity Roost Trees

Tree Number	Species	Zone	Easting	Northing	Decay Class	DBH	Height Class	Attribute
MacLeod V								
1	Trembling Aspen	18T	520157	4993218	1	32	1	knot hole
2	American Basswood	18T	520161	4993210	1	27	1	knot hole
3	Eastern Hemlock	18T	520149	4993207	4	23	2	woodpecker hole, peeling bark
4	Yellow Birch	18T	520146	4993208	2	17	2	entry from broken top
5	Green Ash	18T	520141	4993205	2	22	1	woodpecker hole
6	American Basswood	18T	520134	4993200	4	23.5	2	woodpecker hole, broken top
7	Trembling Aspen	18T	520127	4993193	4	24	2	peeling bark
8	Green Ash	18T	520129	4993190	2	22	2	broken top, split trunk
9	soft maple (red, silver or Freemans)	18T	520106	4993133	1	43	1	knot hole 4 m + height
10	Bitternut Hickory	18T	520033	4993011	1	22	1	damaged crown
MacLeod III								
1	Sugar Maple	18T	518773	4992385	1	24	1	large broken branch
2	American Elm	18T	518772	4992379	4	24	1	peeling bark
3	American Elm	18T	518775	4992376	4	22	1	peeling bark
4	Sugar Maple	18T	518778	4992399	1	32	1	knot hole
5	American Elm	18T	518897	4992471	4	22	1	peeling bark
6	Trembling Aspen	18T	518884	4992469	1	36	1	knot hole in dying branches
7	Trembling Aspen	18T	518876	4992469	4	17	2	knot hole, peeling bark

7.0 DISCUSSION

The following sections outline specific environmental constraints identified within the subject properties (MacLeod III and MacLeod V) and discuss potential impacts to these features and mitigation measures to minimize or eliminate impacts to these features.

7.1 Fish and Fish habitat

Impacts to fish and fish habitat are not anticipated as part of the proposed quarry activities within the MacLeod V property as no fish habitat exists within the parcel or within 120 m of the parcel.

The unnamed drain (a tributary of the Eastman Drain) located in the southwest corner of the MacLeod III property represents fish habitat which supports baitfish species and provides important and exceptional habitat (e.g. spawning and nursery habitat) for these species. It is not anticipated that fish and fish habitat associated with the Eastman Drain will be impacted by the proposed quarry development. Any activity that occurs within 30 m of top of bank must ensure that appropriate erosion and sediment control measures are installed prior to work commencing and maintained until work is completed. Should de-watering activities of the future quarry development discharge water to the Eastman Drain at a different location than is currently approved, it is recommended that impacts to fish and fish habitat be assessed at that time following current legislative requirements. If a new discharge location to the Eastman Drain is considered, it is recommended that provisions be put in place to ensure fish and fish habitat is not impacted by quarry discharge. This may include but is not limited to the use of storm water ponds to attenuate sediment, temperature and water quality.

7.1.1 *Cutlip Minnow*

At this time it is not anticipated that the Cutlip Minnow will be impacted by the proposed quarry development.

7.1.2 *General Recommendations*

The area within 30 m of the existing Eastman Drain is currently bordered by a narrow strip of wooded area (5 m on either watercourse bank) with agricultural row crops planted from 5 m to 30 m from the watercourse. Though it is generally recommended that a 30 m setback be maintained from a fish habitat (e.g. the watercourse), as a part of this ARA application, Cornwall Gravel has requested to perform a cut/fill in the flood plain to create a retention pond in order to maximize the amount of aggregate available. It is proposed that the cut area be located within 30 m of the Eastman Drain. Given the long lifespan of this project, impacts to the Eastman Drain and associated fish habitat (e.g. work within 30 m of the watercourse) should be addressed in accordance with all relevant policies and legislation as outlined by DFO prior to construction of the retention pond.

7.2 Woodlands and Vegetation Communities

7.2.1 *MacLeod III*

Based on the findings of this report, no *Significant Woodlands*, rare vegetation species or rare vegetation communities exist within the MacLeod III property or within 120 m of the property at this time. As such, it is not anticipated that proposed quarry activities will negatively impact *Significant Woodlands*, rare vegetation species or rare vegetation communities. Existing woodland communities found within the parcel should be maintained where possible.

7.2.2 *MacLeod V*

No rare vegetation communities were observed within the MacLeod V parcel. One rare vegetation species, the endangered Butternut, was observed within the parcel and impacts to this endangered species will be outlined in section 7.5.3 of this report. Based on Stormont, Dundas and Glengarry mapping, *Significant Woodlands* exist adjacent to the MacLeod V property. Woodland present within the MacLeod V property represents *Significant Woodland* due to the connection with adjacent woodlands and the function of *Significant Woodlands* within the parcel is to provide supporting function to interior forest habitat within the larger woodland parcel (e.g. interior forest habitat is located to the north and east of the subject property). Clearing of the site has already occurred and based on the site investigations conducted by McIntosh Perry on September 13, 2016 and November 1, 2016 impacts to interior forest habitat (e.g. creation of edge effect) have already occurred.

7.2.3 *General Recommendations*

It is anticipated that berms will be constructed within the setback areas (e.g. from property boundaries) of the two subject properties (MacLeod III or MacLeod V). These setback areas within the two subject properties should be maintained as areas of native plant communities, where possible. Where transition zones between existing woodlands and cleared areas exist within the setback areas, these locations should be re-planted **or,** given the timeframe of operation, allowed to naturally re-vegetate with native vegetation to provide transitional edge effect between the quarry development and the adjacent woodland feature. The use of native seed mixes is encouraged where seed is used to stabilize exposed soils or re-vegetate setback areas.

7.3 Wildlife Habitat

Due to the existing site conditions observed during the September 13, 2016 and November 1, 2016 site visits conducted by McIntosh Perry, it is not anticipated that the proposed quarry development of MacLeod III or MacLeod V will result in significant impacts to wildlife within the parcels.

The migratory bird nesting window for this location is March 15 to August 15 of any year. A screening of the study area is recommended for the presence of migratory birds, or their nests, prior to any disturbance of

vegetation (woody and herbaceous vegetation) between April 25 to August 5 of any year, as this period corresponds to the core nesting period for migratory observed within the study area. If breeding birds and/or their nests are encountered, works should not continue in the location of the nest until it has been determined by an avian specialist that the young have fledged and vacated the nest and works area.

7.3.1 *Significant Wildlife Habitat*

Candidate Significant Wildlife Habitat exists for the Eastern Wood-Pewee (special concern) within the MacLeod V parcel. As vegetation clearing has already occurred it is not anticipated that future development of the site would impact this *Candidate Significant Wildlife habitat*. As the natural function of woodlands within the MacLeod V property is to provide support to interior forest habitat (e.g. forest edge habitat) and the Eastern Wood-Pewee is adapted to utilize forest edges and fencerows for nesting, it is unlikely that the Eastern Wood-Pewee or its *Candidate Significant Wildlife Habitat* will be impacted by the proposed MacLeod V quarry at this time. Due to the long lifespan of the proposed quarry, maintaining the outside slope of all noise barriers/berms adjacent to the *Significant Woodland* area (**Figure 3**) as naturally vegetated areas (e.g. through natural succession) would also provide benefit to the Eastern Wood-Pewee and its habitat by providing a "soft" edge effect (e.g. gradual transition between open habitat and woodland habitat) and increased habitat diversity along the woodland edge. If further clearing of woodlands is to occur within the MacLeod V parcel it should be confirmed weather identified *Candidate Significant Wildlife Habitat* for the Eastern Wood-Pewee is occupied by the species prior to vegetation removal and appropriate mitigation measures if required be prescribed and implemented at that time.

Regionally appropriate milkweed species should be included in all seed mixes used to re-vegetate setback areas within the MacLeod III and MacLeod V properties to provide host plants for larval Monarchs.

7.4 Wetlands

Revised wetland mapping was done through desktop review and based on exiting wetland layers (LIO GIS layers), satellite interpretation and field investigations. Wetland habitat is found within both the MacLeod III (0.22 hectares total) and MacLeod V properties (1.19 hectares total). All existing wetland habitats (based on 2016 field investigations completed by McIntosh Perry) are located within setback areas outlined in the quarry site plans for both MacLeod III and MacLeod V. Additional wetland areas (extension of existing wetland areas found within the parcel) are found to the east of MacLeod V.

A wetland evaluation was not completed for wetlands within the subject lands and it is unlikely that on their own these wetland parcels would score sufficient points in a wetland evaluation (OWES) to be listed as *PSW*s. Land within much of the subject properties (both MacLeod III and MacLeod V) has been recently disturbed. As impacts to wetlands (e.g. impacts within 120 m of wetland boundaries) have already occurred, it is not anticipated that future development of the site as an aggregate extraction site will impact the remaining

wetland areas as these wetland areas are located within setback areas from existing property boundaries and other sensitive features.

7.5 Species at Risk

The following section outlines specific concerns and mitigation measures related to Threatened and Endangered species known or suspected to occur within the immediate vicinity of the MacLeod III and MacLeod V study sites.

7.5.1 *Eastern Whip-poor-will and Common Nighthawk*

The Eastern Whip-poor-will and Common Nighthawk were not observed during targeted field surveys for these species. As such, given the current conditions of the MacLeod III and MacLeod V study sites, it is not anticipated that the proposed quarry development would pose adverse impacts to these species or their habitat at this time. Should these species be encountered within the properties (MacLeod III or MacLeod V) during the quarries long lifespan, impacts to these species and their habitat should be addressed in accordance with all current and relevant policies and legislation as required.

7.5.2 *Bobolink and Eastern Meadowlark*

The Bobolink and Eastern Meadowlark were not observed during targeted field surveys for these species. As such, given the current conditions of the MacLeod V study sites, it is not anticipated that the proposed quarry development would pose adverse impacts to these species or their habitat at this time. Suitable habitat does exist within the MacLeod III study site for the Eastern Meadowlark however absence of the species at the time of targeted field surveys indicates that this habitat is unoccupied at this time and as such no impacts are anticipated to the Eastern Meadowlark or its habitat as a result of the proposed quarry development. Should these species be encountered within the properties (MacLeod III or MacLeod V) during the quarries long lifespan, impacts to these species and their habitat should be addressed in accordance with all current and relevant policies and legislation as required.

7.5.3 *Butternut*

No Butternuts were observed on or within 50 m of the MacLeod III lands. It is not anticipated that development of this site will result in impacts to the species or its habitat.

A notice of butternut impact form under Section 23.7 of O.Reg 242/08 was submitted to MNRF on July 19, 2017 by Bowfin Environmental and a Confirmation of Registration (**Appendix E**) was received which allows the kill, harm or take of the following ten (10) Category 2 as outlined in **Table 2**: Tree # 2, 3, 7, 8, 9, 10, 11, 13, 15 and 16. The following three (3) trees were also assessed during the June 15, 2017 BHA conducted by Bowfin Environmental Consulting and were found to be Category 1 trees which are not afforded protection under the ESA and its regulations. Based on this, it is not anticipated that development of this site will result in impacts to the species or its habitat.

7.5.4 *Species at Risk Bats*

It is not anticipated that the proposed extraction will result in adverse impacts to bat hibernacula as habitat found within MacLeod III and MacLeod V does not appear suitable to support the overwintering requirements of at-risk bats. It is not anticipated that the proposed quarry development will result in negative impacts to maternity colony habitat for at-risk bats as the proposed extraction area is mostly devoid of cavity trees at this time. Remaining woodland habitat found within the northern extents of MacLeod III (**Figure 4**) and MacLeod V (**Figure 5**) was found to contain suitable features required by at risk bats during the April 28, 2017 habitat inventory. The extraction area does not require the removal of these treed areas at this time and as such no acoustic monitoring surveys were conducted during the 2017 season. In the event that vegetation alteration or removal be required within these treed areas targeted acoustic surveys should be conducted prior to any site alteration within these wooded areas (**Figure 4** and **5**) to determine if SAR bats are present within suitable habitat. If present, suitable mitigation measures should be prescribed and all current legislative requirements be followed to ensure impacts to SAR bats are avoided or minimized.

7.6 Site Plan Recommendations

1. All setback areas and berms should be allowed to naturally regenerate with vegetation where possible;
2. No further removal of existing *Significant Woodlands* or wetland areas should occur. If further removal of woody vegetation from *Significant Woodlands* or removal of wetland areas be required, an additional impact assessment should be completed to demonstrate the work will not impact the feature **OR** that sufficient mitigation can be implemented to prevent adverse impacts to the natural function of the feature;
3. Acoustic surveys must be completed prior to vegetation removal within remaining wooded areas (**Figure 4** and **5**) prior any site alteration within the treed areas to determine if species at risk bats are present within suitable habitat;
4. Given the long time frame of quarry development, legislative requirements pertaining to species at risk and their habitat must be adhered to through the lifespan of the quarry;
5. Should de-watering activities of the future quarry development discharge water to the Eastman Drain at a different location than is currently approved, it is recommended that impacts to fish and fish habitat be assessed at that time following current legislative requirements, and
6. Any activity that occurs within 30 m of top of bank must ensure that appropriate erosion and sediment control measures are installed prior to work commencing and maintained until work is completed.

8.0 LIMITATIONS

The desktop review and field investigations were undertaken by McIntosh Perry specifically for this report. Any conclusions or recommendations made in this report reflect McIntosh Perry's judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of the preparation of this report. Additional studies have been undertaken by other parties pertaining to the MacLeod III and V study sites. Recommendations or conclusions made regarding the findings of these field studies can only be made based on information available in the appended reports and documents.

This report has been prepared for specific application to this site and is based, in part, upon visual observation of the site and aquatic/terrestrial investigations at various locations during a specific time interval, as described in this report. **Unless otherwise stated, the findings cannot be extended to previous or future site conditions, or portions of the site which were unavailable for direct investigation.**

If site conditions, legislation, or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

If you have any questions, comments, or concerns, please do not hesitate to contact the undersigned at McIntosh Perry at 613-542-3788 (ext. 3111)

Sincerely,
McIntosh Perry Consulting Engineers Ltd.

_____
Chris Heffernan
Fish and Wildlife Biologist

9.0 REFERENCES

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APPENDIX A: CORRESPONDENCE WITH REGULATORY AGENCIES

Ministry of Natural Resources and Forestry

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Wed. Aug 10, 2016

Kristin Palilionis
McIntosh Perry
1-1329 Gardiners Road
Kingston, Ontario
K7P 0L8
(613) 542-3788
k.palilionis@mcintoshperry.com

Attention: Kristin Palilionis

Subject: Information Request - Developments
Project Name: Cornwall Gravel - MacLeod III
Our File No. 2016_COR-3621

Natural Heritage Values

The Ministry of Natural Resources and Forestry (MNRF) Kemptville District has carried out a preliminary review of the area in order to identify any potential natural resource and natural heritage values.

The MNRF works closely with partner agencies and local municipalities in order to establish concurrent approval process and to achieve streamlined and efficient service delivery. The MNRF strongly encourages all proponents to contact partner agencies (e.g. MOECC, Conservation Authority, etc.) and appropriate municipalities early on in the planning process. This provides the proponent with early knowledge regarding agency requirements and approval timelines.

