

**Scoped Environmental Impact Statement
3713 Borrisokane Rd. – Eastern Parcel**

Final Report

May 22, 2020

Version 1A

KILGOUR & ASSOCIATES LTD.
www.kilgourassociates.com



Version History

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List of Acronyms and Abbreviations

CRZ – Critical Root Zone
DBH – Diameter at Breast Height
EIS – Environmental Impact Statement
ESA – Endangered Species Act
KAL – Kilgour & Associates Ltd.
MECP – Ministry of Environment Conservation and Parks
MNRF – Ministry of Natural Resources and Forestry
PIN – Property Identification Number
RVCA – Rideau Valley Conservation Authority
SAR – Species at risk
TCR – Tree Conservation Report
UNA – Urban Natural Area



1.0 INTRODUCTION

This report is a Scoped Environmental Impact Statement (EIS) prepared by Kilgour & Associates Ltd. (KAL) on behalf of the Caivan Communities (Caivan) in relation to a proposed new residential development on the eastern portion of 3713 Borrisokane Road (herein, the Site; Figure 1). The Site is located on a property formerly operated as the Drummond Pit, an aggregate (sand and gravel) extraction operation. While the pit was active, the Site had provided habitat for two species at risk (SAR) - Barn Swallow (*Hirundo rustica*) and Bank Swallow (*Riparia riparia*) (KAL, 2019a).

As part of the SAR management plan for the Drummond Pit, the area was required to be fully re-graded upon closure (KAL, 2019a). This process removed all vegetation and topographic relief from the site, effectively eliminating habitat and habitat potential for the noted SAR species from the area. The adjacent property to the south – the Brazeau Pit – had also provided habitat for the same two SAR and had the same requirement to be regraded under its management plan (KAL, 2019b). Both pits ceased operation in late 2019. Additionally, the wooded area that had been situated between the Site and the Cambrian Woods Urban Natural Area (UNA) to the north was removed as part of ongoing land development in that area by another residential builder.

The EIS for the proposed development of the site was scoped by the City of Ottawa to confirm that habitat for SAR on and adjacent to the site has been removed and is now absent (Appendix A-1). This EIS also addresses trees remaining on the Site and thereby serves as the Tree Conservation Report (TCR) for the proposed development.

2.0 PROPERTY IDENTIFICATION

2.1 Property Owner's Name and Contact Information:

The property is owned by:

Caivan Greenbank Inc.
2934 Baseline Road, Suite 302
Ottawa, ON
K2H 1B2

2.2 Municipal Address of Property including Lot, Concession, Township and Property Identification Number (PIN)

The Site of the proposed development is located on the eastern portion of the property at 3713 Borrisokane Road (Ottawa, ON, K2J 0T2; Concession 3RF Part Lot 9 RP 5R-6254; Part 2 Less RP 5R-13374 Parts; 9 & 10 Road Widening, PIN: 04592-0035). The development will also extend onto two small, un-addressed, portions of adjacent parcels owned, and that and will be prepared for development, by Mattamy Homes (northeast corner: Part 2 4R-22633, PIN 04595-2107; southeast corner: Part 1 4R-22633, PIN 04595-2108) as part of the broader residential development in the area (Figure 1).

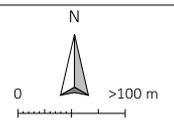




Figure 1 Site Context

Legend

-  Project Area
-  Cambrian Woods UNA



Project: The Ridge
 Created By: AF
 MTM Zone 9
 (NAD 83)
 Printed on: 2020-05-21



2.3 Land Use Designation and Zoning from the Official Plan

The main portion of the Site at 3713 Borrisokane Road is currently zoned for Mineral Extraction, though all mineral extraction activities have now ceased (on both this property and the Brazeau Pit immediately to the south). The small triangular parcel in the southeast corner of the site is included in an area zoned as Mineral Reserve (Figure 1). The small triangular parcel in the northeast corner of the site is included in a Development Reserve.

2.4 Existing and Past Land Uses:

The Site had been subject to ongoing aggregate extraction from prior to 1976 (City of Ottawa, 2020) until the closure of the Drummond Pit in late 2019. The entire property is currently subject to active groundworks, with the Site surface being levelled and filled.

3.0 SITE VISIT

The site was visited by KAL biologist Anthony Francis on April 10, 2020. The purpose of the visit was to confirm the extent of the Site that was under active construction and re-grading. The site visit confirmed that no natural land cover was present or possible (i.e. active groundworks underway) over the entirety of parcel at 3713 Borrisokane Road (Appendix B).

4.0 DESCRIPTION OF THE SITE AND THE NATURAL ENVIRONMENT

4.1 General Description of the Natural Environment

Prior to the pit closure in late 2019, all land between the north property line of the Drummond pit property and the south boundary of the Cambrian Woods (UNA) had been fully cleared of all vegetation. This area was cleared in preparation for residential construction by a different land developer. Two small “remnant” treed areas had remained in the corners of the Site, though these were well dissociated from, and were not part of, the Cambrian Woods UNA. The Cambrian Woods UNA is separated from the Site by 300 m of open land, fully covered by active groundworks and construction.

The entire parcel at 3713 Borrisokane Road, including the western remnant woodlot, has now been fully cleared of vegetation as part of the re-grading program for the lands of the Drummond Pit following its closure (Figure 2; Appendix B). The eastern remnant woodlot has been almost entirely removed. The only remaining portion of the eastern remnant woodlot is a small patch of trees that had extend onto the triangle of the Site that is still owned by another developer (Mattamy Homes). The clearing and regrading of the site were confirmed by the MNRF to have proceeded in compliance with the closure plan for the Drummond Pit (Appendix A-3). The Brazeau Pit property adjacent to the south side of the Site has also been fully cleared following its closure.





Figure 2 Proposed development

Legend

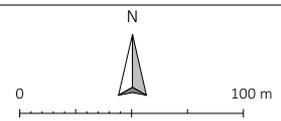
Site Boundaries

-  Urban Boundary
-  Property Line
-  Commercial Area
- separate project

ELC

-  Cleared Land
-  CUM
-  FOD4

Note: The only trees remaining on site are located within FOD4



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 (NAD 83)
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4.2 Landforms, Soils and Geology

Soils on the site had been Uplands and Mille-Isles formations in the west (strongly acid fine to coarse sand with limited fine gravel), to a Kars formation in the east (slightly acid to neutral, gravelly and cobbly coarse to moderately coarse textures glaciofluvial materials with a surface generally worked into beach deposits; Marshall et al., 1979). Excavation on the site over its years as an active sand and gravel pit, however, would have led to significant disruption of that soil stratigraphy and geology. The Site has now been levelled and raised with imported fill.

4.3 Surface Water, Groundwater and Fish Habitat

The most recently available air photo (2017) for the Site indicates the presence of a low-lying area at the western end of the site holding ponded water, but that feature was removed as part of ongoing pit operations in 2018. There were no surface water features on the site at the time of its closure in 2019 and none are currently present with the ongoing site regrading.

4.4 Vegetation Cover and Site Trees

General Vegetation Cover

The entire parcel at 3713 Borrisokane Road, the lands to the south of the Site from the former Brazeau Pit, and the Mattamy-owned triangular parcel in the southeast corner of the Site have been cleared of all vegetation as part of the area re-grading following the closure of the Drummond and Brazeau Pits (Figure 2; Appendix B). The eastern remnant woodlot has been almost entirely removed.

The 1.51 ha eastern remnant woodlot had been evaluated using Ecological Land Classification (Lee et al, 1998) and identified as an FOD4 Dry Fresh Deciduous Forest ecosite by KAL biologists Katherine Black and Heather Lindsay as part of a tree survey of the area conducted on August 12, 2019. The feature type, which generally occurs under a regime of significant disturbance, had Manitoba Maple (*Acer negundo*) as the dominant species Diameter at Breast Height (DBH) ranging from 10 to 45 cm. The second most common species was Green Ash (*Fraxinus pennsylvanica*). A narrow line of Eastern White Cedar (*Thuja occidentalis*) runs along the easternmost edge. Other species present (all in small numbers with most <20 cm in DBH) included Common Apple (*Malus* sp.), Black Ash (*Fraxinus nigra*), White Spruce (*Picea glauca*), Honey Locust (*Gleditsia triacanthos*), American Elm (*Ulmus americana*), Black Cherry (*Prunus serotina*), White Birch (*Betula papyrifera*), Staghorn Sumac (*Rhus typhina*), Balsam Poplar (*Populus balsamifera*), Trembling Aspen (*Populus tremuloides*), Eastern Cotton Wood (*Populus deltoides*), Basswood (*Tilia americana*), Red Maple (*Acer rubrum*), Crack Willow (*Salix fragilis*) and Bur Oak (*Quercus macrocarpa*). The 1.36 ha of the feature located directly on the pit site (i.e. not in the Mattamy-owned corner), however, has been clear of all trees as part of the overall site re-grading under the pit rehabilitation. Only the 0.25 ha of the woodlot feature located in on the Mattamy-owned triangle remains.

Site Trees

Descriptions of trees within contiguously treed areas for the purposes supporting land development (within a TCR) need only identify the mix of tree species present and their size ranges, as opposed to detailing every tree, if the cluster is otherwise unremarkable, though detailed locations must still be provided for trees of



“notable” size, species type or character (Mark Richardson, City of Ottawa Planning Forester, personal communication, March 13, 2020). The 0.25 ha of the trees remaining on the Site (Figure 2) was not accessible during the site visit on April 10, 2019. The trees are known to be a subset of the original tree list, which did not include any tree of notable size or species. Trees within the feature were noted as being generally healthy during the August 12, 2019 site visit. As 84% of the FOD4 ecosite has now been removed and the remaining portion is isolated within an extensive area of active construction, the ecological function of the remaining trees has been severely reduced. The trees have no connection to other natural features limiting their ability to contribute to local wildlife.

This scoped EIS includes TCR information for the proposed project (Appendix C).

4.5 Wildlife

Fauna on the site were not studied directly as part of a site review for the proposed project. With the total site rehabilitation/regrading associated with the pit closure occurring presently, no habitat suitable for species is currently present on site.

4.6 Habitat for Species at Risk

The Site, and the lands to the south of the former Brazeau pit, had both previously been identified as providing habitat for two SAR – Barn Swallow (*Hirundo rustica*) and Bank Swallow (*Riparia riparia*; KAL, 2019a). At the onset of this current project, however, it was understood by the City that all habitat from the Site, including habitat for SAR, would be fully and completely removed as part of the closure process for the two pits. The City of Ottawa determined that this section is not required to address SAR present on the site, given that no habitat remains, but rather, should outline the process by which that habitat was removed in accordance with regulations of the Ministry of Natural Resources and Forestry (MNRF) and the Ministry of Environment, Conservation and Parks (MECP; Appendix A-2).

Before their closure, the two aggregate operations filed Notices of Activity with the MNRF under O.Reg 242/08 Section 23.14 in the fall of 2019, as previous studies on the sites had identified the presence of Barn Swallows and Bank Swallows. Both species had been observed making opportunistic use of anthropogenically generated features on the site. Barn Swallows had been found to be nesting in maintenance-shed-type structures erected from piles of Sea Cans. Bank Swallows had been found to be nesting in vertical sand banks developed as extraction faces at the site. In consideration of these species, a Notice of Activity for the Drummond Pit was submitted on October 21, 2019 (Confirmation ID M-102-8330859947) and for the Brazeau Pit on October 4, 2019 (Confirmation ID M-102-5329320036).

Filing the Notices of Activity exempted the pits from Sections 9 and 10 of the Endangered Species Act (ESA) (i.e. prohibitions on impacting individuals or habitat), but required each pit operator to develop management plans (Appendix D) for their respective sites that include best management practices (BMPs) to minimize the impact of mining activities on the identified species, while the pits remained open. Upon the closure of the pits, the management plans allow for the restoration/re-grading of the sites including the removal of habitat features that were created directly (albeit unintentionally) by or in support of mining operations (i.e. the vertical faces of sand at extraction points and the operational buildings/structures on the site). The removal of such features is an important element of pit closure for public safety and was a requirement of the pit closure plans.



The management plans did not call for any specific re-creation of habitat elements for Bank Swallows. The only requirement was that nest-supporting faces be removed outside of nesting season. Site regrading was found to be actively underway and no vertical sand faces remained (Appendix B).

The management plans did call for the creation of new nesting structures for Barn Swallows. The Sea Can maintenance sheds have been disassembled (Appendix B). A new nest structure has been erected on land owned by the Rideau Valley Conservation Authority (RVCA) at 3889 Rideau Valley Drive (Appendix E). Monitoring reports for this structure will be filed with the MNRF later this year, per the management plans.

A request to review the final version of the management plans, and the actions taken under those management plans, was submitted to Carolyn Hann (MECP Biologist, Kemptville District) on April 23, 2020 (Appendix A-2). No response has been received from the MECP at this time.

5.0 DESCRIPTION OF THE PROPOSED PROJECT

The project addressed by this EIS is a draft plan submission for a proposed residential community on the eastern half of the Drummond property (Figure 3). The submission will also include a rezoning of the parcel at 3713 Borrisokane Rd. from Mineral Extraction to Residential.

General Site grading and clearing that will allow for the proposed development is currently being completed as part of the rehabilitation required under their closing plans (i.e. as a separate process from the development proposed under this EIS). Site clearing of both the Brazeau and Drummond pits is anticipated to be completed by late-spring of 2020.

The residential development concept plan includes a mix of single-family homes and townhomes with one park (1.47 ha) and a 4.10 ha stormwater management area. Draft Approval followed by detailed design is anticipated in early 2021. Housing construction would proceed in one phase, anticipated to begin in the winter of 2021 with first closings in summer 2022. The need for groundworks for the site development will be limited given the site prep to be completed in advance under the pit closure plans.



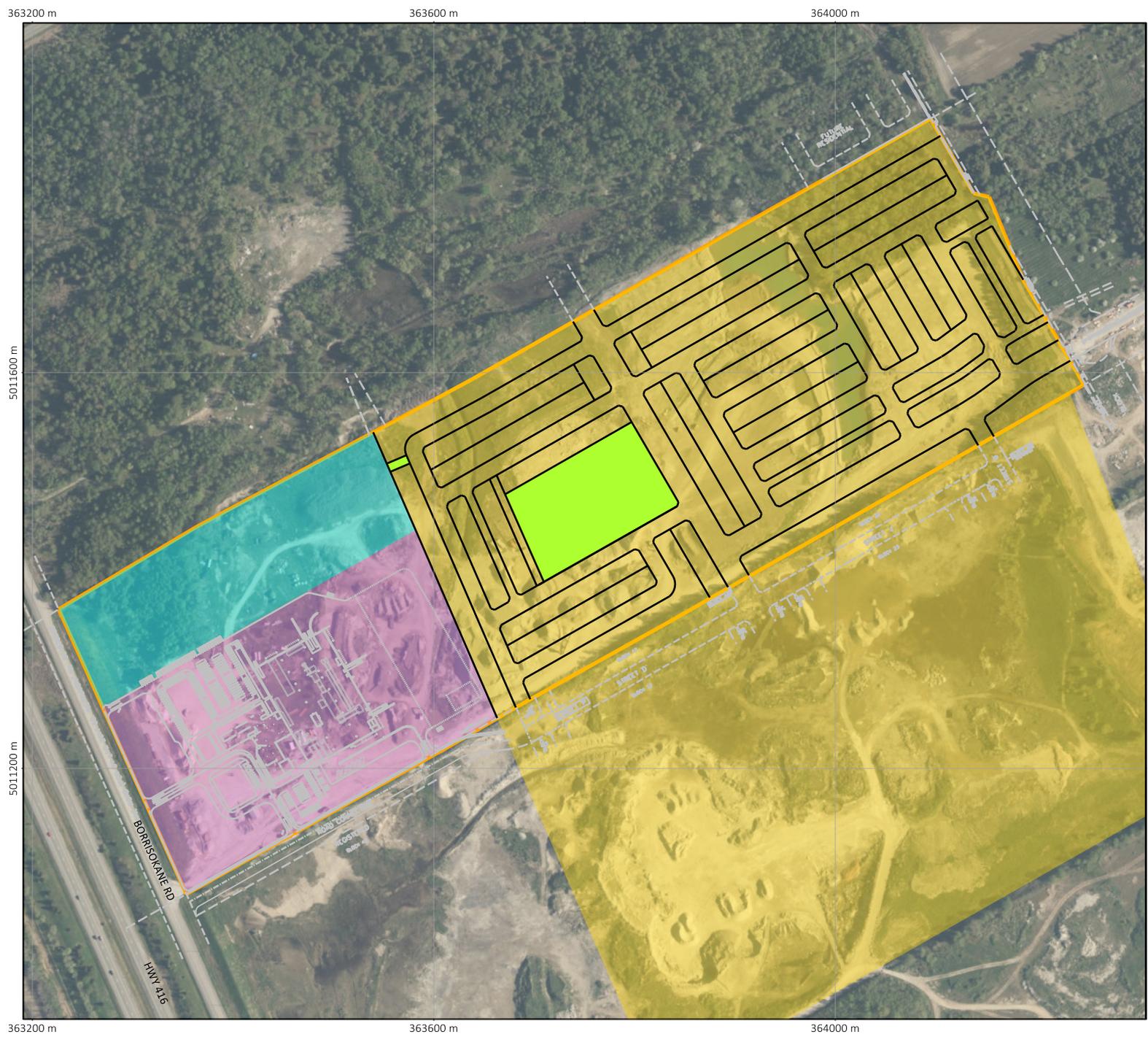


Figure 2 Existing Site Conditions

Legend

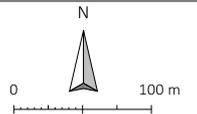
— Property Line

General Areas of Development

- ABIC Site (Commercial)
- Residential (The Ridge)
- SWM (for residential)

Proposed Development

- Block Plan
- Other
- Park



Project: The Ridge
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6.0 IMPACTS AND MITIGATION

6.1 Site Trees

The only trees remaining on or adjacent to the Site are those located within the remaining 0.25 ha patch of the FOD4 ecosite in the northeast corner. Those trees will be removed as part of the final site preparation in late 2020 or early 2021.

Please note that the City's acceptance of this report does not directly constitute permission to remove any trees. The remaining trees on the Site may only be removed once the City planner on the file has been notified of and provided permission for their removal.

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

As no trees are anticipated to remain on or near the site at the time of development, the following recommendations for mitigation measures are intended to minimize impacts to any new trees planted during the construction process:

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

Specific trees to be planted on the site will be identified in the landscape plan for the development. Tree planting is to be at a density of, at minimum, one tree per house lot, with additional tree plantings in park and SWM areas. Tree species to be planted must native to the Ottawa area. Recommended tree species to consider in the landscaping plan include Red Maple, White Pine (*Pinus strobus*), White Spruce, White Birch, Black Cherry, and Eastern White Cedar. Bur Oak may be considered where spacing allows for future showcase trees. Common Juniper (*Juniperus communis*), Maple-leaf Viburnum (*Viburnum acerifolium*), Nannyberry



(*Viburnum lentago*), Serviceberry (*Amelanchier* sp.) and Northern Bush-honeysuckle (*Diervilla lonicera*) may be considered as appropriate shrub species.

6.2 Species at Risk

The Site and the areas surrounding the Site have been fully cleared and are under active groundworks. It is very unlikely SAR or habitat suitable for SAR is present on the Site. Development of the site is unlikely to negatively impact SAR or SAR habitat.

A request to review the final version of the management plans, and the actions taken under those management plans to remove SAR habitat, was submitted to Carolyn Hann (MECP Biologist, Kemptville District) on April 23, 2020 (Appendix A-2). The response from the MECP will be provided to the City upon receipt. The MNRF has accepted the clearing and regrading of the site as compliant with the approved closure plan (Appendix A-3)

As no SAR habitat remains on or adjacent to the Site, no SAR specific mitigation is required at this time.

7.0 CLOSURE

This report was prepared for exclusive use by Caivan Greenbank Inc and may be distributed only by, or as per the direction of, Caivan Greenbank Inc. Questions relating to the data and interpretation can be addressed to the undersigned.

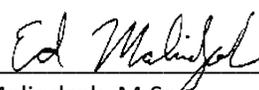
Respectfully submitted,

KILGOUR & ASSOCIATES LTD.



Anthony Francis Ph.D.
Project Director/Senior Ecologist

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8.0 LITERATURE CITED

City of Ottawa. 2020. GeoOttawa Online Database accessed March 6, 2020 URL:
<http://maps.ottawa.ca/geoOttawa/>

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Kilgour & Associates Ltd. (KAL). 2019b. Mitigation Plan for Bank and Barn Swallows at the Brazeau Sandpit, Ottawa. Report Date: December 12, 2019.

Lee, H., W.Bakowsky, J.Riley, J.Bowles, M.Puddister, P.Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario, First Approximation and Its Application. SCSS Field Guide FG-O2 September 1998. Ontario.

Marshall. I. B., Dumanski, J., Huffman, E. C. And Lajoie, P. G. 1979. Soils, capability and land use in the Ottawa urban fringe. Ontario Soil Survey Report 47. Agriculture Canada, Ottawa, Ont.

Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch, North Bay, ON.



Appendix A – Agency Communications



Communication List

- 1) Confirmation of the scope of the EIS and requirements for consideration of SAR
- 2) Correspondence to MECP to requesting confirmation of the acceptability of the pit mitigation plans
- 3) Letter from the MNRF regarding the pit closure and acceptance of site regrading





Anthony Francis <afrancis@kilgourassociates.com>

Re: Drummond

1 message

Rehman, Sami <Sami.Rehman@ottawa.ca>
To: Anthony Francis <afrancis@kilgourassociates.com>
Cc: "Moore, Sean" <Sean.Moore@ottawa.ca>

Thu, May 21, 2020 at 1:32 PM

Hi Tony,

Thanks for following up our discussion with this summary email. I would add that we would like to see the MNRF's approval of the rehabilitation plan. I suspect you may already have that but given the unique process involved with this project, it would be useful to have in our files.

Thanks and happy to discuss further. Best regards, sami

From: Anthony Francis <afrancis@kilgourassociates.com>
Sent: May 21, 2020 1:14 PM
To: Rehman, Sami <Sami.Rehman@ottawa.ca>
Subject: Drummond

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Hi Sami,

Thanks for chatting with me again yesterday regarding the direction and scope of the EIS for the Drummond Site (i.e. 3713 Borrisokane). The point of the EIS is to address SAR (previously present) on the site (i.e. Barn Swallow and Bank Swallow), knowing that the habitat has now been fully removed as part of the pit closure. As there is no remaining habitat, the focus instead is to confirm that the MECP accepts the process by which the habitat was removed... correct?

We have the Notices of Activity filed with the MNRF for the Drummond Pit and the Brazaeu Pit immediately to the south. We developed the SAR management plans in consultation with Carolyn Hann at the MECP and have sent her the final versions to review to confirm that they are acceptable. We will send you her response as soon as she provides it.

Best regards

Tony

Anthony Francis, PhD
Senior Ecologist

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5/21/2020

Kilgour & Associates Mail - Re: Drummond

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,

April 23, 2020

Our File: CAIV1013

Carolyn Hann
Management Biologist
Permissions and Compliance Section
Ontario Ministry of Environment, Conservation and Parks
10-1 Campus Drive
Kemptville, ON
K0G 1J0

**Reference: Species at risk review for Caivan projects at 3713 and 3809
Borrisokane Road**

Ms. Hann:

This letter, provided by Kilgour & Associates Ltd. (KAL), is intended to address species at risk (SAR) considerations associated with proposed residential and commercial development projects by Caivan Communities on lands that, until very recently, had been active sand and gravel pits. Caivan Communities is proposing to build “The Ridge” residential community on the eastern half of two properties located at 3713 and 3809 Borrisokane Road (the Drummond and Brazeau Pits respectively). They propose to develop the south west corner Drummond Pit as a commercial centre.

The purpose of this type of letter would normally be to provide you with the list of species that we have identified as potentially occurring on or adjacent to the site and proposed mitigation measures relevant to any such species, *prior* to project-related work commencing. In this instance, however, the proposed project area is already subject to significant active construction activity, though this work is associated with the closure of the two pits preceding the proposed development work. That construction work – the full regrading and clearing of the entire site – is being completed in accordance with the management plans for each pit, developed per the Notices of Activity filed with the Ministry of Natural Resources and Forestry (MNRF) as part of their required closure. We have previously discussed the various elements of the mitigations in the management plans with you as they were developed and implemented, but those plans are now attached in their entirety in Appendix 1 for your review.