Natural heritage features and values contribute to the province's rich biodiversity and provide habitat for a variety of species. The following Natural Heritage values were identified:

- Municipal Drain, Eastman Drain
- Municipal Drain, Un-named Drain
- Unevaluated Wetland (Not evaluated per OWES)
- Significant Woodlands

Municipal Official Plans contain additional information related to natural heritage features. Please see the local municipal Official Plan for more information such as specific policies and direction pertaining to activities which may impact natural heritage features. For planning advice or Official Plan interpretation, please contact the local municipality.

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Where natural values and natural hazards exist (e.g., floodplains), there may be additional approvals and permitting required from the local Conservation Authority. The MNRF strongly recommends contacting the local Conservation Authority for further information and approvals. Please see the MNRF Kemptville Information Guide (2012) for contact information pertaining to Conservation Authorities located within the Kemptville District area.

For additional information and online mapping tools, please see the Natural Heritage Information Centre (NHIC), where additional data and files can be downloaded in both list and digital format. In addition sensitive species information can be requested and accessed through the NHIC at NHICrequests@ontario.ca.

In Addition, the following Fish species were identified: bluntnose minnow, brassy minnow, brook stickleback, Carps and Minnows, central mudminnow, common shiner, creek chub, johnny darter, johnny darter/tesselated darter, pumpkinseed, white sucker.

Water

Where the site is adjacent to or contains a watercourses or waterbodies, additional considerations apply. If any in-water works are to occur, there are timing restriction periods for which work in water can take place (see below). Appropriate measures should be taken to minimize and mitigate impact on water quality and fish habitat, including:

- including the installation of sediment and erosion control measures;
- avoiding removal alteration or covering of substrates used for fish spawning, feeding, over-wintering or nursery areas; and
- debris control measures should be put in place to manage falling debris (e.g. spalling).

A work permit from the MNRF may be required pending further details regarding the proposed works. No encroachment on the bed or banks of the waterbody (e.g. abutments, embankments, etc.) is permitted until MNRF approval and clearance has been issued. In order for MNRF staff to determine when a work permit is required, additional information can include:

- Detailed drawings (existing and proposed)
- Location mapping
- Registered Plan survey
- Site photographs
- Public Lands Act Forms - application forms, ownership form and landowner notification form.

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The MNRF does not have any water quality or quantity data available. We recommend that the Ministry of the Environment and Climate Change be contacted for such data along with the local Conservation Authority. For further information regarding fish habitat and protocols, please refer to the following interagency, document, *Fish Habitat Referral Protocol for* Ontario at: http://www.MNRF.gov.ca/264110.pdf

Timing restriction periods in MNRF Kemptville District*:

Warmwater → March 15 – June 30
→ March 15 – July 15 for St. Lawrence River & Ottawa River
Coldwater → October 1 – May 31
Mixed lakes → October 1 – June 30 (Big Rideau & Charleston)

** Please note: Additional timing restrictions may apply as it relates to Endangered and Threatened Species, including works in both water and wetland areas.*

Spring:

FISH SPECIES	TIMING WINDOW
Walleye	March 15 to May 31
Northern Pike	March 15 to May 31
Lake Sturgeon	May 1 to June 30
Muskellunge	March 15 to May 31
Largemouth/Smallmouth Bass	May 1 to July 15
Rainbow Trout	March 15 to June 15
Other/Unknown Spring Spawning Species	March 15 to July 15

Fall:

FISH SPECIES	TIMING WINDOW
Lake Trout	October 1 to May 31
Brook Trout	October 1 to May 31
Pacific Salmon	September 15 to May 31
Lake Whitefish	October 15 to May 31
Lake Herring	October 15 to May 31
Other/Unknown Fall Spawning Species	October 1 to May 31

Additional approvals and permits may be required for the proposed works as it relates to the Fisheries Act. Please contact your local Conservation Authority and the Department of Fisheries and Oceans to determine requirements and next steps. Where the Fisheries Act is triggered and habitat compensation, mitigation measures or best management practices are being considered; as the MNRF is charged with the management of Provincial fish populations, the MNRF requests ongoing involvement in such discussions in order to ensure population conservation. Furthermore, local Conservation Authorities may also have additional approvals for works in and adjacent to water and wetland features. Finally, Transport Canada's Navigable Waters Protection Division

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may require review and approval of the proposed project. Please contact these local agencies directly for more information.

Aggregates

As per the Natural Heritage Reference Manual (Section 13; OMNRF 2010) the MNRF strongly recommends that an Ecological Site Assessment be carried out to more thoroughly determine the presence of natural heritage features, and Species at Risk and their habitat located on site. The MNRF can provide survey methodology for particular species at risk and their habitats. In addition, the local planning authority may have more details pertaining to the requirements of the assessment process, which will allow for the municipality to make planning decisions which are consistent with the Provincial Policy Statement (2014).

Species at Risk

It is important to understand which species and habitats exist in the area and the implications of the Endangered Species Act (ESA, 2007). A review of the Natural Heritage Information Centre (NHIC) and internal records indicate that there is a potential for the following Threatened (THR) and/or Endangered (END) species on the site or in proximity to it:

- Barn Swallow (THR)
- Bobolink (THR)
- Butternut (END)
- Cutlip Minnow (THR)
- Eastern Meadowlark (THR)
- Little Brown Bat (END)
- Whip poor will (THR)

All Endangered and Threatened species receive individual protection under section 9 of the ESA and receive general habitat protection under Section 10 of the ESA, 2007. Any potential works should consider disturbance of possible important habitat (e.g. nesting sites). Please note that as of June 30, 2013 general habitat protection applies to all Threatened and Endangered species. The habitat of these listed species is protected from damage and destruction and certain activities may require authorization(s) under the ESA.

Species receiving General Habitat protection:

- Barn Swallow (THR)
- Bobolink (THR)
- Butternut (END)
- Cutlip Minnow (THR)
- Eastern Meadowlark (THR)

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- Little Brown Bat (END)
- Whip poor will (THR)

If the proposed activity is known to have an impact on the species mentioned above or any other SAR, an authorization under the Endangered Species Act, 2007 (ESA) may be required. It is recommended that MNRF Kemptville be contacted prior to any activities being carried out to discuss potential survey and mitigation measures to avoid contravention of the ESA.

In Addition, one or more Special Concern species has been documented to occur either on the site or nearby. Species listed as Special Concern are not protected under the ESA, 2007. However, please note that some of these species may be protected under the Fish and Wildlife Conservation Act. Species of Special Concern for consideration:

- Snapping Turtle (SC)

If any of these or any other species at risk are discovered throughout the course of the work, and/or should any species at risk or their habitat be potentially impacted by on site activities, MNRF should be contacted immediately and operations be modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by MNRF.

Please note that information regarding species at risk is based on documented occurrences only and does not include an interpretation of potential habitat within or in proximity to the site in question. Although this data represents the MNRF's best current available information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. i.e.: Species at Risk (SAR) or their habitat could still be present at the location or in the immediate area. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed; or their habitat is not damaged or destroyed through the activities carried out on the site. The MNRF continues to strongly encourage ecological site assessments to determine the potential for SAR habitat and occurrences. When a SAR or potential habitat for a SAR does occur on a site, it is recommended that the proponent contact the MNRF for technical advice and to discuss what activities can occur without contravention of the Act. If an activity is proposed that will contravene the ESA (such as Section 9 or 10), the proponent must contact the MNRF to discuss the potential for a permit (Section 17). For specific questions regarding the Endangered Species Act (2007) or SAR, please contact a district Management Biologist at sar.kemptville@ontario.ca. For more information regarding the ESA (2007), please see attached ESA Information Sheet.

As of July 1, 2013, the approvals processes for a number of activities that have the potential to impact SAR or their habitat were changed in an effort to streamline approvals processes while continuing to protect and sustainably manage Ontario's natural resources. For those activities that

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require registration with the Ministry, businesses and individuals will be able to do so through a new online system. The online system will also include information to help guide individuals and businesses through the new processes. For further information on which activities are authorized through this new online registration process and how to apply, please refer to the following website: http://www.MNRF.gov.on.ca/en/About/2ColumnSubPage/STDPROD_104342.html. General inquiries may be directed towards Kemptville District MNRF, while questions and comments involving the new online forms can be directed to the Registry Approvals Service Centre (RASC) at 1-855-613-4256 or MNRF.rasc@ontario.ca.

Please note: The advice in this letter may become invalid if:

- The Committee on the Status of Species at Risk in Ontario (COSSARO) re-assesses the status of the above-named species OR adds a species to the SARO List such that the section 9 and/or 10 protection provisions apply to those species.
- Additional occurrences of species are discovered.
- Habitat protection comes into force for one of the above-mentioned species through the creation of a habitat regulation (see general habitat protection above).

This letter is valid until: Thu. Aug 10, 2017

MNRF is streamlining and automating its approvals processes for natural resource-related activities. Some activities that may otherwise contravene the ESA may be eligible to proceed without a permit from MNRF provided that regulatory conditions are met for the ongoing protection of species at risk and their habitats. There are regulatory provisions for projects that have attained a specified level of approval prior to, or shortly after, the specified species or its habitat became protected under the ESA. Their requirements include registering the activity with the Ministry of Natural Resources and Forestry, taking steps to immediately minimize adverse effects on species and habitat, and developing a mitigation plan. Anyone intending to use this regulatory provision is strongly advised to review Ontario Regulation 242/08 under the Endangered Species Act, 2007 for the full legal requirements.
For more information please check out the following link http://www.ontario.ca/environment-and-energy/development-and-infrastructure-projects-and-endangered-or-threatened-species

The MNRF would like to advise, by way of this letter, that we continue to be circulated on information with regards to this project. If you have any questions or require clarification please do not hesitate to contact me.

Sincerely,

Ministry of Natural Resources and Forestry

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Dom Ferland
A/ Management Biologist
dom.ferland@ontario.ca

Encl.\
-ESA Infosheet
-NHIC/LIO Infosheet

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December 6, 2016

Cornwall Gravel Company Limited
P. O. Box 67
390 Eleventh Street West
Cornwall, ON K6H 5R9

Attention: Travis Mitchell

Subject: **Aggregate Licence Application Proposal – Pre-consultation Follow-up for Proposed MacLeod III Quarry**
Part Lot 6, Concession 4
Geographic Township of Cornwall
United Counties of Stormont, Dundas and Glengarry

Dear Mr. Mitchell:

Following the pre-consultation meeting of August 10, 2016 for the proposed MacLeod III site, the Ministry of Natural Resources and Forestry (MNRF) would like to provide the following information and clarification for your consideration.

As discussed, the proposed aggregate extraction at the MacLeod III and MacLeod V sites will require separate licence applications under the *Aggregate Resources Act* (ARA), 1990. Similarly, any site plan amendments that may be necessary on the adjacent licenced MacLeod I, II and IV sites will need to be addressed separately. Though they need to be addressed separately, MNRF encourages the proponent to submit the various applications within the same time frame to facilitate a concurrent review process.

1. General

Cornwall Gravel indicated in the pre-consultation meeting that the cultural heritage report was completed and signed off by the Ministry of Tourism, Culture and Sport (MTCS) in the mid-1990s. As the MTCS Standards and Guidelines have changed since this time, the MNRF requires that Cornwall Gravel submit with the ARA licence application written confirmation from the MTCS that the original clearance letter remains valid. If MTCS is not satisfied then a new assessment will need to be carried out for this site.

2. Natural Heritage

Species at Risk

- As there is a Cutlip minnow occurrence in proximity to the site, MNRF would like to confirm that this needs to be addressed through the Natural Environment Report.
- Butternut may be found on site. A full Butternut Health Assessment (BHA) carried out by a Certified Butternut Health Assessor must be submitted to MNRF. When submitting this BHA, please ensure that the licence application information is referenced. Any Butternut assessed on site will need to appear on the existing features page of the Site Plans.
- Surveys for Eastern whip-poor-will, Common nighthawk, Bobolink, Eastern Meadowlark, and Species at Risk bats must be carried out following MNRF protocols on the site. General breeding bird surveys should be carried out as well.

Wetlands

- MNRF mapping suggests that unevaluated wetlands are found at the north end of the site. These wetlands must be evaluated using the Ontario Wetland Evaluation System (OWES) or treated as Provincially Significant Wetlands.
- Any wetland evaluation is to be done following a comprehensive OWES, including consideration of wetland features outside of the licence application area. Please provide the wetland boundary shapefile (digital copy) and documentation to MNRF for review.
- As noted in the pre-consultation, documentation regarding impacts (including surface and ground water impact) to the feature and its function must be captured as part of the Natural Environment Report and the Hydrogeological report.

Woodlands

- The official plan for Stormont, Dundas and Glengarry identifies the broader area as Significant Woodlands. Furthermore, Kemptville District's mapping of Significant Woodlands identifies the woodlands on site as potentially Significant Woodlands based on the following criteria: woodland interior, interior support and proximity.
- The Natural Environment Report must include an assessment of the impacts of the proposed aggregate extraction on the significant woodlands and the features and functions for which it was identified.

Wildlife Habitat

Significant Wildlife Habitat (SWH) must be identified and confirmed on the site through appropriate surveys and in consideration of the ELC mapping. Impacts to any confirmed SWH must be captured in the Natural Environment Report.

3. Site Plan

- Any Common Boundary Agreements with the adjacent licensed sites will need to be amended to reflect the setback reductions.
- A shared internal haul route with the adjacent licenced sites can be considered, provided that the adjacent licences have requested and received approval in principle for these amendments regarding the exit/entrance and changes to internal haul route prior to the time the new licence is being considered for approval.
- Material moving between sites must be reported as “shipments” according to the TOARC handbook. It is not considered to be importation of fill and would not need an amendment, but would have to be reported by the receiving licensee.

4. Hydrogeology

It is our understanding that monitoring wells with data loggers will be installed at the site as part of the hydrogeological investigations. The Hydrogeological Report should include an assessment of the cumulative impacts of quarrying in this area on surface and groundwater levels and quality.

5. Objections

Any person(s) wishing to object to an application during the 45-day of the ARA must send, in writing, their objection with reason(s) to the **Applicant** and to the district/local office of the **Ministry of Natural Resources and Forestry**. Note: E-mail submissions are acceptable however they must contain the objector's complete postal mailing address where a response can be delivered. **E-mail objections which do not contain a postal address will not be considered acceptable.**

If you have any questions or require further information, please contact me.

Yours truly,

Mary Dillon

Mary Dillon
A/District Planner

Ministry of Natural Resources and Forestry

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Wed. Aug 10, 2016

Kristin Palilionis
McIntosh Perry
1-1329 Gardiners Road
Kingston, Ontario
K7P 0L8
(613) 542-3788
k.palilionis@mcintoshperry.com

Attention: Kristin Palilionis

Subject: Information Request - Developments
Project Name: Cornwall Gravel - MacLeod V
Our File No. 2016_COR-3625

Natural Heritage Values

The Ministry of Natural Resources and Forestry (MNRF) Kemptville District has carried out a preliminary review of the area in order to identify any potential natural resource and natural heritage values.