The two aggregate operations filed Notices of Activity with the MNRF under O.Reg 242/08 Section 23.14 in the fall of 2019 as previous studies on the sites had identified the presence



of two SAR – Barn Swallows and Bank Swallows. Both species had been observed making opportunistic use of anthropogenically generated features on the site. Barn Swallows had been found to be nesting in maintenance-shed-type structures erected from piles of Sea Cans. Bank Swallows had been found to be nesting in vertical sand banks developed as extraction faces at the site. In consideration of these species, a Notice of Activity for the Drummond Pit was submitted on October 21, 2019 (Confirmation ID M-102-8330859947) and for the Brazeau Pit on October 4, 2019 (Confirmation ID M-102-5329320036).

Filing the Notices of Activity exempted the pits from Sections 9 and 10 of the ESA (i.e., prohibitions on impacting individuals or habitat), but required each pit operator to develop management plans for their respective sites that include best management practices (BMPs) to minimize the impact of mining activities on the identified species, while the pits remained open. Upon the closure of the pits, the management plans allow for the restoration/re-grading of the sites including the removal of habitat features that were created directly (albeit unintentionally) by or in support of mining operations (i.e. the vertical faces of sand at extraction points and the operational buildings/structures on the site). The removal such features is an important element of pit closure for public safety and was a requirement of the pit closure plans.

The management plans did not call for any specific re-creation of habitat elements for Bank Swallows. The only requirement was that nest-supporting faces be removed outside of nesting season. The pits were visited by a KAL biologist on April 10, 2020. Site regrading was found to be actively underway and not vertical sand faces remained (see site pictures in Appendix 2).

The management plans did call for the creation of new nesting structures for Barn Swallows. The Sea Can maintenance sheds have been disassembled (Photo D1, Appendix 2). A new nest structure has been erected on land owned by the RVCA at 3889 Rideau Valley Drive (Appendix 3). Monitoring reports for this structure will be duly filed with the MNRF later this year, per the management plans.

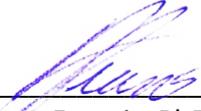
With no natural habitat currently left on the two properties, and the site fully under active construction, it is our consideration that development of the site for residential and commercial usage immediately following the completion of the site regrading would not impose any negative impacts on SAR or their habitat.

We look forward to any comments you may have. Questions relating to the contents of this letter can be addressed to the undersigned.



Respectfully submitted,

KILGOUR & ASSOCIATES LTD.



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Project Lead

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Appendix 1 – Management Plans for the Drummond and Brazeau Pits

Appendix 2 – Site photos from April 10, 2020

Appendix 3 – Email regarding Barn Swallow compensation structure



**Ministry of Natural Resources &
Forestry**
Kemptville District

10-1 Campus Drive
Kemptville ON K0G 1J0
Tel: 613 258-8204

**Ministère des Richesses naturelles
et des Forêts**
District de Kemptville

10-1 Campus Drive
Kemptville ON K0G 1J0
Tél: 613 258-8204



February 12, 2020

George W. Drummond Ltd.
30 Rideau Heights Drive
Nepean, ON K2E 7A6

Via Email: sdrummond@drummonds.com

Attn: Mr. Scott Drummond

Subject: **Surrender of Aggregate Resources Act Licence No. 4074**
'Drummond Costello Pit'
Pt. Lot 9, Concession 3RF
Former Geographic Township of Nepean, City of Ottawa

Dear Mr. Drummond,

Further to your request, a final inspection of this licensed property was completed on January 17, 2020. It was determined during this inspection that the final rehabilitation grades have been achieved for this property.

Further to our discussion, and in consideration of both a conditional sale agreement for the land and the development potential of the property, the requirement to topsoil and seed the site is hereby waived. You hereby accept any and all liability for the site in its current condition.

Due to the fact that the rehabilitation has been ongoing for several years, and that there has been no recent aggregate production, the surrender will be backdated to December 31, 2019 to align with the reporting requirements of The Ontario Aggregate Resources Corporation.

The licence is hereby surrendered, and you have no further obligations under the Aggregate Resources Act for this property. The file for this licence will be closed and archived. Please remove the ARA signage from the entrance to the site.

Thank you for your effort and cooperation in the rehabilitation of this site.

Sincerely,

A handwritten signature in blue ink that reads "Christopher M. Bierman".

Christopher M. Bierman

Aggregate Resources Technical Specialist
Kemptville District – City of Ottawa & East Lanark Areas
T: 613-258-8264 | E: christopher.bierman@ontario.ca

cc. Sean Moore, Development Review Services - City of Ottawa
John DeRick - The Ontario Aggregate Resources Corporation

Appendix B – Existing Site Conditions

Images and existing habitat review from
the Site visit to the former Drummond
and Brazeau Pit sites on April 10, 2020



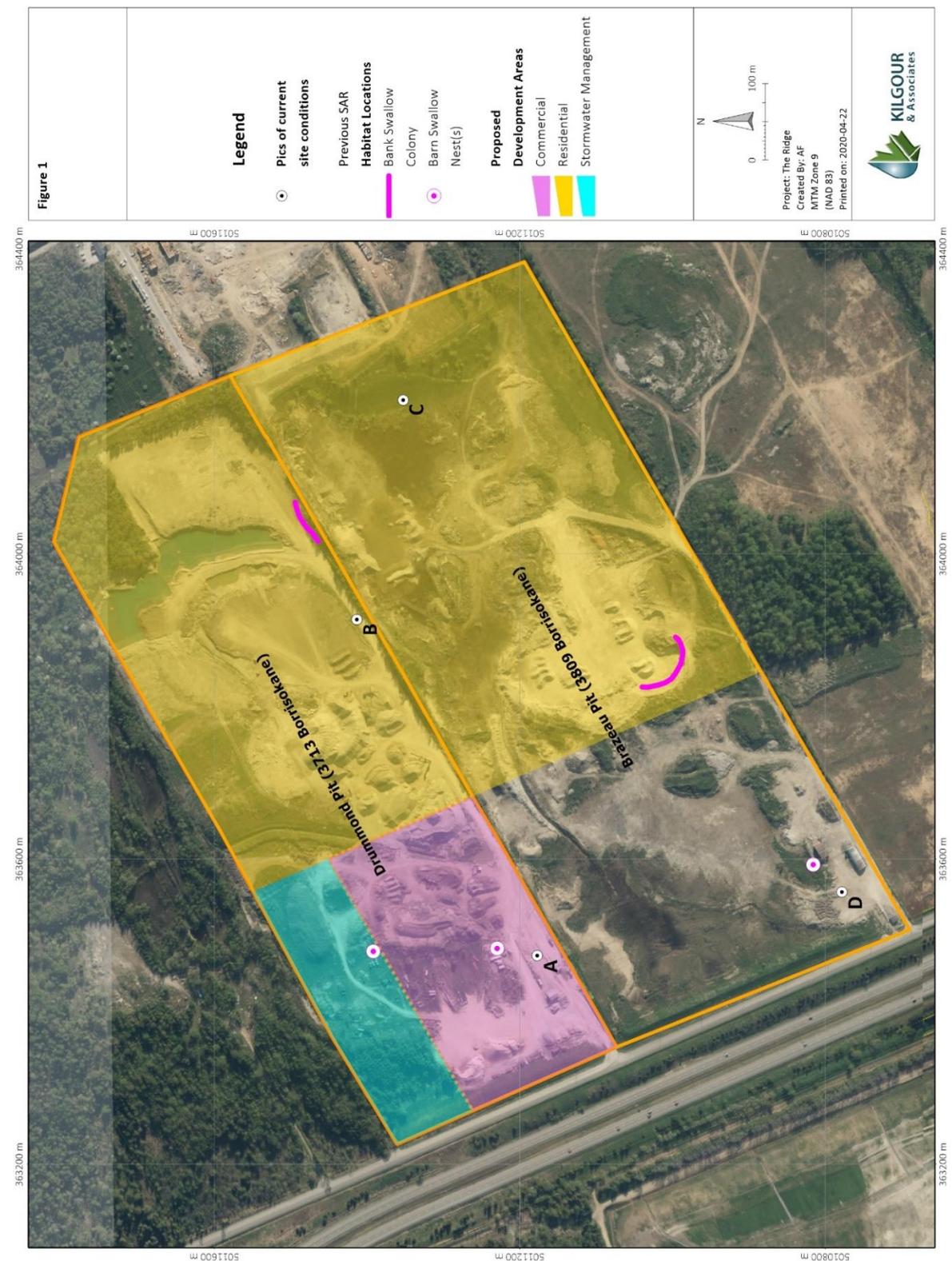


Figure 1. Map of area showing locations of SAR bird nests prior to pit closure. The air photo background is from 2017. Vegetation has now been removed from the site and from lands north of it. Coloured areas indicate proposed development. The southwest corner of the Brazeau pit is not currently subject to any development applications.



Photo Location A

Three photos from along the property line between the two former pit sites, near Borrisokane Rd. (see Figure 1 for location).



Photo A1. Southward across the Brazeau site. The Quonset hut and gatehouse (in the distance) of the former pit operation are still present in the southwest corner of the site. They are being used as staging/work areas for the site construction. Both structures are located more than 200 m away from any proposed development.



Photo A2. Westward view along the former access road for the Drummond site (following the concrete barriers). The ground along the south (right) side of the road had previously been significantly higher towards the rear of the site, such that a northward facing ridge was present there that supported a Barn Swallow colony (see Figure 1). That ridge is now gone. The south-facing slopes in the foreground have been flattened to shallow angles.





Photo A3. Northward across the west end of the Drummond Site. Trees in the distance are part of the Cambrian Woods, located 300 m beyond the north property line of the Drummond site. The Drummond site is being regraded with the pit closures. The intervening land is owned and has been cleared by other land development companies and is currently being prepared for construction.

Photo Location B

Three photos from along the property line between the two former pit sites, towards the rear (east end) of area (see Figure 1 for location).



Photo B1. View north-northeastward across the eastern end of the Drummond site.





Photo B2. Eastward toward the rear of the sites. A vertical ridge previously located just to the right-of-center has been completely levelled. The shallow slopes in the distance mark the easterly end of the site.



Photo B3. Southward view across the east end of the Brazeau site. The small slopes along the southern lot line are new features temporarily created as material is moved around the site. The slopes there are being maintained at a low angle and will disappear as fill is added to the foreground.



Photo Location C

One photo from the central rear portion of the former Brazeau pit (see Figure 1 for location).



Photo C1. Westward view. The entire site is generally flat with no remaining prominent vertical ridges. No structures remain on site except for in the southwest most corner (left side of photo). The trees in the distance are located on the other side of Borrisokane Road. No vegetation currently remains.

Photo Location D

One photo from the southwest corner of the property (see Figure 1 for location).



Photo D1. Remaining Sea Cans on site prepared for removal from the area. These units had previously been stacked in sets of six, with two stacked pairs forming right and left walls, and the final two cans sideways on top forming a roof. These large “shed” type structures had provided ideal nesting supports for Barn Swallows. The “sheds” have all been disassembled.



Appendix C – TCR



The Tree Conservation Report

Required elements are included within the EIS Report and/or specified below

1. An inventory of the trees currently on site, including species composition, size, age, and condition and health of the trees.
2. A description of the environmental value of the trees within the site and their ecological function, including their context within the surrounding landscape.

- *Provided in Section 2.4*

- *Provided in Section 2.4*

The following natural elements should be considered:

- a) Surface water features, including wetlands and watercourses;
 - *None present*
 - b) Steep slopes, including valleys and escarpments;
 - *None present*
 - c) Valued woodlots designated as Urban Natural Features or Natural Environment Areas, areas evaluated in the Urban Natural Areas Environmental Evaluation Study (UNAEES), or other areas that meet the criteria used in the UNAEES;
 - *None present within 120 m of the Site*
 - d) In the rural area, identify the presence of significant woodlands, which are woodlands that contain mature stands of trees 80 years or older, have interior forest habitat more than 100 metres from forest edge, and are adjacent to a surface water feature;
 - *None present within 120 m of the Site*
 - e) Greenspace linkages as identified in the Greenspace Master Plan or as may occur in the larger landscape;
 - *None present*
 - f) High quality, specimen trees;
 - *None present*
 - g) The presence of rare communities or other unique ecological features, as may be identified in available data sources including the Natural Environment System Strategy, Natural Heritage Information Centre, Ecological Land Classification, or other MNR data;
 - *None present 120 m of the Site*
 - h) Species at Risk and their habitat.
 - *None present*
3. Map #1 Current Vegetation - A current aerial photograph of the site (available through the City's e-map tool) showing the current vegetation mapped as an overlay.
 - *Provided by Figure 2 in the EIS*



This map should be at the same scale as the draft plan of subdivision or site plan. The following elements must be included:

- a) The property line;
 - *Included*
 - b) The vegetation communities;
 - *Included (to the extent present)*
 - c) Single trees and small clumps of trees;
 - *Included (small remnant portion of FOD4 ecosite)*
 - d) Existing buildings and impervious surfaces (e.g. driveways and parking lots);
 - *None present*
 - e) Surface water features;
 - *None present*
 - f) Steep slopes;
 - *None present*
 - g) Locations of wetlands, valued woodlots, high quality trees, rare communities, and Species at Risk, including their habitat;
 - *None present*
 - h) Greenspace linkages (for larger scale linkages, this can also be shown on a separate map);
 - *None present*
 - i) Names of surrounding roads;
 - *Included*
 - j) Standard mapping elements such as a north arrow, scale, date, and legend.
 - *Included*
4. Map #2 Proposed Development and Conserved Vegetation – The same aerial photograph of the site as in Map #1 showing the proposed development or the proposed plan of undertaking (A plan of undertaking could include a plan for investigative site works or a plan for sustainable forest management on the site.) as an overlay.
- *Provided by Figure # in the EIS*

This should be at the same scale as the draft plan of subdivision or site plan. The following elements must be included:

- k) Proposed development (including; roads, infrastructure, stormwater management, lot lines, etc.) or the proposed plan of undertaking;
 - *Included (to the extent available within the community concept – not yet at detailed-design stage)*
- l) The property line;



- *Included*
- m) Existing buildings and impervious surfaces (e.g. driveways and parking lots);
- *None present*
- n) Treed areas identified for protection;
- *None present*
- o) Surface water features;
- *None present*
- p) Locations of wetlands, valued woodlots, high quality trees, rare communities, and Species at Risk;
- *None present*
- q) Remaining greenspace linkages (for larger scale linkages, this can also be shown on a separate map);
- *None present*
- r) Names of surrounding roads;
- *Included*
- s) Standard mapping elements such as a north arrow, scale, date, and legend.
- *Included*
5. Identify what vegetation will be retained and why it has been chosen for retention. If there are several vegetated areas on site or a large area, it should be identified how the areas are prioritized for retention.
- *Per Section 5.0 of the EIS, no existing vegetation will be retained and most has already been removed.*
6. An indication of how parkland dedication, road locations, infrastructure, stormwater management facilities, creative lot layouts, and design approaches can help to conserve vegetated areas, where feasible.
- *Per Section 5.0 of the EIS, no existing vegetation will remain, and most has already been removed. The area will include a park as identified with Figure 3 of the EIS though this feature will be established within an area that has already been fully cleared of vegetation.*
7. Describe the area and nature of vegetation loss on the site and how it will affect the natural systems on site and on the surrounding landscape.
- *Per Section 4.1 of the EIS, the site was already cleared prior to the current project and no natural connection remains to the surrounding landscape.*
8. The impact of the development on the conserved portions of vegetation should be examined and outlined, including and not limited to the impacts of grade change, changes to drainage patterns, effects of impervious surfaces and new buildings, and changes in the water table.
- *This will be completed as part of the detailed design for the community*



9. Describe mitigation measures that will be used to promote the long-term survival of retained trees and woodlands (e.g. buffers for protection, fencing, single loaded roads along forest stands, edge preparation).

- *Per Section 5.0 of the EIS, no existing vegetation will be retained and most has already been removed.*

10. Outline the protection measures during construction for trees and woodlands being retained that may be impacted by the construction. Where feasible, show that efforts will be made to protect trees on adjacent property that may be impacted by the construction. Use the following protection measures for retained trees:

- *The following standard measures were included in Section 6.1 of the EIS*
 - erect a fence at the critical root zone ((CRZ) is established as being 10 cm from the trunk of a tree for every cm of trunk DBH. The CRZ is calculated as DBH x 10 cm.) of trees;*
 - do not place any material or equipment within the CRZ of the tree;*
 - do not attach any signs, notices or posters to any tree;*
 - do not raise or lower the existing grade within the CRZ without approval;*
 - tunnel or bore when digging within the CRZ of a tree;*
 - do not damage the root system, trunk or branches of any tree;*
 - ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.*

11. Where there is substantial alteration of the tree cover on the site, consider the impact on fauna or rare species during and after construction and propose mitigation measures, using the City's Protocol for Wildlife Protection during Construction. Indicate how this is meeting any existing legislation on species protection.

- *Per Section 4.1 of the EIS, the substantial alteration of the tree cover on the site was completed prior to the current project and no natural connection remains to the surrounding landscape.*

12. Include tree planting recommendations for the site which will direct the development of the Landscape Plan, including the following recommendations:

- *The landscape plane will be developed as part of the detailed design. The EIS, however, addresses the following:*
 - The species to be used for the given site conditions;*
 - The required use of native tree species;*
 - Where tree planting is required to provide protection for watercourses and steep slopes... **not applicable as there are no watercourses;***
 - How the proposed tree planting will help offset the vegetation loss on site... **not applicable as the site has already been cleared.***

13. Other Required Information :



- i. The name, address and telephone number of the owner.
 - *Provided in Section 2.1 of the EIS*
- ii. The name, address and telephone number of the applicant, if different from the owner and the owner's written consent to the application.
 - *Not applicable*
- iii. The name, address and telephone number of the professional hired by the owner or applicant to complete the report.
 - *Provided in Section 7.0 of the EIS report*
- iv. The name, address and telephone number of the contractor implementing the tree and forest conservation plan, if applicable.
 - *Not applicable.*
- v. The municipal address and legal description of the land, upon which the trees are proposed to be protected, injured or destroyed.
 - *Provided in Section 2.2 of the EIS*
- vi. Confirmation of existing Official Plan and zoning designations, and the status of any planning applications on the property.
 - *Provided in Section 2.3 of the EIS*
- vii. The purpose for which the Tree Conservation Report is being prepared.
 - *Provided in Section 1.0 of the EIS*
- viii. A schedule of the proposed works, including the start and end dates and the construction period.
 - *Provided in Section 5.0 of the EIS to the extent available within the community concept – not yet at the detailed design stage*
- ix. Confirmation of any other applications affecting the land, upon which the trees are to be protected, injured or destroyed.
 - *Per Section 4.1 of the EIS, the substantial alteration of the tree cover on the Site was completed prior to the current project. That site alteration, however, was completed in accordance with the closure plan for the Drummond Pit as confirmed by the MNFR (Appendix A-3).*



Appendix D – Management Plans for the Drummond and Brazeau Pits



Appendix E – Barn Swallow Nest Compensation - RVCA



Mitigation Plan for Bank and Barn Swallows at the Drummond Sandpit, Ottawa

December 12, 2019

KILGOUR & ASSOCIATES LTD.
www.kilgourassociates.com
Project Number: CAIV836



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1.0 INTRODUCTION

The Drummond Sandpit, located in the southwest of the City of Ottawa, operates as an aggregate extraction operation under licence from the Ministry of Natural Resources and Forestry (MNRF) under the *Aggregate Resources Act*. During the summer of 2019, two bird species — Bank Swallow (*Riparia riparia*) and Barn Swallow (*Hirundo rustica*) — listed as at-risk and protected under the Ontario *Endangered Species Act* (ESA; 2007) were observed to be nesting on the Drummond Site, making the pit *de facto* habitat. Sections 9 and 10 of the ESA prohibit harming individuals or habitat respectively of species listed under the act. Under Section 23.14 of Ontario Regulation 242/08, however, a pit may continue operation, and will be exempted from Sections 9 and 10 of the ESA following the filing of a Notice of Activity, so long as the pit operators follow a series of prescribed conditions. Generally, those conditions mandate a series of actions and mitigations to be applied throughout operations of the pit that will limit, to the fullest extent possible, the impacts of those operations on the species and/or their habitat. A key element of these conditions is the development of a mitigation plan that clearly identifies the full set of mitigations to be employed throughout the operational life of the pit.

This “Bank Swallow (*Riparia riparia*) and Barn Swallow (*Hirundo rustica*) Mitigation Plan” has been written by Kilgour & Associates Ltd. (KAL) on behalf of Caivan Communities (Caivan) in support of operations at the Drummond Sandpit, has been prepared in accordance with requirements under Section 23.14 of Ontario Regulation 242/08, filed under the *Endangered Species Act* (ESA; 2007).

Ontario Regulation 242/08 specifies that the following conditions must be met concerning the mitigation plan:

- this mitigation plan must be complied with for as long as the Drummond Sandpit is in operation and likely to adversely affect Banks Swallows;
- a copy of the mitigation plan must be retained for five years after the cessation of operations at the Drummond Sandpit;
- the mitigation plan must be updated by Caivan at a minimum of once every five years to include information obtained while carrying out monitoring requirements; and,
- Caivan must provide a copy of the mitigation plan to the MNRF within 14 days of receiving a request for it.

The Drummond Sandpit is located on a 37.8 ha parcel at 3809 Borrisokane Rd. (Nepean Township; Con 3 RF W Pt Lot 8; RP5R-13403 Parts 2 and 3; Less RP 5R-13374 Parts 15 & 16; PIN: 045920037; Figure 1) and is owned by Caivan. Both Bank and Barn Swallows were first observed on-site on July 4, 2019. On that date, Bank Swallows were noted actively establishing a colony in one of the vertical sand excavation areas near the center of the site. This area constitutes the Bank Swallow breeding habitat in part of this mitigation plan (Figure 2). A thorough search of the site also found six active Barn Swallow nests that had been established in a pile of shipping containers located in the southwestern corner of the property. The

shipping containers constitute the breeding habitat for this species on site. Figure 2 illustrates the locations of Bank and Barn Swallow nests on site as well as their associated foraging areas based on their Category 3 habitats defined by the MNRF (2015) and the Ministry of Environment, Conservation and Parks (MECP; 2019), respectively.

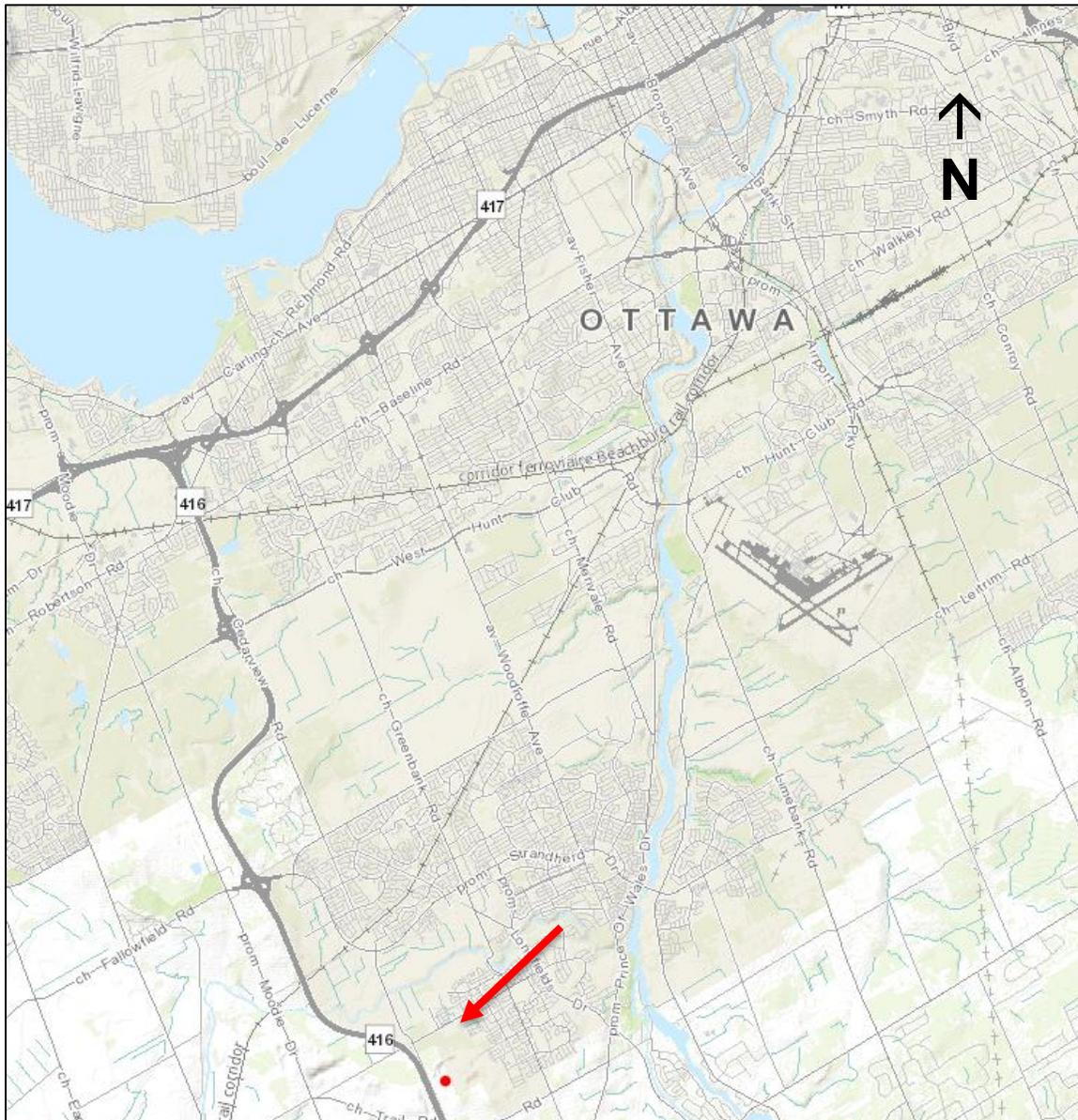


Figure 1. Map showing the location of the Drummond Sandpit in Ottawa, Ontario.