The MNRF works closely with partner agencies and local municipalities in order to establish concurrent approval process and to achieve streamlined and efficient service delivery. The MNRF strongly encourages all proponents to contact partner agencies (e.g. MOECC, Conservation Authority, etc.) and appropriate municipalities early on in the planning process. This provides the proponent with early knowledge regarding agency requirements and approval timelines.

Natural heritage features and values contribute to the province's rich biodiversity and provide habitat for a variety of species. The following Natural Heritage values were identified:

- Fish Nursery, White Sucker Nursery Area
- Municipal Drain, Un-named Drain
- Unevaluated Wetland (Not evaluated per OWES)
- Significant Woodlands

Municipal Official Plans contain additional information related to natural heritage features. Please see the local municipal Official Plan for more information such as specific policies and direction pertaining to activities which may impact natural heritage features. For planning advice or Official Plan interpretation, please contact the local municipality.

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Where natural values and natural hazards exist (e.g., floodplains), there may be additional approvals and permitting required from the local Conservation Authority. The MNRF strongly recommends contacting the local Conservation Authority for further information and approvals. Please see the MNRF Kemptville Information Guide (2012) for contact information pertaining to Conservation Authorities located within the Kemptville District area.

For additional information and online mapping tools, please see the Natural Heritage Information Centre (NHIC), where additional data and files can be downloaded in both list and digital format. In addition sensitive species information can be requested and accessed through the NHIC at NHICrequests@ontario.ca.

In Addition, the following Fish species were identified: banded killifish, blacknose shiner, bluntnose minnow, brook stickleback, brown bullhead, Carps and Minnows, central mudminnow, common carp, common shiner, creek chub, fantail darter, fathead minnow, finescale dace, golden shiner, lowa darter, johnny darter, johnny darter/tesselated darter, largemouth bass, logperch, northern pike, northern redbelly dace, pumpkinseed, rock bass, round goby, spotfin shiner, Sunfishes, tadpole madtom, white sucker, yellow perch.

Water

Where the site is adjacent to or contains a watercourses or waterbodies, additional considerations apply. If any in-water works are to occur, there are timing restriction periods for which work in water can take place (see below). Appropriate measures should be taken to minimize and mitigate impact on water quality and fish habitat, including:

- including the installation of sediment and erosion control measures;
- avoiding removal alteration or covering of substrates used for fish spawning, feeding, over-wintering or nursery areas; and
- debris control measures should be put in place to manage falling debris (e.g. spalling).

A work permit from the MNRF may be required pending further details regarding the proposed works. No encroachment on the bed or banks of the waterbody (e.g. abutments, embankments, etc.) is permitted until MNRF approval and clearance has been issued. In order for MNRF staff to determine when a work permit is required, additional information can include:

- Detailed drawings (existing and proposed)
- Location mapping
- Registered Plan survey
- Site photographs

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- Public Lands Act Forms - application forms, ownership form and landowner notification form.

The MNRF does not have any water quality or quantity data available. We recommend that the Ministry of the Environment and Climate Change be contacted for such data along with the local Conservation Authority. For further information regarding fish habitat and protocols, please refer to the following interagency, document, *Fish Habitat Referral Protocol for* Ontario at: http://www.MNRF.gov.ca/264110.pdf

Timing restriction periods in MNRF Kemptville District*:

Warmwater → March 15 – June 30
→ March 15 – July 15 for St. Lawrence River & Ottawa River
Coldwater → October 1 – May 31
Mixed lakes → October 1 – June 30 (Big Rideau & Charleston)

* *Please note: Additional timing restrictions may apply as it relates to Endangered and Threatened Species, including works in both water and wetland areas.*

	FISH SPECIES	TIMING WINDOW
Spring:	Walleye	March 15 to May 31
	Northern Pike	March 15 to May 31
	Lake Sturgeon	May 1 to June 30
	Muskellunge	March 15 to May 31
	Largemouth/Smallmouth Bass	May 1 to July 15
	Rainbow Trout	March 15 to June 15
	Other/Unknown Spring Spawning Species	March 15 to July 15

	FISH SPECIES	TIMING WINDOW
Fall:	Lake Trout	October 1 to May 31
	Brook Trout	October 1 to May 31
	Pacific Salmon	September 15 to May 31
	Lake Whitefish	October 15 to May 31
	Lake Herring	October 15 to May 31
	Other/Unknown Fall Spawning Species	October 1 to May 31

Additional approvals and permits may be required for the proposed works as it relates to the Fisheries Act. Please contact your local Conservation Authority and the Department of Fisheries and Oceans to determine requirements and next steps. Where the Fisheries Act is triggered and habitat compensation, mitigation measures or best management practices are being considered;

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as the MNRF is charged with the management of Provincial fish populations, the MNRF requests ongoing involvement in such discussions in order to ensure population conservation. Furthermore, local Conservation Authorities may also have additional approvals for works in and adjacent to water and wetland features. Finally, Transport Canada's Navigable Waters Protection Division may require review and approval of the proposed project. Please contact these local agencies directly for more information.

Aggregates

As per the Natural Heritage Reference Manual (Section 13; OMNRF 2010) the MNRF strongly recommends that an Ecological Site Assessment be carried out to more thoroughly determine the presence of natural heritage features, and Species at Risk and their habitat located on site. The MNRF can provide survey methodology for particular species at risk and their habitats. In addition, the local planning authority may have more details pertaining to the requirements of the assessment process, which will allow for the municipality to make planning decisions which are consistent with the Provincial Policy Statement (2014).

Species at Risk

It is important to understand which species and habitats exist in the area and the implications of the Endangered Species Act (ESA, 2007). A review of the Natural Heritage Information Centre (NHIC) and internal records indicate that there is a potential for the following Threatened (THR) and/or Endangered (END) species on the site or in proximity to it:

- Bobolink (THR)
- Butternut (END)
- Cutlip Minnow (THR)
- Eastern Meadowlark (THR)
- Little Brown Bat (END)
- Whip poor will (THR)

All Endangered and Threatened species receive individual protection under section 9 of the ESA and receive general habitat protection under Section 10 of the ESA, 2007. Any potential works should consider disturbance of possible important habitat (e.g. nesting sites). Please note that as of June 30, 2013 general habitat protection applies to all Threatened and Endangered species. The habitat of these listed species is protected from damage and destruction and certain activities may require authorization(s) under the ESA.

Species receiving General Habitat protection:

- Bobolink (THR)
- Butternut (END)

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- Cutlip Minnow (THR)
- Eastern Meadowlark (THR)
- Little Brown Bat (END)
- Whip poor will (THR)

If the proposed activity is known to have an impact on the species mentioned above or any other SAR, an authorization under the Endangered Species Act, 2007 (ESA) may be required. It is recommended that MNRF Kemptville be contacted prior to any activities being carried out to discuss potential survey and mitigation measures to avoid contravention of the ESA.

In Addition, one or more Special Concern species has been documented to occur either on the site or nearby. Species listed as Special Concern are not protected under the ESA, 2007. However, please note that some of these species may be protected under the Fish and Wildlife Conservation Act. Species of Special Concern for consideration:

- Snapping Turtle (SC)

If any of these or any other species at risk are discovered throughout the course of the work, and/or should any species at risk or their habitat be potentially impacted by on site activities, MNRF should be contacted immediately and operations be modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by MNRF.

Please note that information regarding species at risk is based on documented occurrences only and does not include an interpretation of potential habitat within or in proximity to the site in question. Although this data represents the MNRF's best current available information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. i.e.: Species at Risk (SAR) or their habitat could still be present at the location or in the immediate area. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed; or their habitat is not damaged or destroyed through the activities carried out on the site. The MNRF continues to strongly encourage ecological site assessments to determine the potential for SAR habitat and occurrences. When a SAR or potential habitat for a SAR does occur on a site, it is recommended that the proponent contact the MNRF for technical advice and to discuss what activities can occur without contravention of the Act. If an activity is proposed that will contravene the ESA (such as Section 9 or 10), the proponent must contact the MNRF to discuss the potential for a permit (Section 17). For specific questions regarding the Endangered Species Act (2007) or SAR, please contact a district Management Biologist at sar.kemptville@ontario.ca. For more information regarding the ESA (2007), please see attached ESA Information Sheet.

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As of July 1, 2013, the approvals processes for a number of activities that have the potential to impact SAR or their habitat were changed in an effort to streamline approvals processes while continuing to protect and sustainably manage Ontario's natural resources. For those activities that require registration with the Ministry, businesses and individuals will be able to do so through a new online system. The online system will also include information to help guide individuals and businesses through the new processes. For further information on which activities are authorized through this new online registration process and how to apply, please refer to the following website: http://www.MNRF.gov.on.ca/en/About/2ColumnSubPage/STDPROD_104342.html. General inquiries may be directed towards Kemptville District MNRF, while questions and comments involving the new online forms can be directed to the Registry Approvals Service Centre (RASC) at 1-855-613-4256 or MNRF.rasc@ontario.ca.

Please note: The advice in this letter may become invalid if:

- The Committee on the Status of Species at Risk in Ontario (COSSARO) re-assesses the status of the above-named species OR adds a species to the SARO List such that the section 9 and/or 10 protection provisions apply to those species.
- Additional occurrences of species are discovered.
- Habitat protection comes into force for one of the above-mentioned species through the creation of a habitat regulation (see general habitat protection above).

This letter is valid until: Thu. Aug 10, 2017

MNRF is streamlining and automating its approvals processes for natural resource-related activities. Some activities that may otherwise contravene the ESA may be eligible to proceed without a permit from MNRF provided that regulatory conditions are met for the ongoing protection of species at risk and their habitats. There are regulatory provisions for projects that have attained a specified level of approval prior to, or shortly after, the specified species or its habitat became protected under the ESA. Their requirements include registering the activity with the Ministry of Natural Resources and Forestry, taking steps to immediately minimize adverse effects on species and habitat, and developing a mitigation plan. Anyone intending to use this regulatory provision is strongly advised to review Ontario Regulation 242/08 under the Endangered Species Act, 2007 for the full legal requirements.
For more information please check out the following link http://www.ontario.ca/environment-and-energy/development-and-infrastructure-projects-and-endangered-or-threatened-species

The MNRF would like to advise, by way of this letter, that we continue to be circulated on information with regards to this project. If you have any questions or require clarification please do not hesitate to contact me.

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Sincerely,

Dom Ferland
A/ Management Biologist
dom.ferland@ontario.ca

Encl.\
-ESA Infosheet
-NHIC/LIO Infosheet

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December 6, 2016

Cornwall Gravel Company Limited
P. O. Box 67
390 Eleventh Street West
Cornwall, ON K6H 5R9

Attention: Travis Mitchell

Subject: **Aggregate Licence Application Proposal – Pre-consultation Follow-up for Proposed MacLeod V Quarry**
Part Lot 2, Concession 4
Geographic Township of Cornwall
United Counties of Stormont, Dundas and Glengarry

Dear Mr. Mitchell:

Following the pre-consultation meeting of August 10, 2016 for the proposed MacLeod V site, the Ministry of Natural Resources and Forestry (MNRF) would like to provide the following information and clarification for your consideration.

As discussed, the proposed aggregate extraction at the MacLeod III and MacLeod V sites will require separate licence applications under the *Aggregate Resources Act* (ARA), 1990. Similarly, any site plan amendments that may be necessary on the adjacent licenced MacLeod I, II and IV sites will need to be addressed separately. Though they need to be addressed separately, MNRF encourages the proponent to submit the various applications within the same time frame to facilitate a concurrent review process.

1. Natural Heritage

Species at Risk

- As there is a Cutlip minnow occurrence in proximity to the site, MNRF would like to confirm that this needs to be addressed through the Natural Environment Report.
- Butternut may be found on site. A full Butternut Health Assessment (BHA) carried out by a Certified Butternut Health Assessor must be submitted to MNRF. When submitting this BHA, please ensure that the licence application information is referenced. Any Butternut assessed on site will need to appear on the existing features page of the Site Plans.

- Surveys for Eastern whip-poor-will, Common nighthawk, Bobolink, Eastern Meadowlark, and Species at Risk bats must be carried out following MNRF protocols on the site. General breeding bird surveys should be carried out as well.

Wetlands

- MNRF mapping suggests that unevaluated wetlands are found throughout the site. These wetlands must be evaluated using the Ontario Wetland Evaluation System (OWES) or treated as Provincially Significant Wetlands.
- Any wetland evaluation is to be done following a comprehensive OWES, including consideration of wetland features outside of the licence application area. Please provide the wetland boundary shapefile (digital copy) and documentation to MNRF for review.
- As noted in the pre-consultation, documentation regarding impacts (including surface and ground water impact) to the feature and its function must be captured as part of the Natural Environment Report and the Hydrogeological report.

Woodlands

- The official plan for Stormont, Dundas and Glengarry identifies the broader area as Significant Woodlands. Furthermore, Kemptville District's mapping of Significant Woodlands identifies the woodlands on site as potentially Significant Woodlands based on the following criteria: woodland interior, interior support and proximity.
- The Natural Environment Report must include an assessment of the impacts of the proposed aggregate extraction on the significant woodlands and the features and functions for which it was identified.

Wildlife Habitat

Significant Wildlife Habitat (SWH) must be identified and confirmed on the site through appropriate surveys and in consideration of the ELC mapping. Impacts to any confirmed SWH must be captured in the Natural Environment Report.

2. Site Plan

- Any Common Boundary Agreements with the adjacent licensed sites will need to be amended to reflect the setback reductions.
- A shared internal haul route with the adjacent licenced sites can be considered, provided that the adjacent licences have requested and received approval in principle for these amendments regarding the exit/entrance and changes to internal haul route prior to the time the new licence is being considered for approval.

- Material moving between sites must be reported as “shipments” according to the TOARC handbook. It is not considered to be importation of fill and would not need an amendment, but would have to be reported by the receiving licensee.

3. Hydrogeology

It is our understanding that monitoring wells with data loggers will be installed at the site as part of the hydrogeological investigations. The Hydrogeological Report should include an assessment of the cumulative impacts of quarrying in this area on surface and groundwater levels and quality.

4. Objections

Any person(s) wishing to object to an application during the 45-day of the ARA must send, in writing, their objection with reason(s) to the **Applicant** and to the district/local office of the **Ministry of Natural Resources and Forestry**. Note: E-mail submissions are acceptable however they must contain the objector's complete postal mailing address where a response can be delivered. **E-mail objections which do not contain a postal address will not be considered acceptable.**

If you have any questions or require further information, please contact me.

Yours truly,

Mary Dillon

Mary Dillon
A/District Planner

APPENDIX B: Existing Conditions Assessment: Bird Surveys Report

CORNWALL GRAVEL CO. LTD.

EXISTING CONDITION ASSESSMENT: BIRD SURVEYS

17631 SOUTH BRANCH ROAD, CORNWALL, ON

WSP

EXISTING CONDITION ASSESSMENT: BIRD SURVEYS

17631 SOUTH BRANCH ROAD, CORNWALL, ON

Cornwall Gravel Co. Ltd.