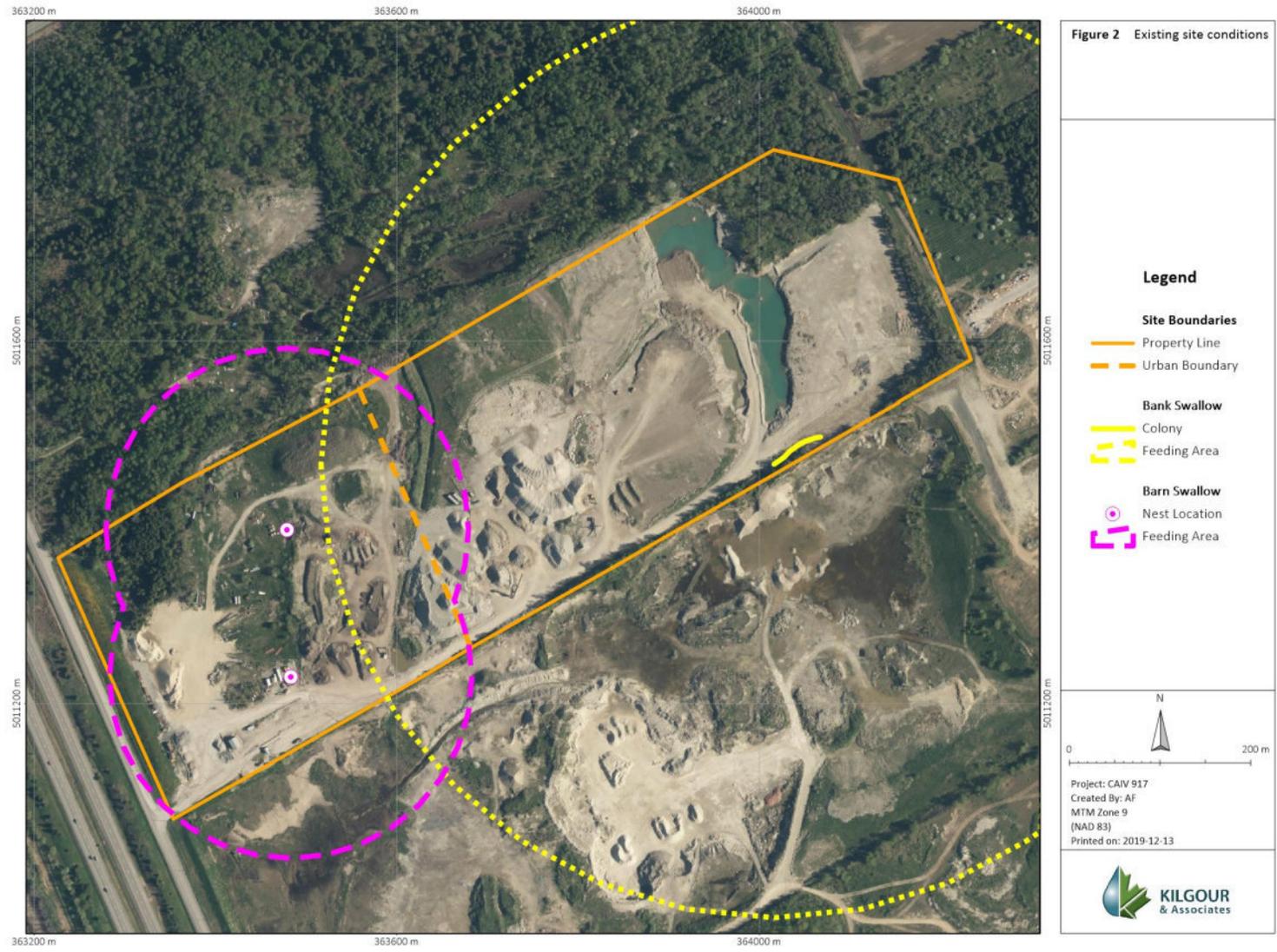


Figure 2. Map showing the location of Bank and Barn Swallow nests and associated foraging areas as of July 2019.

2.0 SPECIES INFORMATION

Operations at the Drummond Sandpit have the potential to impact both Bank Swallows and Barn Swallows that nest on site.

2.1 Bank Swallow

The Bank Swallow is a globally distributed, small songbird. In the Americas, Bank Swallows overwinter in South and Central America and migrate to the northern US and Canada in the spring to breed (COSEWIC, 2013). They have been documented throughout Ontario, with the areas of highest abundance occurring along the shores of the lower Great Lakes and the St. Lawrence Valley (COSEWIC, 2013). In Ontario, Bank Swallows breed in a variety of natural and anthropogenic habitats, including lake bluffs, stream and riverbanks, road cuts, sand/soil piles with vertical surfaces, and aggregate pits. Nests are generally built in a vertical or near-vertical bank and are typically located near open foraging sites such as rivers, lakes, grasslands, agricultural fields, wetlands and riparian woods (Cadman et al., 2007; COSEWIC, 2013). Preferred banks are vertical (90°) or slightly inclined to slightly reclined (i.e., 75° to 105°) although angles from 70° to 110° may be used (MNRF, 2015).

Bank Swallows are generally tolerant of human activity in the broader vicinity of the total range of their breeding habitat area (i.e., within 500 m of the outer edge of the location of the breeding colony; MNRF, 2015), but are quite sensitive to disturbance of or near to their specific nesting colony area (i.e., within 50 m in front of the breeding colony bank face).

In anthropogenic sites such as sand and gravel pits, Bank Swallows use vertical faces that are maintained by human activities. Without active maintenance, the faces often slump within a few years and become unsuitable for nesting. In natural habitats, mechanisms such as erosion and undercutting of stream banks maintain vertical faces suitable for Bank Swallow nesting (MNRF, 2015). Thus, nesting colony areas naturally change somewhat from year to year. Swallows are adapted to the unstable and ephemeral nature of their nesting sites by remaining flexible in the specific colony site they select, while maintaining fidelity to a general breeding area, usually within a few kilometres of the original colony site (MNRF, 2015).

Foraging habitat generally extends out approximately 500 m from the outer edge of the colony. Foraging habitat includes rivers, lakes, wetlands, grasslands, and other open areas that provide good sources of flying insects. Forested areas, however, provide less foraging potential and tend to be avoided (MNRF, 2015). Bank Swallows have a very high tolerance to alteration for disturbance within their foraging habitat (i.e., 50 m to 500 m from the colony) so long as it generally remains open.

2.2 Barn Swallow

The Barn Swallow is one of the most globally widespread and common land-bird species. In Canada, it is known to breed in all provinces and territories and is still relatively common throughout Ontario. However, like many other species of birds that specialize on a diet of flying insects, this species began experiencing significant declines in the mid to late 1980s in Canada.

Barn Swallow habitat is closely associated with human rural settlements. Before European colonization, Barn Swallows nested mostly in caves, holes, crevices, and ledges in cliff faces. Following European settlement, they shifted largely to creating their mud-cup nests in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts. Nests sites generally occur in proximity to feeding habitat. Barn Swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared right-of-ways, cottage areas and farmyards, islands, wetlands, and subarctic tundra. The open lands of the Drummond Sandpit provide suitable foraging space though suitable structures on which to build nests are highly limited on the site.

Barn Swallows are generally tolerant of human activity but are quite sensitive to disturbance of or near to their nests (MNRF, 2014). The birds actively defend the area within 5 m of the nest itself. Open areas between 5 m and 200 m of the nest constitute feeding habitat. In the feeding area, the birds, as aerial insectivores, tend to feed between 1 and 10 m above ground.

2.3 Species Protection

Both Bank and Barn Swallow populations are on the decline, with factors such as climate change, habitat loss and fragmentation, decreases in prey items, increases in predation and susceptibility to parasites, road mortality, and incidental take. Both species have consequently been listed as threatened and are thus afforded protection under the ESA (Ontario, 2007). Under the ESA and Ontario Regulation 242/08 made under the ESA, however, activities affecting Bank and Barn Swallows that would otherwise be prohibited by the *Act* may be authorized or exempted from the prohibitions provided the conditions of the relevant authorization or exemption are met (e.g., an ‘overall benefit permit’; Ontario, 2015). These conditions generally relate to minimizing impacts to species at risk or their habitat, and to providing benefits for species at risk.

In this instance, operations at the Drummond Sandpit, which may impact both swallow species, are exempted from the ESA following Caivan’s submission of a Notice of Activity Form to the MECP identifying their presence within an operational sandpit in the fall of 2019.

3.0 OPERATIONS AND MITIGATION MEASURES

Excavation at the Drummond Sandpit site began prior to 1976 and well before to the enactment of the ESA. Bank Swallows were listed on Schedule 1 of the ESA in 2007 and listed as threatened in June of 2014. Barn Swallows were listed as threatened in January of 2012. Both Bank and Barn Swallows were first observed on site on July 4, 2019. Neither species had previously been observed on site though both were known to occur in the broader vicinity. A Notice of Activity Form was duly filed with the MECP on October 21, 2019 (Confirmation ID: M-102-8330859947) to advise them of both the new presence of the species on site, and of the potential for impacts to the species from ongoing site activities.

The mitigations provided in this management plan are consistent with, and cover all required elements of, Ontario Regulation 242/08, Section 23.14, Subsections (5) through (9), and provide instructions to complete an annual monitoring report per Subsection (10). So long as all of the elements of this plan are

duly implemented so as to mitigate and limit the potential for harm to the two species, and a Notice of Activity has been filed accordingly, clause 9 (1) (a) and subsection 10 (1) of ESA (i.e., prohibitions on impacting individual or their habitat) do not apply to the site or mine-related activities on it.

The major focus of this mitigation plan is the establishment, protection and maintenance of a suitable breeding colony area for Bank Swallows, and the protection of the nesting site(s) of Barn Swallows. The mitigation plan establishes a protected buffer around the current Bank Swallow breeding colony area and details the required maintenance schedule and procedures necessary to ensure the continued utility of the area for colony nesting. As consistent with the biology of the species, this area may, on occasion, be relocated and re-established (i.e. nesting areas may be excavated, moved, or otherwise damaged), though only outside of the nesting season. The mitigation plan also identifies how the broader area outside of the specifically protected nesting colony may be maintained to limit the potential for attracting birds to unsafe, active mining areas, and other procedures to mitigate potential impacts.

Similarly, Barn Swallow nests, or the structures supporting them, may be moved or removed, outside of the nesting season, if required, so long as suitable alternatives are provided prior to the return of the species the following year.

3.1 Bank Swallow Habitat Mitigation

A reserved area for a Bank Swallow breeding colony shall be protected and maintained during the operation of the Drummond Sandpit. Figure 3 indicates the location of the reserved breeding colony area in 2019, though the reserved area may be subsequently moved. The reserved colony area, as currently situated, consists of vertical cliff faces contoured to between 75° and 105° plus a 50 m buffer within each bank face to protect the areas that Bank Swallows use to enter/exit their burrows (MNRF, 2015). Bank Swallow foraging areas within 500 m of the nesting colony area are also protected from development (i.e., must remain open). These include open habitat such as wetlands, rivers, lakes, grasslands, and open fields.