Project No.: 161-07311-00

Date: July 2016

WSP Canada Inc.
294 Rink Street Suite 103,
Peterborough, ON K9J 2K2

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www.wspgroup.com

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FIGURES

APPENDICES

1 INTRODUCTION

Cornwall Gravel Co. Ltd. currently operates the MacLeod Quarry located 17631 South Branch Road; Part of Lots 4, 5 and 6, Concession 4, Township of South Stormont, United Counties of Stormont, Dundas and Glengarry, Ontario. The owner wishes to expand the current operation to the west, into Lot 5, known as MacLeod III and to east into Lot 2, known as MacLeod V. As a requirement under the Aggregate Resource Act (ARA), all new quarry permits and licences applications must be accompanied by a Level 1 and/or Level 2 Natural Environment Report (NEA).

This report is meant to supplement the NEA report with information pertaining to three (3) standardized survey protocols; for Eastern Whip-poor-will (*Caprimulgus vociferus*), Eastern Meadowlark (*Sturnella magna*) and Bobolink (*Dolichonyx oryzivorus*), and Breeding Bird Surveys.

Whip-poor-will, Eastern Meadowlark and Bobolink are designated as Threatened under the Endangered Species Act (ESA) which protects the species and their habitat. In accordance with the Ministry of Natural Resource and Forestry (MNRF) protocol's for these species, where the species is not confirmed during the course of the surveys, it can be assumed that the species does not currently use the particular survey area for habitat. If the species is confirmed on or adjacent to either site, an authorization under the ESA may be required prior to proceeding with the quarry expansion.

2 WHIP-POOR-WILL SURVEYS

The Eastern Whip-poor-will is a medium-sized bird with mottled grey and brown feathers that allow it to camouflage with its surroundings. This insectivorous bird is crepuscular and nocturnal, meaning it is most active between dusk and dawn. Their nocturnal behaviour and cryptic colouration make them difficult to survey by sight, so Eastern Whip-poor-wills are typically identified through auditory surveys. They are most vocal between dusk and dawn on bright, moonlit nights from late May to early July in areas with preferred breeding habitat (MNRF 2013b).

Eastern Whip-poor-wills are typically found in a mix of open and forested areas, such as savannahs, rock barrens, sand barrens with scattered trees, open conifer plantations, and recently burned areas containing early successional forests (Cadman et. al, 2007). Forest structure appears to be of greater importance to Eastern Whip-poor-wills than species composition, however they have been associated most often with Pine (*Pinus* sp.) and Oak (*Quercus* sp.) (COSEWIC, 2009).

Surveys for Eastern Whip-poor-will were completed in accordance with the *Survey Protocol for Eastern Whip-poor-will (Caprimulgus vociferous) in Ontario* (MNRF 2013b). The surveys were completed on three separate occasions, on May 18th, May 24th, and June 21st, 2016 during optimal periods of the lunar cycle when the face of the moon was at least 50% full. Eastern Whip-poor-will surveys are most effective when performed on nights when the moon is at least 50% illuminated, above the horizon, and not obscured by clouds. Eight (8) survey stations were spread across both parcels, with five minute surveys being conducted at each survey location.

Eastern Whip-poor-will was not heard or observed during the surveys. Common Nighthawk (*Chordeiles minor*) is known to occur in a similar habitat type as Whip-poor-will and also calls during the evening hours. Incidental bird observations during the Whip-poor-will survey did not reveal the presence of Common Nighthawk.

3 EASTERN MEADOWLARK AND BOBOLINK SURVEY

Eastern Meadowlark and Bobolink are both medium sized birds, both known to coexist or occupy similar habitat types such as grasslands, savannahs and various agricultural lands including pastures, hayfields, meadows and orchards. Both species are designated as Threatened under the Endangered Species Act, and as such, it is critical that habitat be identified and protected accordingly. Aerial photography indicates the presence of agricultural lands in the northeastern portion of the site, which may support either of these species.

Surveys for both species were completed in accordance with the *Survey Protocol for Eastern Meadowlark (Sturnella magna) in Ontario* (MNRFa 2013), which includes considerations for Bobolink. In particular, surveys were conducted using the point-count method on three separate occasions, on June 7th, June 24th and July 4th, 2016.

Surveys were conducted in conjunction with breeding bird surveys points, located across both parcels (Figure 2). The surveys occurred between sunrise and 4 hours post-sunrise, and lasted 10 minutes at each point count location. The purpose of the survey was to determine if either species occurs on or adjacent to either site, identify breeding pairs, and delineate habitat.

Eastern Meadowlark and Bobolink were not observed on either site during the surveys.

4 BREEDING BIRD SURVEY

The Breeding Bird Survey was completed across both sites in order to confirm the presence of birds during their most vocal period. Surveys were conducted in conjunction with the Eastern Meadowlark and Bobolink survey window and occurred on three separate dates - June 7th, June 24th and July 4th, 2016.

The point count method was used; whereby the WSP completed a survey at twelve (12) stations scattered across the site. Stations were approximately 200 to 225m from one another. All birds detected over the course of a 10 minute survey period were documented.

A total of fifty four (54) species were confirmed during the assessments and are documented in Appendix A.
Of these birds, three (3) species are designated as either Threatened or Special Concern under the ESA, and include Bank Swallow (*Riparia riparia*), Eastern Wood-pewee (*Contopus virens*), and Peregrine Falcon (*Falco peregrinus*).

Bank Swallow prefers open areas within close proximity to their nesting ground. They construct nests in gravel or sand mounds with a sloped or vertical surface. The species was observed flying overhead at both MacLeod III and MacLeod V sites; however, potential nesting habitat (e.g. vertical faces) was not observed within either parcel.

Eastern Wood Pewee was detected among the southern portion of MacLeod V during the surveys. This species prefers disturbed areas and edges of mixed and deciduous forests with a distinct mid-canopy layer and minimal understory. It is expected the species may utilize this area of the site for nesting.

Peregrine Falcon was observed flying overhead during the surveys. This species usually nests on tall, steep cliff ledges close to large bodies of water. Suitable nesting habitat was not observed within the limit of either MacLeod III or V sites, and is expected the bird was simply passing over the site.

5 INCIDENTAL WILDLIFE ENCOUNTERS

During the standardized surveys, and in particular, the evening Whip-poor-will survey, incidental wildlife observations were noted.

A total of five (5) amphibian species were confirmed within and adjacent to both sites, including:

- American Toad (*Anaxyrus americanus*);
- Gray Treefrog (*Hyla versicolor*);
- Spring Peeper (*Pseudacris crucifer*);
- Green Frog (*Lithobates clamitans*); and,
- Northern Leopard Frog (*Lithobates pipiens*).

Additionally, a Raccoon (*Procyon lotor*) was observed on site during the survey. All species noted above are considered common throughout southern Ontario.

6 CONCLUSIONS & RECOMMENDATIONS

Based on WSP experience in completing NEA's and working to satisfy regulatory agencies, WSP offers the following recommendations in moving forward with the NEA for MacLeod III and V sites.

- Consult with the Kemptville District MNRF related to the findings from this study to identify further actions which should be taken to protect Eastern Wood Pewee on MacLeod V or offset potential disturbance to its habitat.

- If planned, and after any regulatory approvals have been obtained, any removal of vegetation and trees should occur outside of the breeding bird period, which generally extends from early spring to the end of summer. The specific breeding bird period window should be requested from the MNRF during project consultation.

- Any contractors conducting work on the site shall know how to identify Species of Risk and Species of Special Concern that could occur in the area, including the birds aforementioned.

This report has been prepared by WSP Canada Inc. The assessment represents the conditions at the Project Area only at the time of the assessment, and is based on the information referenced and contained in this report. WSP Canada Inc. attests that to the best of our knowledge, the information presented in this report is accurate. The use of this report for other projects without written permission of the Client and WSP Canada Inc. is solely at the user's own risk. This report must be reviewed and approved by the relevant regulating agencies prior to being relied upon for planning and/or construction purposes.

Thank you for the opportunity to complete this report. We trust that this information is satisfactory for your current requirements. Please contact us if we can be of further assistance.

Yours truly,
WSP Canada Inc.

Report Prepared by:
WSP Canada Inc.

Jaclyn Rodo B.Sc.
Biologist

Reviewed by:

Dan Reeves, M.Sc.,
Senior Biologist

7 LITERATURE CITED

COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will *Caprimulgus vociferus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp. (www.sararegistry.gc.ca/status/status_e.cfm)

MNRF. 2013a. Survey Protocol for Eastern Meadowlark (*Sturnella magna*) in Ontario.

MNRF. 2013b. Survey Protocol for Eastern Whip-poor-will (*Caprimulgus vociferous*) in Ontario.

Figures

LEGEND

- SITE BOUNDARY
- WHIP-POOR-WILL SURVEY LOCATIONS
- WHIP-POOR-WILL 300 m SURVEY RADIUS
- NON EVALUATED WETLAND
- WATERBODIES
- WATERCOURSE

N W E S

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014.
Imagery, City of Cornwall, 2014. / BING Imagery.

60 30 0 60 Metres

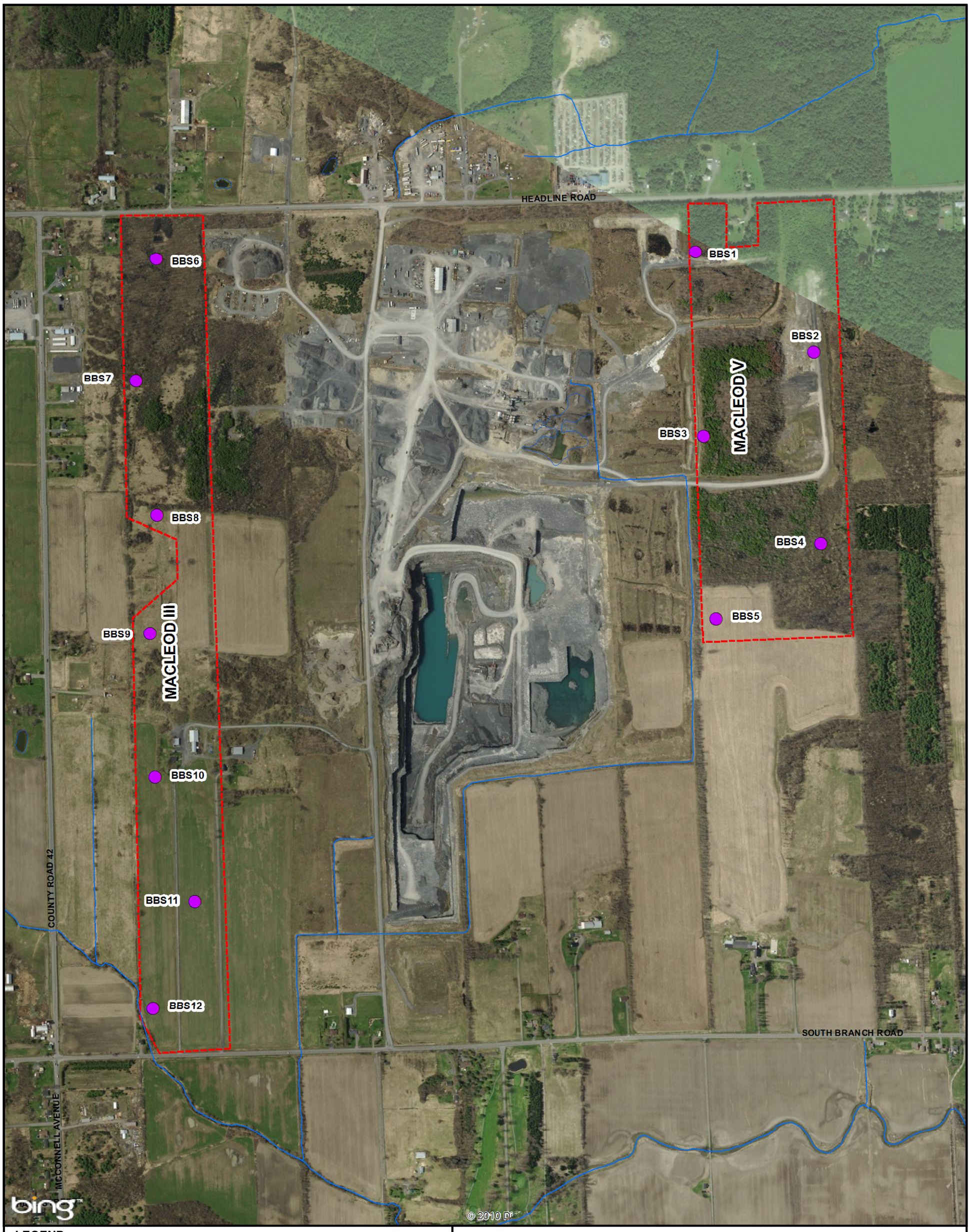
WHIP-POOR WILL SURVEY

WHIP-POOR WILL SURVEY
For Cornwall Gravel Co. Ltd.

DATE: MAY 2016	SCALE: 1:9,000
PROJECT: 161-07311-00	FILE. NO.:161-07311-00 F1

WSP

FIGURE 1



LEGEND

- SITE BOUNDARY
- WATERBODIES
- WATERCOURSE
- BREEDING BIRD SURVEY LOCATIONS

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Data Source: Ministry of Natural Resources,
Ontario Base Mapping, March 2014.
Imagery, City of Cornwall, 2014. / BING Imagery.

60 30 0 60 Metres

BREEDING BIRD SURVEY LOCATIONS

BREEDING BIRD SURVEY
For Cornwall Gravel Co. Ltd.