The reserved breeding habitat must be maintained at a sufficient size so that excavation activities will not alter the stability of the Bank Swallow colony (MNRF, 2015). The current (i.e. in 2019) area of reserved habitat in the Drummond Sandpit is 100 m long and with a 50 m buffer projecting outward from the cliff face, equaling approximately 0.7 ha in size. Note that the cliff face here is, and should be, curved such that the sides of the breeding colony habitat are, to some extent, naturally shielded from louder activity in other portions of the pit.

3.1.1 Breeding Colony Protection

The area within 50 m of the reserved breeding habitat cliff face shall be cordoned off with signs warning personnel to keep out of the area to avoid disturbance to Bank Swallows (see below for more details on signage). This 50 m buffer is protected to allow for unobstructed access of Bank Swallows to their burrows.

Only personnel trained in the recognition of Bank Swallows shall be allowed access into the area within 50 m of the burrows. Moreover, while working in this area personnel should be aware of the behaviour

of Bank Swallows in the nearby colony to determine if they are showing signs of stress and perceiving the work as harassment. All visitors to the site must be made aware of the presence of Bank Swallows on the site and the protections applied to the species.

3.1.2 Signage

Signs must be created and used to cordon off the protected breeding colony and should warn personnel from entering an area set aside for Bank Swallow breeding colonies. The signage should also indicate that the species is a provincially protected and threatened species under the ESA and they shall not be harmed, harassed, or killed. Additional signage indicating that Bank Swallows are breeding in the area and that they are a threatened species should be placed at entrances to the Drummond Sandpit to inform all visitors to the site.

3.1.3 Breeding Colony Maintenance

If ongoing pit development does not require the relocation of a breeding colony area from a given location between two consecutive years, the breeding colony area shall be maintained during the winter (i.e. in the non-breeding season from September through April) as required, to keep cliff faces vertical between 75° and 105° and thereby attractive to Bank Swallows. The established area must be maintained to provide a minimum colony space 200 m in length with at least 10 m of vertical facing. The total vertical height of the colony area including toe slopes will be higher.



Figure 3. Map showing the areas to be maintained and protected as reserved habitat for swallows.

3.1.4 Breeding Colony Relocation

Bank Swallow habitat (e.g., riverbanks) may change substantially from year to year through natural erosion. Therefore, Bank Swallows have adapted to the unstable and ephemeral nature of their nesting sites by remaining flexible in the specific colony site they select, while maintaining fidelity to a general breeding area. Thus while birds generally return to within a few kilometres of the original colony site, the specific burrowing area frequently changes. For sand extraction operations, this means that colony areas may be mined once the birds have left for the season, so long as suitable new banks are in place somewhere nearby within the pit area by the following breeding season. Moreover, the species can be contained within newly created areas by carefully limiting the degree of slope within other active areas of the pit, so that activities in those areas may continue unimpeded by the species during the breeding season.

The reserved area in the Drummond Sandpit may be relocated for operational need. If this area needs to be relocated, the work must be completed in the non-breeding season for the species (September through April). The new reserved breeding colony area to be created will have the cliff faces contoured to vertical (75° to 105°), and a new 50 m buffer projecting outward from the cliff face shall be created and cordoned off with signage. The old colony area shall be contoured to remove vertical cliff faces during the non-breeding season making it less attractive to Bank Swallow.

3.1.5 Bank Swallow Encounters

If Bank Swallows are encountered in the Drummond Sandpit outside of the designated reserved colony area, then all work must cease in that area to provide the Bank Swallow with time to leave the area. If Bank Swallows do not leave the area in a reasonable amount of time, efforts must be taken to relocate the animals to a nearby suitably safe area. The relocation of Banks Swallows must only be carried out by a person who is knowledgeable about or has training in handling the species, and in consultation with the MECP.

3.1.6 Pit Closure

Per the site plans as approved by the MNR on June 17, 1992, excavation on the site is to proceed generally in an east to west direction with continual back filling of opened areas to re-establish final grades, such that that pit closure is completed in a progressive manner. Following the progression of excavation work, the land behind from which extraction has been completed is to be filled and leveled to an elevation of approximately 2 m above the water table.

While filling is to be completed progressively, it must not proceed so quickly as to eliminate all potential nesting space for Bank Swallows. For instance, at any time while the pit is active, some areas of vertical sand banks must be maintained within the areas of completed excavation and located a sufficiently safe distance from aggregate works activity to permit undisturbed nesting. Upon the final cessation of all excavation, however, (i.e., when the pit closes), it is recognized that all remaining areas of the site are to be levelled. As such, the property would no longer be supportive of Bank Swallow nesting, but this reshaping is necessary for post-closure human safety.

Importantly, all post-extraction regrading efforts must occur outside of the active nesting season (i.e., commence in September or later), and must be completed prior to any return of Bank Swallows in the spring (i.e., before April). Upon mine closure, no further monitoring of Bank Swallows is required as no individuals would be expected to be present.

3.2 Barn Swallow Nesting Sites

3.2.1 Nests and Feeding Areas

Active Barn Swallow nests are to be protected and maintained during the operation of the Drummond Sandpit. The birds will actively defend and will be perturbed by human activity within an area extending 5 m out from a nest. Signage must be posted near nests to notify all staff on site to remain more than 5 m from each nest. Barn Swallow foraging habitat extends over all open habitat (such as wetlands, rivers, lakes, grasslands, and open fields) within 200 m of a nest. Away from the nest, individual birds are generally very tolerant of human activity. Pit mining and other normal site activities may continue in areas between 5 and 200 m beyond the nest (i.e., within foraging habitat), so long as these areas are also protected from development (i.e., they must remain open and supportive of insect prey).

3.2.2 Nest Site Maintenance and Relocation

Barn Swallows may reuse mud nest cups from year to year. While active nests cannot be disturbed during the nesting season (April through September inclusive), both the nest cups and the structures supporting them should be fully retained to the extent possible outside of the nesting season.

If a nest supporting structure must be altered, such alteration should be planned to occur between October and March. If any alteration of a nest supporting structure is to be carried out during the Barn Swallow active season, Barn Swallows must be excluded from any part of the building or structure that is the object of the activity by doing the following *before* the Barn Swallow active season begins:

- i. remove from the building or structure any existing Barn Swallow nests that may be impacted by the activity, and
- ii. install tarps and netting or take other such measures to prevent barn swallow from accessing any part of the building or structure that is the object of the activity.

If, despite following the measures described above, Barn Swallows enter the building or structure to establish nests, any part of the activity that would harm or harass Barn Swallow while nesting must be suspended until the end of the Barn Swallow active season (i.e., April through September; note that Barn Swallows may have more than one brood per breeding season).

If any Barn Swallow nests are removed, damaged or destroyed, suitable replacement habitat must be created prior to the beginning of the following nesting season. For each nest that is removed, damaged or destroyed, one substitute nest cup must be installed:

- a) in the building or structure that was the object of the activity and in any area of the building or structure that continues to provide conditions that are suitable for barn swallow nesting,
- b) in any building or structure that exists within one kilometre of the building or structure that was the object of the activity if it provides conditions that are suitable for barn swallow nesting, or
- c) in any building or structure that is constructed within one kilometre of the building or structure that was the object of the activity, that meets the following requirements:
 - i. provide horizontal ledges or rough vertical surfaces with a sheltered overhang;
 - ii. provide surface areas suitable for nest attachment at a height that minimizes disturbances to barn swallow and in a location that minimizes predation;
 - iii. allow barn swallow to freely enter and exit nests;
 - iv. provide suitable areas to accommodate appropriate spacing between nests; and
 - v. be structurally sound and capable of providing habitat for barn swallow on a long-term basis.

3.2.3 Pit Closure

Upon closure of the sandpit, the area may still be suitable to support Barn Swallow feeding areas. If so, any existing nests, whether fully natural or created as part of the nest relocation plan, can continue to function as such so long as areas within 200 m of nests remain as open land. If the landscape, however, is to be redeveloped such that open areas will not be retained, new nesting structures must be created in suitable areas nearby as per Section 3.2.2 above, except for the requirement that alternate nesting structures necessarily be located within one km of the site. If, upon pit closure, the pit lands and/or surrounding areas are subject to redevelopment such that the “one-kilometre” requirement is not feasible, any alternate nest structure(s) must still be installed in a suitably open location, but may be situated more than one kilometre from the current location(s) if and as required.

Monitoring associated with any installed nest structures must continue for three years, regardless of the pit closure.

3.3 Site Maintenance Outside of the Reserved Areas

Both Bank and Barn Swallows are generally tolerant of human activity and will continue to feed over active mine areas. Thus, so long as birds do not establish nests within an active area, ongoing mine activities are unlikely to impact the species. To discourage individual Bank Swallows from establishing new nests within active areas outside of those planned and reserved as breeding colony spaces, all vertical sand/gravel banks, faces and/or piles within the mine area must be continually maintained at slopes shallower than 70°. Temporary piles may have steeper sides while they are subject to active work but must be reshaped

to have slope angles $>70^\circ$ at the completion of the work period. To discourage individual Barn Swallows from establishing new nests within active areas, ensure that structures are not set up that provide vertical walls with a horizontal extension on top (e.g., accessible internal walls below a roof, or external walls below eaves). Additional nesting deterrents such as owl statues may be used, but they must be removed once a colony or nesting site has been established so they do not interfere with nesting activities.

4.0 MONITORING

Active monitoring of the sandpit for Bank and Barn Swallows shall be conducted during the breeding season from mid-May through mid-August for as long as the pit is operational. Monitoring of Bank Swallow colonies shall be conducted weekly during the breeding season. The monitoring visits to the reserved colony area shall include a minimum of ten minutes of observations of active Bank Swallow colonies. The entirety of the Drummond Sandpit must also be surveyed once per week to determine if additional Bank Swallow colonies or Barn Swallow nests are present elsewhere in the sandpit.

Any activities that occur within the 50 m buffer defining the reserved Bank Swallow colony area should be recorded for time, date, and duration, and monitoring of the colony should occur concurrently to determine if Bank Swallows are showing agitation in response to the activities.

Any compensatory nesting structures created for Barn Swallows must be monitored annually for a period of three years (i.e., for three nesting seasons) after their creation. This annual monitoring must continue regardless of whether the pit has been closed as compensatory nest structures are to be designed and located such that they will be expected to continue to be effective regardless of changes at the pit. The monitoring report must provide a description and photograph of each new nest cup and/or structure and detail their location and the extent of the available feeding habitat surrounding them. The report must also determine the number of active nests present and estimate the number of Barn Swallows using them.

4.1 Training

Personnel responsible for the monitoring of Bank and Barn Swallows in the Drummond Sandpit shall have knowledge and experience in the identification of the species or be trained by someone who has this knowledge (i.e., biologist or ecologist with experience in identifying the birds). Only trained personnel shall act as monitors at the sandpit.

Swallow monitoring datasheets are included in Appendix 1 of this report. Population of this datasheet shall be included in the training administered to site monitors.

5.0 REPORTING

An annual report of the results of the mitigation plan shall be prepared on or before December 31st of each year. This report must include the steps taken by the operator of the pit to minimize adverse effects of the operation of the Drummond Sandpit on Bank and Barn Swallows.

The annual report will include but is not limited to:

- name and contact information of the person who operates the pit;
- map indicating the geographic location of Drummond Sandpit;
- the size of the area reserved as the Bank Swallow colony habitat (with pictures and a map);
- all data collected during the weekly monitoring (in a table format);
- records of activities carried out in accordance with the mitigation plan (e.g., installing signs, training personnel, etc.);
- the steps taken by the person operating the pit or quarry to minimize adverse effects of the operation of the pit or quarry on Bank and Barn Swallow;
- copies of all Swallow reports and datasheets; and
- details of additional species at risk and incidental wildlife observed on Site.

A copy of the annual report must be delivered to the MECP within 14 days of receiving a request for it. Copies of the annual report must be retained for at least five years after they are prepared. A report template is included in Appendix 2.

6.0 CLOSURE

This report was written for Caivan Communities by the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.