DATE: JUNE 2016	SCALE: 1:9,000
PROJECT: 161-07311-00	FILE. NO.:161-07311-00 F2

WSP

FIGURE
2

Appendices

Appendix A

Bird Occurrence List

Table 1: Cornwall Gravel Co. Ltd. Bird Occurrence List

Common Name	Scientific Name	S-Rank	SARO	SARA	MacLeod III			MacLeod V		
					7-Jun-16	24-Jun-16	30-Jun-16	7-Jun-16	24-Jun-16	30-Jun-16
Alder Flycatcher	*Empidonax alnorum*	S5B			X	X		X	X	X
American Crow	*Corvus brachyrhynchos*	S5B			X	X	X	X	X	X
American Goldfinch	*Carduelis tristis*	S5B			X	X	X	X	X	X
American Kestrel	*Falco sparverius*	S4				X				
American Redstart	*Setophaga ruticilla*	S5B			X	X			X	
American Robin	*Turdus migratorius*	S5B			X	X	X	X	X	X
American Woodcock	*Scolopax minor*	S4B			X	X				X
Bank Swallow	*Riparia riparia*	S4B	THR			X	X		X	X
Belted Kingfisher	*Megaceryle alcyon*	S4B					X			
Black-and-white Warbler	*Mniotilta varia*	S5B					X			
Black-capped Chickadee	*Poecile atricapillus*	S5				X	X	X	X	X
Black-headed Grosbeak	*Pheucticus melanocephalus*	SNA								
Blue Jay	*Cyanocitta cristata*	S5			X	X	X	X	X	X
Brown-headed Cowbird	*Molothrus ater*	S4B				X	X		X	X
Cedar Waxwing	*Bombycilla cedrorum*	S5B			X	X	X	X	X	X
Chestnut-sided Warbler	*Setophaga pensylvanica*	S5B			X		X	X		X
Chipping Sparrow	*Spizella passerina*	S5B			X		X			X
Common Grackle	*Quiscalus quiscula*	S5B			X	X	X	X	X	X
Common Raven	*Corvus corax*	S5						X		
Common Yellowthroat	*Geothlypis trichas*	S5B			X	X	X	X	X	X
Downy Woodpecker	*Picoides pubescens*	S5			X	X	X		X	X
Eastern Bluebird	*Sialia sialis*	S5B	NAR							
Eastern Kingbird	*Tyrannus tyrannus*	S4B			X			X		
Eastern Phoebe	*Sayornis phoebe*	S5B							X	
Eastern Wood-pewee	*Contopus virens*	S4B	SC						X	
European Starling	*Sturnus vulgaris*	SNA			X	X	X	X	X	X
Fieldfare	*Turdus pilaris*	SNA								
Gray Catbird	*Dumetella carolinensis*	S4B			X	X	X	X	X	X
Great Crested Flycatcher	*Myiarchus crinitus*	S4B					X		X	X
Hairy Woodpecker	*Picoides villosus*	S5				X	X		X	
Hermit Thrush	*Catharus guttatus*	S5B			X			X		
Killdeer	*Charadrius vociferus*	S5B,S5N			X	X			X	X
Merlin	*Falco columbarius*	S5B	NAR				X		X	
Mourning Dove	*Zenaida macroura*	S5				X	X	X	X	X
Northern Cardinal	*Cardinalis cardinalis*	S5					X		X	X
Northern Flicker	*Colaptes auratus*	S4B			X	X	X		X	X
Ovenbird	*Seiurus aurocapilla*	S4B					X		X	
Peregrine Falcon	*Falco peregrinus*	S3B	SC	SC		X				
Purple Finch	*Carpodacus purpureus*	S4B				X	X		X	X

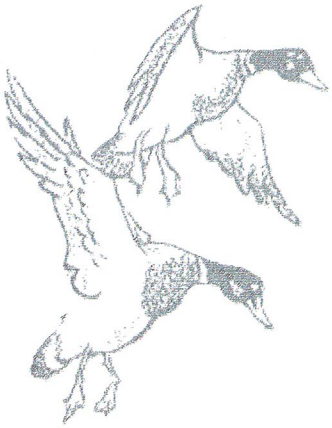
Common Name	Scientific Name	S-Rank	SARO	SARA	MacLeod III			MacLeod V		
					7-Jun-16	24-Jun-16	30-Jun-16	7-Jun-16	24-Jun-16	30-Jun-16
Red-eyed Vireo	*Vireo olivaceus*	S5B			X	X	X	X	X	X
Red-winged Blackbird	*Agelaius phoeniceus*	S4			X	X	X	X	X	X
Ring-billed Gull	*Larus delawarensis*	S5B,S4N			X	X	X	X	X	X
Rock Pigeon	*Columba livia*	SNA			X	X	X		X	X
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B				X			X	X
Savannah Sparrow	*Passerculus sandwichensis*	S4B			X	X	X		X	X
Slaty-backed Gull	*Larus schistisagus*	SNA								
Song Sparrow	*Melospiza melodia*	S5B			X	X	X	X	X	X
Tree Swallow	*Tachycineta bicolor*	S4B			X	X		X	X	X
Veery	*Catharus fuscescens*	S4B				X	X	X	X	X
White-breasted Nuthatch	*Sitta carolinensis*	S5							X	
Wild Turkey	*Meleagris gallopavo*	S5				X		X	X	X
Willow Flycatcher	*Empidonax traillii*	S5B						X		X
Wood Thrush	*Hylocichla mustelina*	S4B							X	
Yellow Warbler	*Setophaga petechia*	S5B			X	X	X	X	X	X
Yellow-bellied Sapsucker	*Sphyrapicus varius*	S5B				X				

APPENDIX C: Natural Environment Level 2 Technical Report

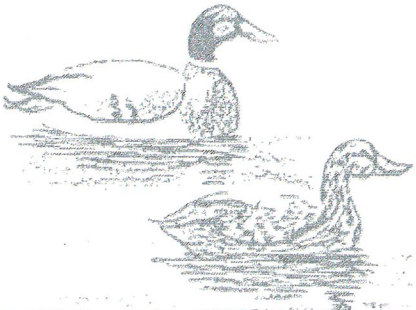
NATURAL ENVIRONMENT LEVEL 2 TECHNICAL REPORT

McLEOD QUARRY 3

EAST 1/2 LOT 6, CONC. IV
SOUTH STORMONT TOWNSHIP (formerly Township of Cornwall)
UNITED COUNTIES OF STORMONT, DUNDAS & GLENGARRY



A Report For: **Cornwall Gravel Company Ltd.**
By: **Niblett Environmental Associates Inc.**



Niblett Environmental Associates Inc.

August 2001

NIBLETT ENVIRONMENTAL ASSOCIATES INC.

August 24, 2001 PN 99-051

Cornwall Gravel Company Ltd.
P.O. Box 67
390 Eleventh St. West
Cornwall, Ontario
K6H 5R9

Attn: Mr. Norvan Grant.

Re: McLeod Quarry III, Natural Environment Level 2 Report

Dear Mr. Grant:

We are pleased to submit our Natural Environment Level 2 Technical Report for the license application for the McLeod Quarry III site.

We have concluded that the proposed project should have no long term adverse effects on fish or fish habitat. Potential impacts identified are related to the decrease in surface water entering the Eastman Drain during the decommissioning of the pit. We have made recommendations to reduce these impacts.

We hope the report is clear, and addresses all the requirements of the review agencies. If there is anything else we can do to further assist you in securing approvals for this project, please call.

Sincerely,

C. Thomas Hoggarth
Fisheries Biologist

attach.

1484 HIGHWAY 7A, P.O. BOX 160, BETHANY, ONTARIO L0A 1A0
Tel (705) 277-1929 Fax (705) 277-1951 email general@niblettenvironmental.on.ca

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NATURAL ENVIRONMENT LEVEL 2 TECHNICAL REPORT

McLEOD QUARRY 3
EAST 1/2 LOT 6, CONC. IV
SOUTH STORMONT TOWNSHIP (formerly Township of Cornwall)
UNITED COUNTIES OF STORMONT, DUNDAS & GLENGARRY

1.0 INTRODUCTION

1.1 Site location

The property is located north of Cornwall on the East 1/2 Lot 6, Conc. IV Township of Cornwall, United Counties of Stormont, Dundas and Glengarry (Figure 1).

1.2 Study rationale

Niblett Environmental Associates Inc. was retained by Cornwall Gravel Company Ltd. to conduct a Natural Environment Level 1 Technical Report. This report identified fish habitat adjacent to the area to be licensed and recommended that a Level 2 report be completed. The watercourse is known as Eastman Drain.

The Provincial Standards state that a Level 2 report will be conducted to "*determine any negative impacts on the natural features and ecological functions for which the area is identified and any proposed preventative, mitigative or remedial measures*".

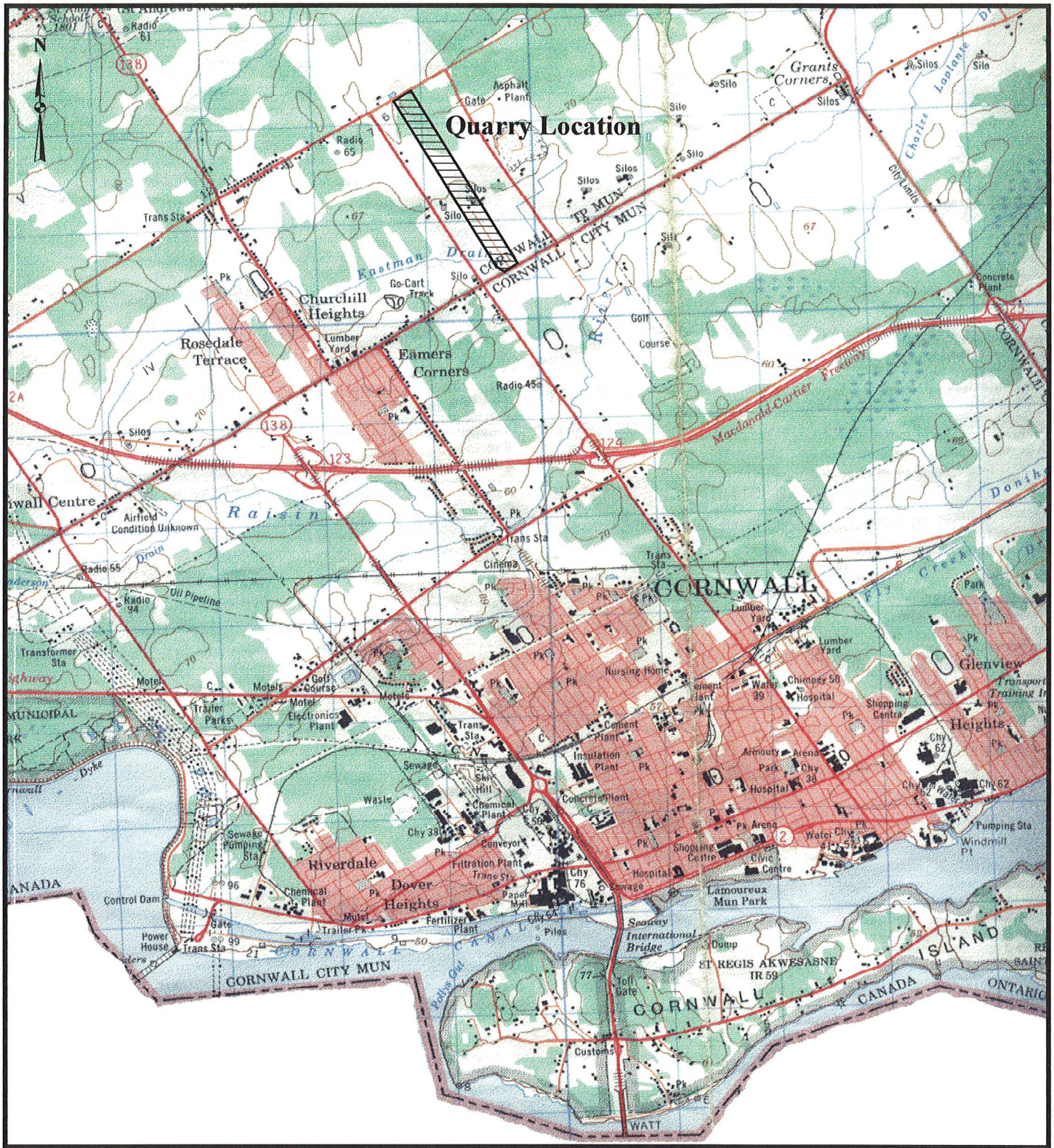


Figure 1: Study Site Location - McLeod Quarry 3

Base map digitized from Energy Mines and Resources Canada Map 31G/2 & 31B/15

Niblett Environmental Associates Inc. August 2001 Scale 1:50,000

3.0 RESOURCE INVENTORY

3.1 Fish Species

Fish within the Eastman Drain were sampled using a minnow trap. The trap was placed in an isolated pool downstream of South Branch Road. A total of seven species of fish were captured (Table 1). Common shiner and creek chub were the most abundant species.

Table 1: Eastman Drain Fish Catch Records

Fish Catch Records Eastman Drain		
Common Name	Scientific Name	Catch
common shiner	*Luxilus cornutus*	12
northern redbelly dace	*Phoxinus eos*	1
bluntnose minnow	*Pimephales notatus*	2
creek chub	*Semotilus atromaculatus*	14
white sucker	*Catostomus commersoni*	1
brook stickleback	*Culaea inconstans*	6
rock bass	*Ambloplites rupestris*	1
Total Catch		**37**

These are typical warm water fish. This relatively large number of fish for one minnow trap set is a result of low water conditions. Fish within the drain were isolated to the few remaining refugia (see habitat section).

3.2 Fish Habitat

On-site

Only a small section of Eastman Drain was located on the McLeod Quarry 3 lands (Figure 2). The fish habitat was restricted to a stagnant pool upstream of South Branch Road. Very little flow was observed exiting the culverts under the road.

Bottom substrate was 100 percent silts and organic matter. Depth averaged 0.3 meters while the width averaged 1.5 meters. The stream banks were highly stable, being heavily vegetated with grasses and alder, elm and hawthorn.

Overhead cover ranged from 100 percent open to partly covered. Instream cover averaged 10 percent. This cover was provided by clumps of floating algae.

Upstream

Upstream of the proposed quarry the Eastman Drain meandered through an area of intensive pasture.

The substrate consisted of a combination of bedrock, silts and organic matter. The stream width averaged 1.5 meters wide and 0.2 meters deep.

There was no natural riparian vegetation. The banks of the stream have been heavily grazed by cattle. The overhead cover was 100 percent open and the instream cover was less than 5 percent.

Downstream

Downstream of South Branch Road the Eastman Drain meandered through a grassed swale. At the time of our field survey only a small trickle of water was observed flowing through the thick mats of terrestrial grasses.

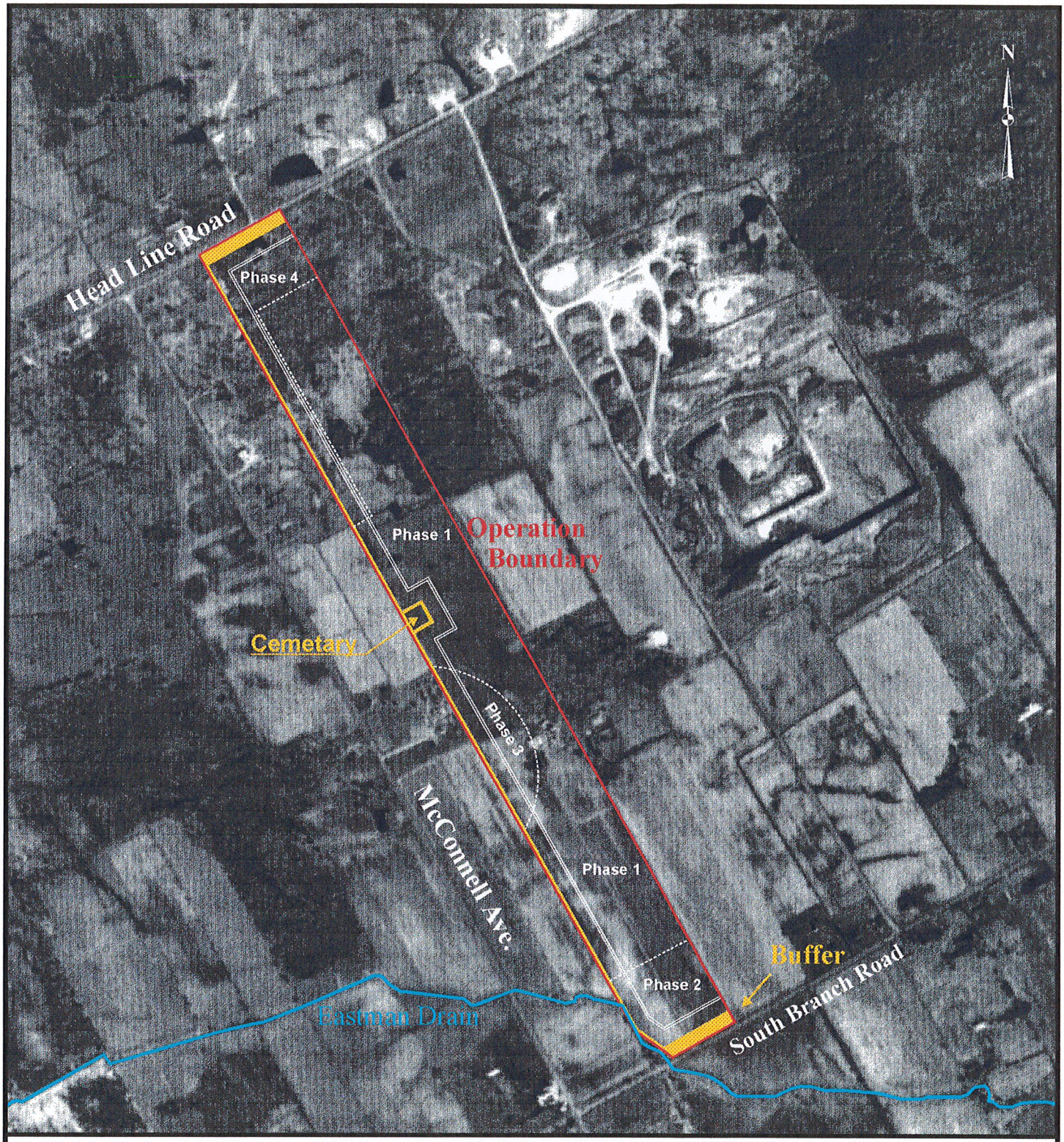


Figure 2: Study Area - McLeod Quarry 3

Base aerial photograph digitized from A28051 #81 04-05-94
Quarry boundary and operational plan digitized from McElhanney Geosurveys Ltd. Operation Plan page 2 of 3

Niblett Environmental Associates Inc. August 2001 Scale 1:11,000

4.0 RESOURCE SIGNIFICANCE

No vulnerable, threatened or endangered fish species were captured or have been reported for Eastman Drain (COSEWIC 1999, NHIC 1999).

The species of fish captured within Eastman Drain are highly tolerant fish adapted to a constantly changing environment.

5.0 IMPACT ASSESSMENT

Quarry Dewatering

The accumulated groundwater and surface runoff from McLeod III will be pumped to the existing sump in McLeod I pit. The sump in McLeod I is currently drained into ditches along South Branch Road which eventually drain into the Eastman Drain (CGC, 2000).

Prior to pumping accumulated water, from the quarry to Eastman Drain, it is stored in a retention pond to allow suspended solids to settle out. The sump is not run during flood conditions (CGC 2000).

The proposed dewatering plans utilize the existing drainage system and operational plan as currently being utilized for McLeod I. There will be no net loss of water draining to the Eastman Drain. Therefore, there should be no negative impacts on the aquatic ecosystem of the Eastman Drain.

Increased silt and sediment loadings to the Eastman Drain will be controlled by the use of a retention pond within the quarry as well as by directing the water to a ditch system prior to entering the drain. Therefore, there should be no sediment impacts on the Eastman Drain.

Quarry Construction

A minimum of a 5 meter setback from the Eastman Drain to the proposed quarry berm is proposed. It is proposed to plant dogwoods and willow within this setback to assist in erosion control (CGC, 2000).

The plantings and 5m setback will be more than sufficient to protect the natural features of the Eastman Drain.

Quarry Decommissioning

Once quarry operations are completed it is proposed to allow the pit to fill with water, by removing the existing sumps. The estimated time for filling will be 55 years (Gorrell, 1995). If the dewatering sumps are completely turned off, once the quarries are finished, there will be a decline in the amount of surface water entering the Eastman Drain. This may have a negative impact on the fish and fish habitat within Eastman Drain.

To protect the fish and fish habitat some water should be continually pumped to the drain, until the quarries completely filled. The volume and timing of discharge can be determined at a later date and should be incorporated into a long term monitoring plan.

6.0 CONCLUSIONS

Upstream of the proposed McLeod III Quarry the Eastman Drain meanders through land intensively utilized by agriculture. A total of seven species of fish were captured in Eastman Drain. These fish species are highly tolerant fish adapted to a constantly changing environment.

The proposed McLeod III quarry will not have any direct impacts on the Eastman Drain. Proposed dewatering operations and sediment and erosion control measures have been developed to have the least impact on the drain. This proposed quarry should not have a negative impact on the aquatic ecosystem of the Eastman Drain.

7.0 RECOMMENDATIONS

1) Prior to the construction of the berm adjacent to Eastman Drain, a detailed sediment and erosion control plan should be developed and implemented.

2) Once quarry operations are completed some water should be continually pumped to the Eastman Drain, until the quarries completely filled. The volume and timing of discharge can be determined at a later date.

8.0 REFERENCES

Cornwall Gravel Company. 2000. Notes on Operation Plan for McLeod III. Sent to NEA by Mr. Norvan Grant.

COSEWIC 1999. Species at Risk. Committee on the Status of Endangered Wildlife in Canada. Ottawa Canada.

Dodge, D.P., J.C. Tilt, I. MacRitchie, G.A. Goodchild, and D.G. Waldriff (1987). Manual of Instructions: Aquatic Habitat Surveys. Ontario Ministry of Natural Resources, Fisheries Branch. Official Procedural Manual. Policy Fl.2.03.01

Gorrell. 1995. Hydrogeological Assessment, McLeoad Quarries. A report prepared for Cornwall Gravel Co. Lt. by Gorrell Resources Investigations.

NHIC. 1994-99. Natural Heritage Resources of Ontario: Amphibians and Reptiles, Birds, Fish, Vegetation and Mammals. Natural Heritage Information Centre Manuals and Website. Ontario Ministry of Natural Resources.

APPENDIX D: Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis and Tri-colored Bat

Survey Protocol for Species at Risk Bats within Treed Habitats

Little Brown Myotis, Northern Myotis & Tri-Colored Bat

April 2017

Ontario Ministry of Natural Resources and Forestry

Guelph District

Ontario

Introduction

This document describes Guelph District's recommended protocol for confirming presence/absence of Little Brown Myotis, Northern Myotis and Tri-colored Bat, where it is determined that suitable habitat for the establishment of maternity roosts is present.

This document replaces any previous versions of the survey protocol, and may be updated periodically as new information becomes available.

Note that those undertaking projects that may impact anthropogenic structures and isolated trees considered suitable habitat for bats should refer to Guelph District's *Survey Methodology for the Use of Buildings and Isolated Trees by Species at Risk (SAR) Bats*.

Little Brown Myotis (*Myotis lucifugus)*, Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) are listed as provincially endangered and receive species and general habitat protection under the *Endangered Species Act, 2007* (ESA).

Where the habitat of an endangered or threatened species is not prescribed by regulation, the ESA defines habitat as an area on which a species depends on, directly or indirectly, to carry out its life processes. Such processes include reproduction, rearing, hibernation, migration or feeding, as well as places being used by members of the species.

Throughout eastern North America, a disease known as white-nose syndrome (WNS), which is caused by the fungus *Pseudogmnoascus destructans*, is the primary cause of the decline of Little Brown Myotis, Northern Myotis and Tri-colored Bat populations. Where population numbers have significantly decreased due to WNS, the relative magnitude of other threats (e.g., habitat destruction) may increase. This is because the mortality or displacement of a small number of the remaining individuals can have a major impact on the survival of local populations and their recovery.

Many bat species are known to have high fidelity to their hibernacula and maternity roost sites. It is not uncommon for bats to return to the same roost tree or group of trees in successive years. Some bats switch roost trees periodically within the same treed area over the summer, likely to avoid predators or parasites or in search of a warmer or cooler roost.

Of the SAR bats species noted in this protocol, Little Brown Myotis is the most frequently encountered species in treed communities due to higher population numbers relative to other SAR bat species. Little Brown Myotis establishes maternity roosts within tree cavities and under loose or exfoliating bark, especially in wooded areas located near water. Foraging habitat includes over water and in open areas between water and forest. Favoured prey consists of aquatic insects (e.g., mayflies, midges, mosquitos and caddisflies). In agricultural environments, Little Brown Myotis tend to follow linear wooded features, such as hedgerows, for commuting and foraging.

Northern Myotis is less frequently encountered relative to Little Brown Myotis but selects similar maternity roost space. Northern Myotis roosts within tree crevices, hollows and under the bark of live and dead trees, particularly when trees are located within a forest gap. Northern Myotis switch roost trees more frequently compared to other SAR bat species (i.e., every 1-5 days) and are relatively

slow flyers. Northern Myotis is adapted to hunting in cluttered environments, such as within the forest along edges, where it gleans and hawks its prey (primarily moths).

Tri-coloured Bat establishes maternity roosts within live and dead foliage within or below the canopy. Oak is the preferred roost tree species, likely because oaks retain their leaves longer than other trees. Maples are also thought to be important for roosting, although maples are selected far less often compared to oaks. Some studies have shown that Tri-colored Bat prefers dead leaves over live leaves, especially if the dead leaves are situated on a live tree i.e., along a broken branch. Other documented roost sites include dogwood leaves, within accumulations of pine needles, in squirrel nests and in tree cavities. Within a forest, the location of maternity roost trees varies from dense woods to more open areas, although roosts are rarely found in deep woods. Although Tri-colored Bat switches roosts over the summer, this species has very high site fidelity to particular leaf clusters within a season. Foraging occurs along forested riparian corridors, over water (e.g., ponds and rivers) and within gaps in forest canopies. This species is an insect generalist, feeding on species such as leafhoppers, ground beetles, flies, moths and flying ants. The Tri-colored Bat is less frequently encountered compared to Little Brown Myotis and Northern Myotis. Unlike other SAR bats, Tri-colored Bat rarely roosts in buildings, and therefore relies heavily on treed areas for rearing its young.

Note: Confirmation of individual maternity roost trees is extremely challenging. Exit surveys are not always reliable, since SAR bats are known to periodically switch roost trees within a treed area over the summer. In addition, techniques used to confirm maternity roost trees, such as mist netting, are quite invasive and therefore not recommended.

The survey protocol that follows focuses on confirming presence/absence of Little Brown Myotis, Northern Myotis and Tri-colored Bat within treed habitats considered suitable for the establishment of maternity roosts, which is sufficient information to apply species and habitat protection under the ESA.

If an Ecological Land Classification (ELC) ecosite is determined to be suitable for the establishment of maternity roosts, trees with suitable attributes are present, and SAR bats are detected during the maternity roost season (June), it can be concluded with a high degree of certainty that the ELC ecosite represents the habitat most in use during the breeding season for roosting, feeding, rearing of young and resting.

Phase I: Bat Habitat Suitability Assessment

Little Brown Myotis, Northern Myotis and Tri-colored Bat establish maternity roosts in treed areas consisting of deciduous, coniferous or mixed tree species. For bats that roost under bark or within cracks, hollows or crevices, tree species is important only as it relates to its structural attributes. For example, trees that retain bark for longer periods or are more susceptible to fungal infections/attract cavity excavators are more likely to provide appropriate roosting space.

Following the completion of ELC mapping of a study area, any coniferous, deciduous or mixed wooded ecosite, including treed swamps, that includes trees at least 10cm diameter-at-breast height

(dbh) should be considered suitable maternity roost habitat. For cultural treed areas, such as plantations, consultation with the Ministry of Natural Resource and Forestry (MNRF) is recommended to determine if these habitats may be suitable for the species.

If suitable habitat is to be impacted by a proposed activity, project proponents should proceed to Phase II. It is recommended that the proponent contact the MNRF to discuss the need for additional work with respect to SAR bats.

Phase II: Identification of Suitable Maternity Roost Trees

As previously described, Tri-colored Bat primarily roosts in tree foliage (mainly oak), while Little Brown Myotis and Northern Myotis select loose bark, cracks and cavities. Because of these differences, two separate field data sheets should be completed by the proponent to identify and map suitable roost trees for Tri-colored Bat (Appendix A) and Little Brown Myotis/Northern Myotis (Appendix B). The data collected in Phase II will help inform the positioning of acoustic monitoring stations in Phase III.

The timing of field visits is important in order for an observer to be able to clearly identify tree attributes that are suitable for the establishment of maternity roosts:

- **Tri-colored Bat**: field visits should take place during the leaf-on season the same year that acoustic monitoring is to be conducted so that foliage characteristic (i.e., dead/dying leaves along a dead branch) can be observed.

- **Little Brown Myotis/Northern Myotis**: field visits should occur during the leaf-off period so that the view of tree attributes (hollows, cracks etc.) is not obscured by foliage.

Note that for large ecosites (e.g., >10 ha) where a thorough walk-through may not be possible or practical, the proponent should discuss the study design for Phase II with the MNRF prior to undertaking field work.

i) Tri-colored Bat

Leaf roosts are shaped like umbrellas with a “roof” and a hollow core where bats rest. Studies have shown that oak leaves are the preferred roost site. Maple leaves are also selected, although less commonly. It is thought that Tri-colored Bat may prefer roost trees in open woodlands, as opposed to deep woods.

Within each ecosite identified as suitable maternity roost habitat in Phase I, the following trees should be documented on the field data sheet (Appendix A)

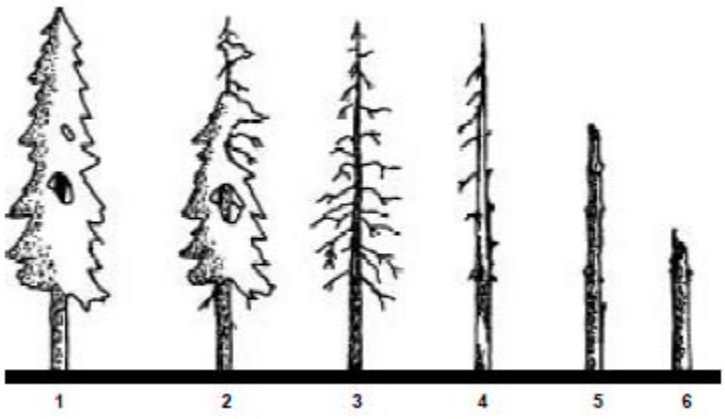
- any oak tree ≥10cm dbh
- any maple tree ≥10cm dbh IF the tree includes dead/dying leaf clusters
- any maple tree ≥25cm dbh

ii) Little Brown Myotis and Northern Myotis

Within each ecosite identified as suitable maternity roost habitat in Phase I, all “snags” should be identified and relevant information recorded on the field data sheet provided in Appendix B.