Anthony Francis, PhD

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**Appendix 1:
Bank Swallow Monitoring Datasheet**

Bank Swallow Monitoring data sheet

Observer: _____

Date: _____

Site Location: _____

Observations:

Location: _____

Orientation: _____

Pictures: _____

UTM coordinates: Zone: _____ Easting: _____ Northing: _____

Nesting burrows present (y/n): _____ Number of burrows: _____

Distance between outermost burrows: _____

Activity within 50 metres: _____

Habitat: _____

Comments: _____

Observations:

Location: _____

Orientation: _____

Pictures: _____

UTM coordinates: Zone: _____ Easting: _____ Northing: _____

Nesting burrows present (y/n): _____ Number of burrows: _____

Distance between outermost burrows: _____

Activity within 50 metres: _____

Habitat: _____

Comments: _____

Barn Swallow Monitoring data sheet

Observer: _____

Date: _____

Site Location: _____

Observations:

Location: _____

Pictures: _____

UTM coordinates: Zone: _____ Easting: _____ Northing: _____

Nest cup description: _____

Description of the nest-supporting structure: _____

Surrounding Feeding Habitat (extent and description): _____

Observations:

Location: _____

Pictures: _____

UTM coordinates: Zone: _____ Easting: _____ Northing: _____

Nest cup description: _____

Description of the nest-supporting structure: _____

Surrounding Feeding Habitat (extent and description): _____

**Appendix 2:
Annual Mitigation Report Template**

**SAR Mitigation Report for Drummond Sandpit
Ottawa, Ontario**

To:
Ontario Ministry of Environment, Conservation and Parks
10-1 Campus Drive,
Kemptville, Ontario,
K0G 1J0

Introduction:

This is the annual report of the results of the Bank and Barn Swallow Mitigation Plan for the Drummond Sandpit 3809 Borrisokane Rd. (Nepean Township; Con 3 RF W Pt Lot 8; RP5R-13403 Parts 2 AND 3; Less RP 5R-13374 Parts 15 & 16; PIN: 045920037) (Figure 1).

The sandpit is managed _____ under the direction of _____ and operated by _____.

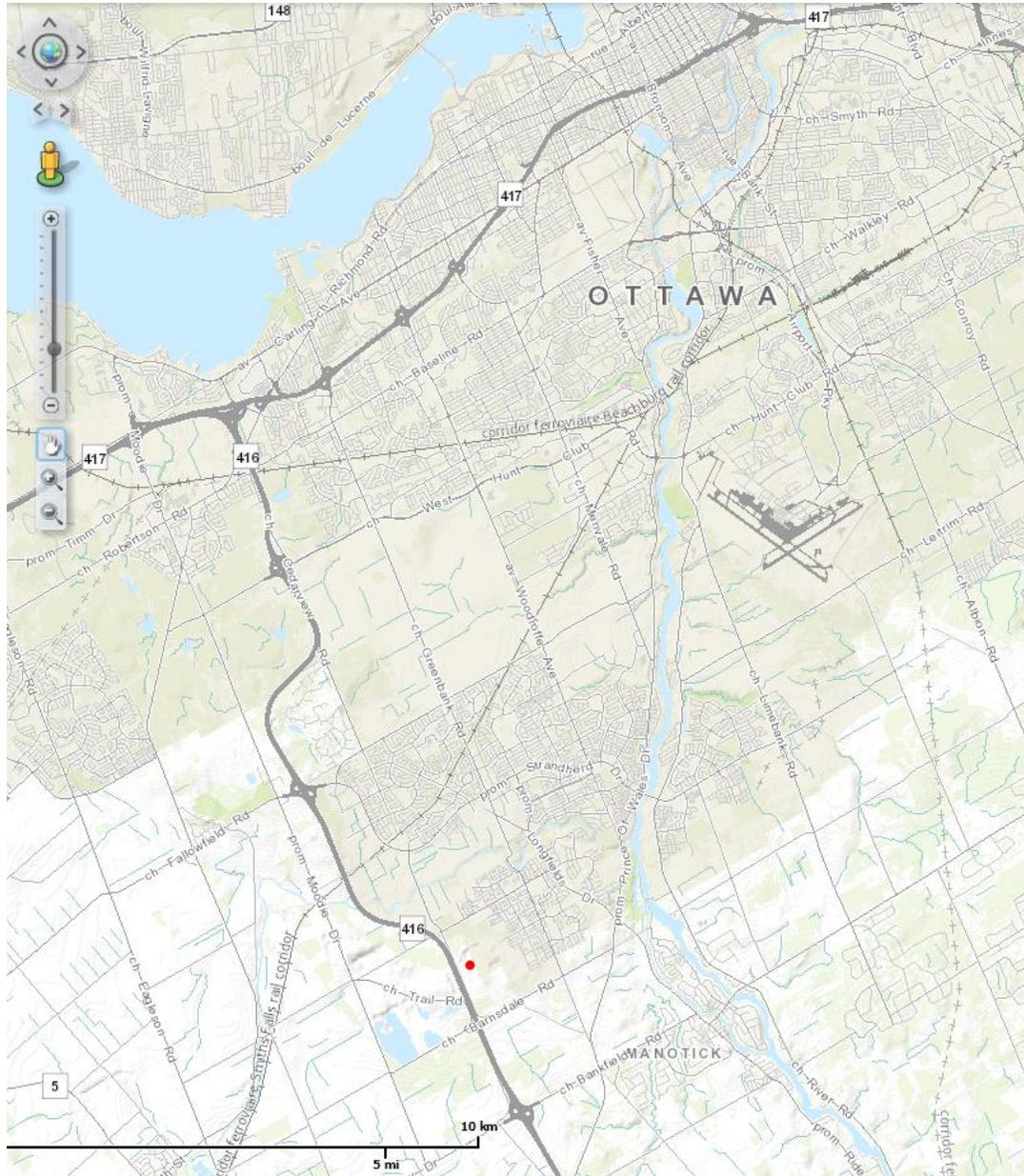


Figure 1: Location of Drummond Sandpit in Ottawa, Ontario.

Bank Swallow Reserved Colony Area:

A Bank Swallow colony area has been reserved within the Drummond Sandpit that has been deemed inactive from excavation activities. Banks in this area have been contoured to between 75° and 105° making this attractive to Banks Swallows for breeding colony habitat. In the remaining sandpit, the cliff faces have been contoured to less than 70° thereby making them unattractive as potential breed colony habitat. This area is defined in Figure 2 and is composed of approximately _____(minimum 100)_____ meters of cliff face for breeding colony establishment. The vertical portion of this cliff face (i.e. excluding toe slope areas inclined) averages _____(minimum 10) metres in height. A _____(minimum 50) metre buffer projecting outward from the cliff face has also been established, within which only limited access and work is permitted by personnel trained in the recognition of Bank Swallows.



**Figure 2: Location of the reserved Bank Swallow colony area in the Drummond Sandpit.
Mark the reserved colony Area in the map**

Mitigation Plan for Bank and Barn Swallows at the Brazeau Sandpit, Ottawa

December 12, 2019

KILGOUR & ASSOCIATES LTD.
www.kilgourassociates.com
Project Number: CAIV836



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1.0 INTRODUCTION

The Brazeau Sandpit, located in the southwest of the City of Ottawa, operates under the Ministry of Natural Resources and Forestry (MNRF) License Number C459-91 under the *Aggregate Resources Act*. During the summer of 2019, two bird species — Bank Swallow (*Riparia riparia*) and Barn Swallow (*Hirundo rustica*) — listed as at-risk and protected under the Ontario *Endangered Species Act* (ESA; 2007) were observed to be nesting on the Brazeau Site, making the pit *de facto* habitat. Sections 9 and 10 of the ESA prohibit harming individuals or habitat respectively of species listed under the act. Under Section 23.14 of Ontario Regulation 242/08, however, a pit may continue operation, and will be exempted from Sections 9 and 10 of the ESA following the filing of a Notice of Activity, so long as the pit operators follow a series of prescribed conditions. Generally, those conditions mandate a series of actions and mitigations to be applied throughout operations of the pit that will limit, to the fullest extent possible, the impacts of those operations on the species and/or their habitat. A key element of these conditions is the development of a mitigation plan that clearly identifies the full set of mitigations to be employed throughout the operational life of the pit.

This “Bank Swallow (*Riparia riparia*) and Barn Swallow (*Hirundo rustica*) Mitigation Plan” has been written by Kilgour & Associates Ltd. (KAL) on behalf of Caivan Communities (Caivan) in support of operations at the Brazeau Sandpit, has been prepared in accordance with requirements under Section 23.14 of Ontario Regulation 242/08, filed under the *Endangered Species Act* (ESA; 2007).

Ontario Regulation 242/08 specifies that the following conditions must be met concerning the mitigation plan:

- this mitigation plan must be complied with for as long as the Brazeau Sandpit is in operation and likely to adversely affect Banks Swallows;
- a copy of the mitigation plan must be retained for five years after the cessation of operations at the Brazeau Sandpit;
- the mitigation plan must be updated by Caivan at a minimum of once every five years to include information obtained while carrying out monitoring requirements; and,
- Caivan must provide a copy of the mitigation plan to the MNRF within 14 days of receiving a request for it.

The Brazeau Sandpit is located on a 37.8 ha parcel at 3809 Borrisokane Rd. (Nepean Township; Con 3 RF W Pt Lot 8; RP5R-13403 Parts 2 and 3; Less RP 5R-13374 Parts 15 & 16; PIN: 045920037; Figure 1) and is owned by Caivan. Both Bank and Barn Swallows were first observed on-site on July 4, 2019. On that date, Bank Swallows were noted actively establishing a colony in one of the vertical sand excavation areas near the center of the site. This area constitutes the Bank Swallow breeding habitat in part of this mitigation plan (Figure 2). A thorough search of the site also found six active Barn Swallow nests that had been established in a pile of shipping containers located in the southwestern corner of the property. The

shipping containers constitute the breeding habitat for this species on site. Figure 2 illustrates the locations of Bank and Barn Swallow nests on site as well as their associated foraging areas based on their Category 3 habitats defined by the MNRF (2015) and the Ministry of Environment, Conservation and Parks (MECP; 2019), respectively.

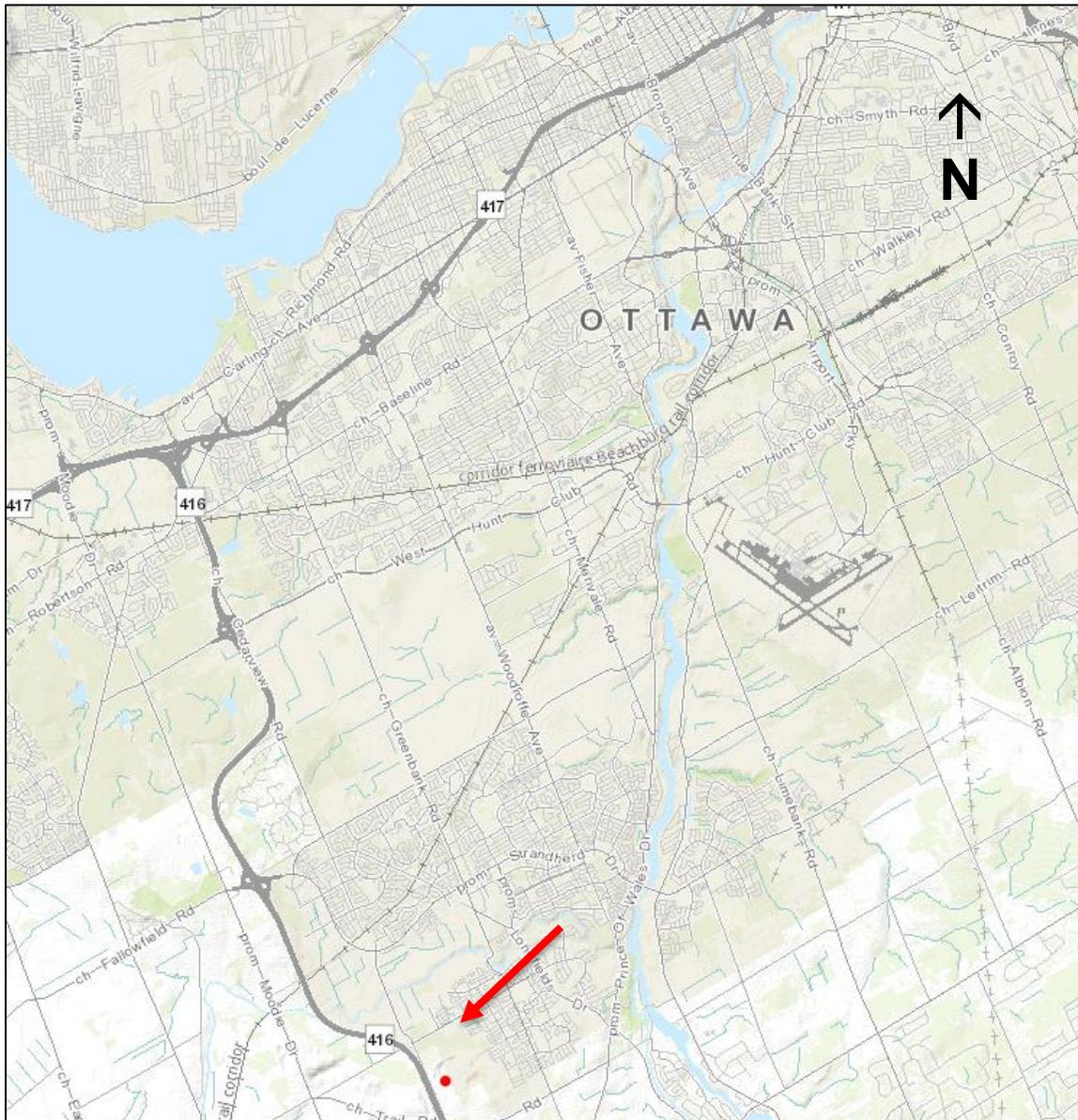


Figure 1. Map showing the location of the Brazeau Sandpit in Ottawa, Ontario.