For purposes of this exercise, a "snag" is any standing live or dead tree ≥10cm dbh with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark.

During the field visit, the Decay Class should be noted for each snag (see Figure 1). Snags in an early stage of decay (which also includes healthy, live trees) may be preferred by Little Brown Myotis and Northern Myotis if suitable attributes for roost space are present. However, since SAR bats will also roost in snags outside of Class 1-3, any snag >10cm dbh with suitable roost features should be documented. For trees with cavities, the entrance can be high or low ("chimney-like") on the tree.



1. Healthy, live tree
2. Declining live tree, part of canopy lost
3. Very recently dead, no canopy, bark intact, branches intact
4. Recently dead, bark peeling, only large branches intact
5. Older dead tree, 90 percent of bark lost, few branch stubs, broken top
6. Very old dead tree, advanced decay, no branches, parts of the stem have rotted away

Figure 1: Snag classification (Decay Class 1-3 is considered an early decay stage)[1]

In addition, proponents should be aware that some tree species, such as shagbark hickory, silver maple and yellow birch, have naturally exfoliating bark that may be suitable for establishing maternity roosts. Trees ≥10cm dbh exhibiting these characteristics should be considered "snags" as per the definition above and included on the field data sheet provided in Appendix B.

Note: For efficiency (especially for larger ecosites e.g., >10 ha), a proponent may choose to undertake snag density surveys while conducting the work required in Phase II. For a detailed methodology, refer to Phase IV of this protocol.

[1] Watt, Robert and Caceres, M. 1999. Managing snags in the Boreal Forests of Northeastern Ontario. OMNR, Northeast Science & Technology. TN-016. 20p.

Phase III: Acoustic Surveys

Within each ELC ecosite determined to be suitable maternity roost habitat in Phase I, acoustic surveys are recommended to confirm presence/absence of Little Brown Myotis, Northern Myotis and Tri-colored Bat. As described below, acoustic detectors should be placed in the best possible locations in order to maximize the probability of detecting all three SAR bats species. The data collected in Phase II should be used to select optimal locations for monitoring. The trees to be targeted for acoustic monitoring will typically be a subset of the trees documented in Phase II.

Density and Optimal Location of Acoustic Monitoring Stations:

Multiple stations may be required to cover an ecosite adequately (see example in Figure 2). Based on the microphone range of most broadband acoustic detectors (20-30m), **4 stations/hectare** is needed for full coverage of an ELC ecosite.

Strategic placement of acoustic detectors is critical for the successful isolation of high-quality bat calls. Recommended positioning is to locate acoustic detectors **within 10m of the best potential maternity roost trees**. To increase the probability of detecting all three SAR bat species, detectors should be divided proportionally to target suitable roost trees (if present) for Tri-colored Bat and Little Brown Myotis/Northern Myotis.

Prior to undertaking acoustic surveys, it is recommended that the proponent discuss the proposed location of acoustic monitoring stations with the MNRF.

(i) Tri-colored Bat

Although Tri-colored Bat will roost within both live and dead foliage, it appears that reproductive females may prefer clusters of dead leaves, especially if they are situated on a live tree. Using the information collected on the field data sheet (Appendix A), the best suitable maternity roost trees for Tri-colored Bat should be selected according to the following criteria (in order of importance):

If oaks are present:

- Live oak with dead/dying leaf clusters
- Dead oak with retained dead leaf clusters
- Live oak (no dead leaf clusters) with the largest dbh (>25cm)
- Oak within a forest gap

If oaks are absent:

- Live maple with dead/dying leaf clusters
- Dead maple with retained dead leaf clusters
- Live maple (no dead leaf clusters) with the largest dbh (>25cm)
- Maple within a forest gap

Note that if a cluster of tree species with attributes preferred by Tri-colored Bat is present, this may be a good area to target acoustic monitoring.

(ii) Little Brown Myotis and Northern Myotis

Bats that roost under tree bark or within crevices or cavities frequently select the tallest and largest diameter snags, which often extend above the forest canopy. This is because larger snags better retain solar heat, which benefits the pups. Tall trees within a forest gap or along an edge may also have a less obstructed flight approach for bats.

Using the information collected on the field data sheet completed in Phase II, the best suitable maternity roost trees for Little Brown Myotis/Northern Myotis should be selected using the following criteria (in order of importance):

- Tallest snag
- Snag exhibits cavities/crevices often originating as cracks, scars, knot holes or woodpecker cavities
- Snag has the largest dbh (>25 cm)
- Snag is within the highest density of snags (e.g., cluster of snags)
- Snag has a large amount of loose, peeling bark (naturally occurring or due to decay)
- Cavity or crevice is high on the tree (>10 m) or is “chimney like” with a low entrance
- Tree is a species known to be rot resistant (e.g., black cherry, black locust)
- Tree species provides good cavity habitat (e.g., white pine, maple, aspen, ash, oak)
- Snag is located within an area where the canopy is more open
- Snag exhibits early stages of decay (Decay Class 1-3)

Note: The sole purpose of the above-listed criteria is to determine the best placement of acoustic monitors in order to maximize the probability of detecting Little Brown Myotis and Northern Myotis. The listed criteria are NOT intended for any type of snag “ranking”. Snags that do not include any of the above characteristics may still be used as a maternity roost site. For example, the absence of snags >25 cm dbh by no means indicates that there is no potential maternity roost habitat present on a site.

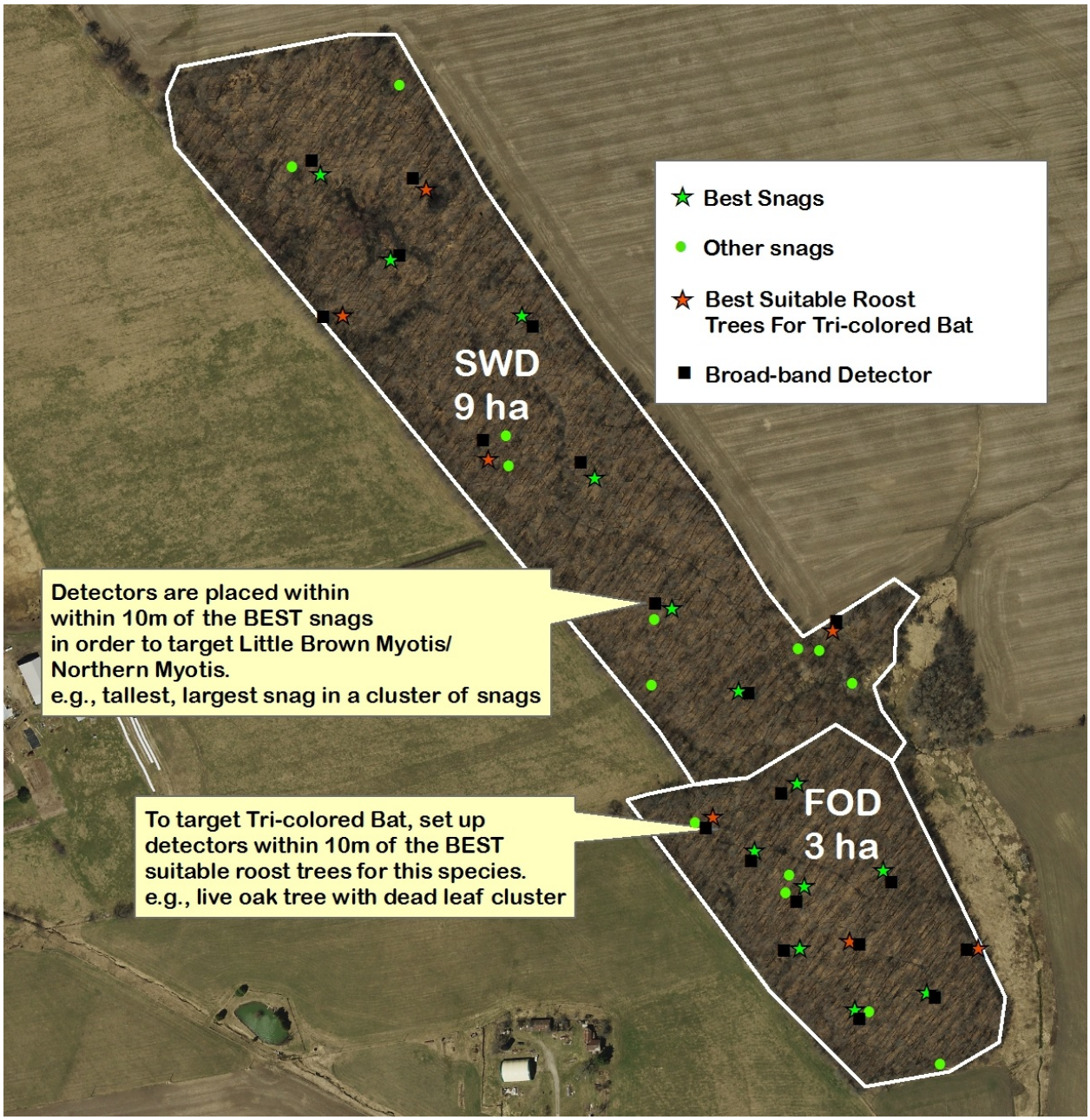


Figure 2: Hypothetical example illustrating the location and density of acoustic detectors i.e., 4/ha to a maximum of 10 per ELC ecosite.

Timing and Weather Conditions:

Acoustic surveys should take place on **evenings between June 1st and June 30th, commencing after dusk and continuing for 5 hours**.

Surveys should occur on warm/mild nights (i.e., ambient temperature >10°C) with low wind and no precipitation. At least 10 visits on nights that align with the above conditions where no SAR bat activity is detected are required to confirm absence.

Note that project proponents may cease survey work at any point once documentation of all three SAR bats species presence occurs.

Recommended Equipment Guidelines for Best Results:

- Broadband detectors (full spectrum) should be used. These may be automated systems in conjunction with computer software analysis packages or manual devices with condenser microphones.
- Acoustic monitoring systems should allow the observer to determine the signal to noise ratio of the recorded signal (e.g., from oscillograms or time-amplitude displays). These provide information about signal strength and increase quality and accuracy of the data being analysed.
- Microphones should be positioned to maximize bat detection i.e., situated away from nearby obstacles to allow for maximum range of detection and angled slightly away from prevailing wind to minimize wind noise.
- The same brand and/or model acoustic recording system should be used throughout the survey (if multiple devices are required), as the type of system may influence detection range/efficiency. If different systems are used, this variation should be quantified.
- Information on the equipment used should be recorded, including information on all adjustable settings (e.g., gain level), the position of the microphones, and dates and times for each station where recording was conducted.

Analysis:

Analytical software should be used to interpret bat calls and process results. Data should be analysed to the species level (as opposed to the genus level) in order to confirm presence/absence of SAR bats. Note that MNRF may request a copy of the raw acoustic data file when reviewing the results of the work completed in Phase III.

Additional Notes:

Project proponents should be aware that information about the number of bat passes detected in an area does not allow for an estimate of the number of bats present because there is not a 1:1 relationship between the number of passes and the number of bats responsible for those passes. It is not possible to distinguish between several bat passes made by a single bat flying repeatedly through the study area vs. several bats each making a single pass. Therefore, bat passes cannot provide a direct estimate of population densities.

Next Steps:

If Little Brown Myotis and/or Northern Myotis are detected, project proponents should proceed to Phase IV (Snag Density Survey). If only Tri-colored Bat is detected, snag density is not relevant and the proponent can proceed directly to Phase V (Complete an Information Gathering Form).

Phase IV: Snag Density Survey

Snag density information may be useful when the MNRF is considering the potential impact of a proposed activity on Little Brown Myotis and/or Northern Myotis. Snag density for each suitable ELC ecosite should be noted on the field data sheet provided in Appendix B. Surveys should take place during the leaf-off period so that the view of tree cavities, cracks and loose bark etc., is not obscured by foliage.

Snag density is a qualitative assessment of a treed ecosite, not a method of determining presence/absence of maternity roost habitat. There is no minimum threshold in terms of the number of snags/ha for an ELC ecosite to be considered suitable maternity roost habitat. However, an ELC with 10 or more snags/ha may be considered to be high quality potential maternity roost habitat. This information may be relevant when considering overall benefit in cases where a s.17(2)c permit under the ESA is required.

For smaller ecosites (e.g., <10 ha), snag density (# of snags/ha) can be calculated by dividing the number of snags mapped in Phase II by the total area of the ecosite.

Example:

ELC ecosite	Size (ha)	# of snags	Snag Density
WOD-M4	3.1	14	4.5 snags/ha
FOD-M2	0.8	9	11.25 snags/ha

For larger ecosites (e.g., >10 ha), sample plots can be used to estimate snag density within the suitable ELC ecosite, as follows:

- Select random plots across the represented ELC ecosite
- Survey fixed area 12.6m radius plots (equates to 0.05 ha)
- Survey a minimum of 10 plots for sites up to 10 ha, and add another plot for each additional ha up to a maximum of 35 plots
- Measure the number of suitable snags in each plot
- Use the formula πr^2 to calculate the number of snags/ha (where r=12.6m)
- Map the location of each snag density plot and record the UTM location using a GPS
- Calculate snag density for the ELC ecosite (snags/ha)

Example: **ELC Ecosite FOD-M2 (12 ha)**

# of sample plots	Total # of snags in sample plots	# of sample plots x r	Area of plots (πr^2)	Snag Density
12	48	12 x 12.6m = 151.2m	$3.14(151.2m)^{2} =$ $71784.9m^2$ = 7.18 ha	48 snags in 7.18 ha = 6.7 snags/ha

Phase V: Complete an Information Gathering Form

If SAR bats are detected during Phase III, the proponent should complete an Information Gathering Form (IGF) and submit it to the MNRF, Guelph District Office (esa.guelph@ontario.ca) for review. The IGF is available by searching the form repository on the government of Ontario website: http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf.

The MNRF will determine whether an activity is likely to kill, harm or harass a listed species and/or damage or destroy its habitat. The MNRF requires all of the necessary details and results from this survey protocol to be included on the IGF in order to make this determination.

For more information on overall benefit permits, including submission guidelines, process and timelines, please visit: https://www.ontario.ca/page/species-risk-overall-benefit-permits.

Appendix A – Suitable Maternity Roost Trees for Tri-colored Bat

Include all oak trees ≥10cm dbh (if present). If oaks are absent, include maples ≥10cm dbh IF dead/dying leaf clusters are present; and maples >25cm dbh if no dead/dying leaf clusters are present.

Project Name:

Survey Date(s):

Site Name:

Observer(s):

ELC Ecosite:

Tree#	Tree Species ID	Tree Status (live/dead)	Dbh (cm)	Tree Structural & Locational Attributes (check all that apply)	Easting	Northing	Notes
				☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?			
				☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?			
				☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?			
				☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?			
				☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?			
				☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?			
				☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?			

Appendix B – Suitable Maternity Roost Trees for Little Brown Myotis/Northern Myotis

Include all <u>live and dead</u> standing trees ≥10cm dbh with loose or naturally exfoliating bark, cavities, hollows or cracks.