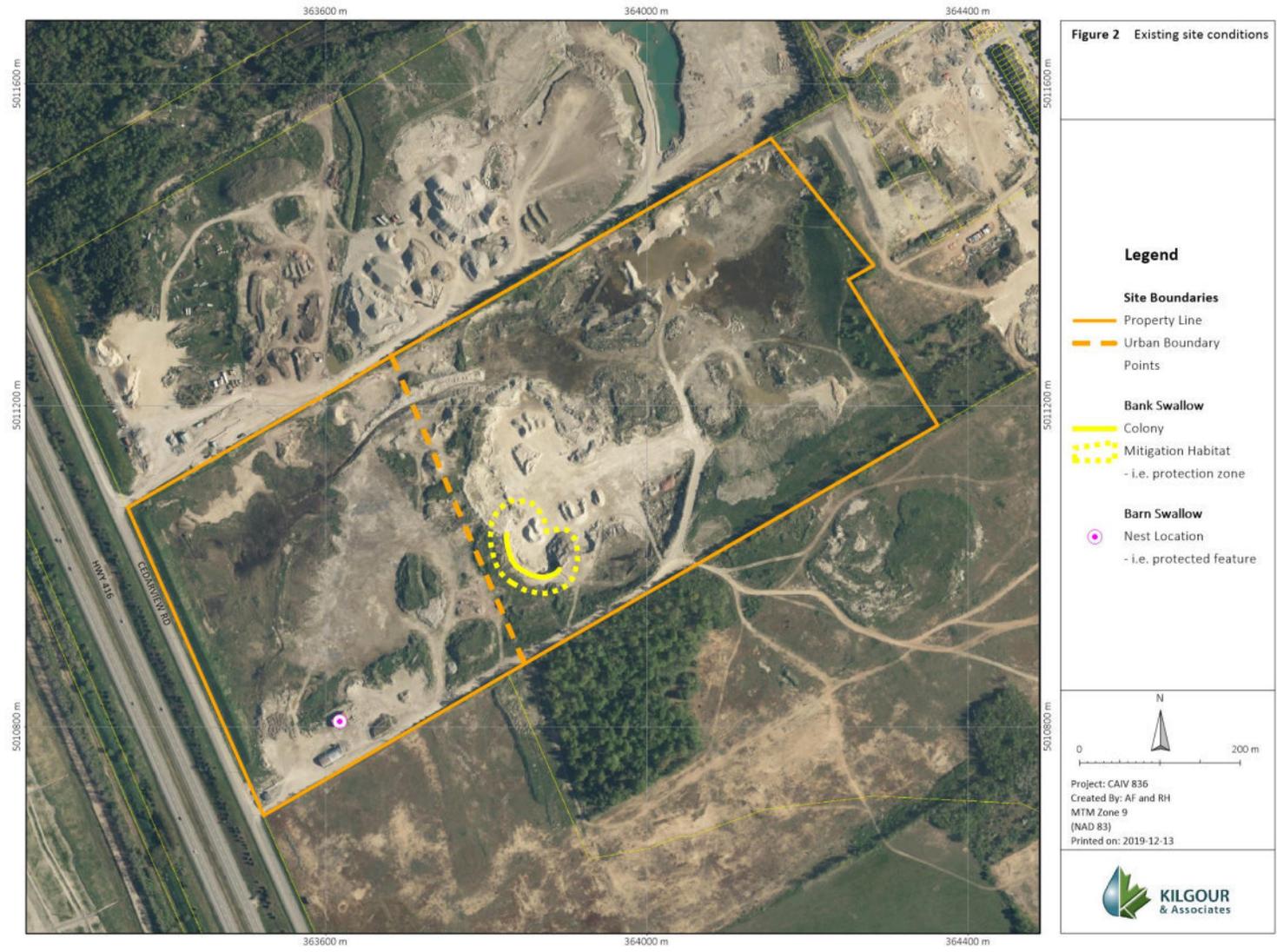


Figure 2. Map showing the location of Bank and Barn Swallow nests and associated foraging areas as of July 2019.

2.0 SPECIES INFORMATION

Operations at the Brazeau Sandpit have the potential to impact both Bank Swallows and Barn Swallows that nest on site.

2.1 Bank Swallow

The Bank Swallow is a globally distributed, small songbird. In the Americas, Bank Swallows overwinter in South and Central America and migrate to the northern US and Canada in the spring to breed (COSEWIC, 2013). They have been documented throughout Ontario, with the areas of highest abundance occurring along the shores of the lower Great Lakes and the St. Lawrence Valley (COSEWIC, 2013). In Ontario, Bank Swallows breed in a variety of natural and anthropogenic habitats, including lake bluffs, stream and riverbanks, road cuts, sand/soil piles with vertical surfaces, and aggregate pits. Nests are generally built in a vertical or near-vertical bank and are typically located near open foraging sites such as rivers, lakes, grasslands, agricultural fields, wetlands and riparian woods (Cadman et al., 2007; COSEWIC, 2013). Preferred banks are vertical (90°) or slightly inclined to slightly reclined (i.e., 75° to 105°) although angles from 70° to 110° may be used (MNRF, 2015).

Bank Swallows are generally tolerant of human activity in the broader vicinity of the total range of their breeding habitat area (i.e., within 500 m of the outer edge of the location of the breeding colony; MNRF, 2015), but are quite sensitive to disturbance of or near to their specific nesting colony area (i.e., within 50 m in front of the breeding colony bank face).

In anthropogenic sites such as sand and gravel pits, Bank Swallows use vertical faces that are maintained by human activities. Without active maintenance, the faces often slump within a few years and become unsuitable for nesting. In natural habitats, mechanisms such as erosion and undercutting of stream banks maintain vertical faces suitable for Bank Swallow nesting (MNRF, 2015). Thus, nesting colony areas naturally change somewhat from year to year. Swallows are adapted to the unstable and ephemeral nature of their nesting sites by remaining flexible in the specific colony site they select, while maintaining fidelity to a general breeding area, usually within a few kilometres of the original colony site (MNRF, 2015).

Foraging habitat generally extends out approximately 500 m from the outer edge of the colony. Foraging habitat includes rivers, lakes, wetlands, grasslands, and other open areas that provide good sources of flying insects. Forested areas, however, provide less foraging potential and tend to be avoided (MNRF, 2015). Bank Swallows have a very high tolerance to alteration for disturbance within their foraging habitat (i.e., 50 m to 500 m from the colony) so long as it generally remains open.

2.2 Barn Swallow

The Barn Swallow is one of the most globally widespread and common land-bird species. In Canada, it is known to breed in all provinces and territories and is still relatively common throughout Ontario. However, like many other species of birds that specialize on a diet of flying insects, this species began experiencing significant declines in the mid to late 1980s in Canada.

Barn Swallow habitat is closely associated with human rural settlements. Before European colonization, Barn Swallows nested mostly in caves, holes, crevices, and ledges in cliff faces. Following European settlement, they shifted largely to creating their mud-cup nests in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts. Nests sites generally occur in proximity to feeding habitat. Barn Swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared right-of-ways, cottage areas and farmyards, islands, wetlands, and subarctic tundra. The open lands of the Brazeau Sandpit provide suitable foraging space though suitable structures on which to build nests are highly limited on the site.

Barn Swallows are generally tolerant of human activity but are quite sensitive to disturbance of or near to their nests (MNRF, 2014). The birds actively defend the area within 5 m of the nest itself. Open areas between 5 m and 200 m of the nest constitute feeding habitat. In the feeding area, the birds, as aerial insectivores, tend to feed between 1 and 10 m above ground.

2.3 Species Protection

Both Bank and Barn Swallow populations are on the decline, with factors such as climate change, habitat loss and fragmentation, decreases in prey items, increases in predation and susceptibility to parasites, road mortality, and incidental take. Both species have consequently been listed as threatened and are thus afforded protection under the ESA (Ontario, 2007). Under the ESA and Ontario Regulation 242/08 made under the ESA, however, activities affecting Bank and Barn Swallows that would otherwise be prohibited by the Act may be authorized or exempted from the prohibitions provided the conditions of the relevant authorization or exemption are met (e.g., an ‘overall benefit permit’; Ontario, 2015). These conditions generally relate to minimizing impacts to species at risk or their habitat, and to providing benefits for species at risk.

In this instance, operations at the Brazeau Sandpit, which may impact both swallow species, are exempted from the ESA following Caivan’s submission of a Notice of Activity Form to the MECP identifying their presence within an operational sandpit in the fall of 2019.

3.0 OPERATIONS AND MITIGATION MEASURES

Excavation at the Brazeau Sandpit site began prior to 1976 and well before to the enactment of the ESA. Bank Swallows were listed on Schedule 1 of the ESA in 2007 and listed as threatened in June of 2014. Barn Swallows were listed as threatened in January of 2012. Both Bank and Barn Swallows were first observed on site on July 4, 2019. Neither species had previously been observed on site though both were known to occur in the broader vicinity. A Notice of Activity Form was duly filed with the MECP on October 4, 2019 (Confirmation ID: M-102-5329320036) to advise them of both the new presence of the species on site, and of the potential for impacts to the species from ongoing site activities.

The mitigations provided in this management plan are consistent with, and cover all required elements of, Ontario Regulation 242/08, Section 23.14, Subsections (5) through (9), and provide instructions to complete an annual monitoring report per Subsection (10). So long as all of the elements of this plan are

duly implemented so as to mitigate and limit the potential for harm to the two species, and a Notice of Activity has been filed accordingly, clause 9 (1) (a) and subsection 10 (1) of ESA (i.e., prohibitions on impacting individual or their habitat) do not apply to the site or mine-related activities on it.

The major focus of this mitigation plan is the establishment, protection and maintenance of a suitable breeding colony area for Bank Swallows, and the protection of the nesting site(s) of Barn Swallows. The mitigation plan establishes a protected buffer around the current Bank Swallow breeding colony area and details the required maintenance schedule and procedures necessary to ensure the continued utility of the area for colony nesting. As consistent with the biology of the species, this area may, on occasion, be relocated and re-established (i.e. nesting areas may be excavated, moved, or otherwise damaged), though only outside of the nesting season. The mitigation plan also identifies how the broader area outside of the specifically protected nesting colony may be maintained to limit the potential for attracting birds to unsafe, active mining areas, and other procedures to mitigate potential impacts.

Similarly, Barn Swallow nests, or the structures supporting them, may be moved or removed, outside of the nesting season, if required, so long as suitable alternatives are provided prior to the return of the species the following year.

3.1 Bank Swallow Habitat Mitigation

A reserved area for a Bank Swallow breeding colony shall be protected and maintained during the operation of the Brazeau Sandpit. Figure 3 indicates the location of the reserved breeding colony area in 2019, though the reserved area may be subsequently moved. The reserved colony area, as currently situated, consists of vertical cliff faces contoured to between 75° and 105° plus a 50 m buffer within each bank face to protect the areas that Bank Swallows use to enter/exit their burrows (MNRF, 2015). Bank Swallow foraging areas within 500 m of the nesting colony area are also protected from development (i.