Project Name: Survey Date(s):

Site Name: Observers(s):

ELC Ecosite: Snag Density (snags/ha):

Tree #	Tree Species ID	dbh (cm)	Height Class[2]	Snag attributes (check all that apply)	Easting	Northing	Notes
				☐ cavity[3] ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?[4]			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
				☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			

[2] **<u>Height Class</u>**: 1 = Dominant (above canopy); 2 = Co-dominant (canopy height); 3 = Intermediate (just below canopy); 4 = suppressed (well below canopy)

[3] The approx. height of the cavity should be noted. Note that cavities with an entrance near the ground may also be used by bats if they are "chimney-like".

[4] **<u>Decay Class</u>**: 1 = Healthy, live tree; 2 = Declining live tree, part of canopy lost; 3 = Very recently dead, bark intact, branches intact

APPENDIX E: Butternut Health Assessment Report

Bowfin Environmental Consulting

168 Montreal Road
Cornwall, ON
K6H 1B3
Tel: 613.935.6139
Fax: 613.935.6295

Shaun St.Pierre (BHA# 0281)
Bowfin Environmental Consulting
168 Montreal Road
Cornwall, ON
K6H 1B3

Cornwall Gravel Co. Ltd.
390 Eleventh St. West
P.O. Box 67
Cornwall, Ontario
K6H 5R9
613.932.6571
Travis@cornwallgravel.ca

June 20, 2017

RE: Lot 2 Concession 4 City of Cornwall
BHA Report Number: 520223
Date(s) of Butternut health assessment: June 15, 2017

Dear Cornwall Gravel,

This letter is in regard to my assessment of the Butternut trees on your property. Bowfin environmental was retained to assess 13 previously identified butternut within Lot 2 Concession 4, City of Cornwall. It is important to note that this was not an inventory/survey. Also these results are pending DNA analysis. Please read this letter carefully as it contains important information about the Endangered Species Act, 2007 (ESA).

Butternut is listed as an endangered species on the Species at Risk in Ontario List, and as such, it is protected under the ESA from being killed, harmed, or removed. If you are planning to undertake an activity that may affect Butternut, you may be eligible to follow the requirements set out in section 23.7 of Ontario Regulation 242/08 under the ESA, or you may need to seek an authorization under the ESA (e.g., a permit).

Please visit e-laws at the link provided below for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled. Information about Butternut is also available at: http://www.ontario.ca/environment-and-energy/butternut-trees-your-property.

If you are eligible to kill, harm or take Butternut under section 23.7 of the regulation, your first step is to submit the BHA Report and the original data forms enclosed in this package to the local MNR District Manager. Note that the MNR will not accept photocopies. The BHA Report must

Links:

Endangered Species Act, 2007:
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm

Ontario Regulation 242/08 (refer to section 23.7):
http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm

Summary of changes related to Butternut:
http://www.ontario.ca/environment-and-energy/butternut-trees-your-property

MNR office locations:
http://www.mnr.gov.on.ca/en/ContactUs/2ColumnSubPage/STEL02_179002.html

be submitted at least 30 days prior to registering to kill, harm, or remove a Butternut tree. During this 30 day period, no Butternut trees (of any category) may be killed, harmed, or removed, and MNR may contact you for an opportunity to examine the trees.

If MNR chooses to examine the trees, a representative of the MNR will contact you using the information you supplied when you submitted the BHA Report. After the examination has been completed, MNR will notify you if the examination results change whether you are eligible for the regulation.

If you are eligible to follow the rules in regulation under section 23.7, you may register your activity using the "Notice of Butternut Impact" form on the MNR Registry **after** the 30 day period has elapsed.

If you are **not** eligible to follow the rules in regulation under section 23.7, please contact the local Ministry of Natural Resources (MNR) office to determine whether you will need to seek a permit. A link to the directory of MNR offices is provided in the text box on the previous page.

As a designated Butternut Health Assessor (BHA), I am providing the following Butternut Health Assessor's Report for the trees located at the above noted property, for which I completed an assessment during the site visit on the above noted date. If there are other Butternut trees at the site that may be affected by the activity and they are not identified in this report, they too must be assessed by a BHA.

Note that municipal by-laws and legislation other than the ESA may also be applicable to the removal or harming of trees.

Please retain this letter and a copy of the BHA Report for your records, along with any other documentation you may receive from the MNR should an examination of the trees occur. If you have any questions, please do not hesitate to contact me or your local MNR district office.

Sincerely,

Shaun St.Pierre (BHA # 281)

Enclosures:

1. Butternut Health Assessor's Report
2. Original data forms
3. Electronic and printed copies of the Excel data spreadsheet (BHA Tree Analysis)

Bowfin Environmental Consulting

168 Montreal Road
Cornwall, ON
K6H 1B3
Tel: 613.935.6139
Fax: 613.935.6295

Butternut Health Assessor's Report

Shaun St.Pierre (BHA# 0281)
Bowfin Environmental Consulting
168 Montreal Road
Cornwall, ON
K6H 1B3

Cornwall Gravel Co. Ltd.
390 Eleventh St. West
P.O. Box 67
Cornwall, Ontario
K6H 5R9
613.932.6571
Travis@cornwallgravel.ca

Property description: Lot 2 Concession 4 City of Cornwall
BHA Report Number: 520223
Date(s) of Butternut health assessment: June 15, 2017
Date BHA Report prepared: June 20, 2017

Map datum used: ☒ NAD83 ☐ WGS84

Total number of trees assessed in this BHA Report: 13

Bowfin environmental was retained to assess 13 previously identified butternut within Lot 2 Concession 4, City of Cornwall. It is important to note that this was not an inventory/survey. Also these results are pending DNA analysis. The assessed trees were numbered on site using white paint and white flagging tape. The numbers at the site correspond to the tree numbers used in this report.

This BHA Report includes the following tables:

- Table 1: Butternut trees proposed to be killed, harmed, or taken
- Table 2: Summary of Assessment Results

Table 1: Butternut trees proposed to be killed, harmed, or taken

Tree #	UTM coordinates	Category[1] *(1, 2, or 3[2])*	dbh[3] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: killed, harmed or taken)*	Reason tree is proposed to be killed, harmed or taken:
2	18T 520228 4992679	2	1	N	Killed	Proposed Quarry Expansion
3	18T 520223 4992676	2	2	N		
4	18T 520223 4992677	1	2	N		
5	18T 520217 4992680	1	19	N		
7	18T 520208 4992670	2	1	N		
8	18T 520205 4992677	2	1	N		
9	18T 520203 4992687	2	2	N		
10	18T 520200 4992685	2	1	N		
11	18T 520188 4992673	2	2	N		
12	18T 520191 4992659	1	28	N		
13	18T 520191 4992657	2	1	N		
15	18T 520366 4992229	2	7	N		
16	18T 520367 4992240	2	2	N		

Table 2: Summary of Assessment Results

Result:	**Total #:**	**Important information for persons planning activities that may affect Butternut:**
Category 1*	3	• A Category 1 tree is one that is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut in the area in which the tree is located; and is considered “non-retainable”. • During the 30 day period that follows your submission of this BHA Report to the MNR District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNR may contact you for an opportunity to examine the trees. • Category 1 trees may be killed, harmed or taken **after** the 30 day period that follows submission of this BHA Report to the MNR District Manager, unless the results of an MNR examination indicate that the assessment has not been conducted in accordance with the document entitled “Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007”*.

[1] The extent to which the tree is affected by Butternut Canker is presented in the Excel document titled, “BHA Tree Analysis” that accompanies this BHA Report.
[2] The rules in regulation under section 23.7 of O. Reg. 242/08 are not applicable to Category 3 trees.
[3] dbh: diameter at breast height, rounded to nearest cm (if tree is shorter than breast height, enter zero)

Result:	Total #:	Important information for persons planning activities that may affect Butternut:
Category 2*	10	• A Category 2 tree is one that is not affected by Butternut Canker, or is affected by Butternut Canker but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut in the area in which the tree is located, and is considered “retainable”. • During the 30 day period that follows your submission of this BHA Report to the MNR District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNR may contact you for an opportunity to examine the trees. • Activities that may kill, harm or take up to a maximum of ten (10) Category 2 trees may be eligible to follow the rules in section 23.7 of Ontario Regulation 242/08, in accordance with the conditions and requirements set out in the regulation. • Refer to e-Laws for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm
Category 3	0	• A Category 3 tree is one that may be useful in determining sources of resistance to Butternut Canker, and is considered “archivable”. • Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08. • Visit the MNR website using the link below for information on how to seek an ESA authorization, or consider an alternative that will avoid killing, harming or taking any Category 3 trees: http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_HOW_DO_GET_PER_EN.html
Cultivated	0	• An activity that involves killing, harming, or taking a cultivated Butternut tree that was not required to be planted to fulfill a condition of an ESA permit or a condition of a regulation, may be eligible for the exemption provided by subsection 23.7 (11) of O. Reg. 242/08. • Prior to undertaking the activity, the owner or occupier of the land on which the Butternut is located (or person acting on their behalf) will need to determine whether the exemption for cultivated trees is applicable by determining whether or not the tree was cultivated as a result of the requirements for an exemption under O. Reg. 242/08 or a condition of a permit issued under the ESA. This information can be accessed by contacting the local MNR district office: http://www.mnr.gov.on.ca/en/ContactUs/2ColumnSubPage/STEL02_179002.html • The owner or occupier of the land on which the Butternut is located (or person acting on their behalf) is encouraged to append the details regarding whether the tree was planted to satisfy a requirement (e.g., the permit number or registration number) to this BHA Report for their records.
Hybrid	0	• Hybrid Butternut trees are not protected under the ESA, but their removal may be subject to municipal by-laws and other legislation.

NOTE: This concludes the summary of the BHA Report. A complete BHA Report must include the original (hard copy) data forms (i.e., all completed sets of Form 1 and Form 2), an electronic copy of the Excel data analysis spreadsheet, and one printed copy of the Excel data analysis spreadsheet.

*Pending DNA results

Bowfin Environmental Consulting

168 Montreal Road
Cornwall, ON
K6H 1B3
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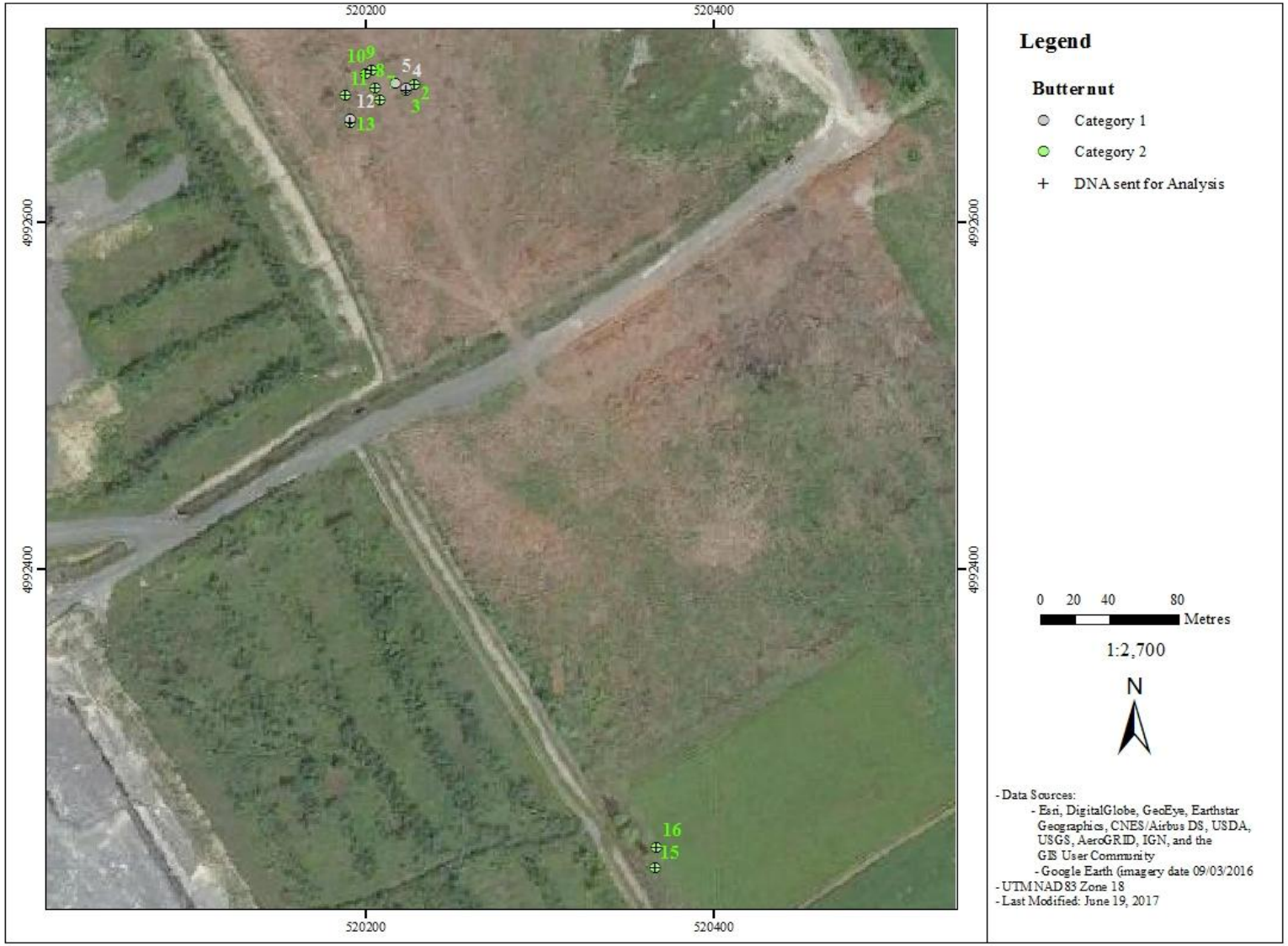

Appendix F: Butternut Confirmation of Registration

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Butternut Impact
Date Registration Filed:	07/19/2017
Confirmation ID:	M-103-5194989482
Version Number:	001
Update Date:	

CORNWALL GRAVEL CO LTD

390 11th ST W
Cornwall, ON K6J3B2

Dear Sir/Madam,

You have registered under section 23.7 of Ontario Regulation Reg. 242/08 of the Endangered Species Act, 2007 and your Notice of Butternut Impact Form has been received by the Ministry of Natural Resources and Forestry for activities impacting Butternut located at:

Lot 2 Concession 4
CORNWALL, ON, K0C1P0

This confirmation applies to the 10 Category 2 (retainable) butternut trees identified in the information provided to the Ministry through the Registry and as referenced in the Butternut Health Assessor's Report # 520223.

Please note, you may only kill, harm or take those Category 2 (retainable) butternut trees from the above-referenced report that you have identified in the information provided to the Ministry through the Registry with the following tree number (s): 2; 3; 7; 8; 9; 10; 11; 13; 15; 16.

A copy of this Confirmation of Registration must be kept on the site where the impacts to Butternut are occurring and you are required to show this Confirmation of Registration upon the request of the Ministry. Please refer to Ontario Regulation 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca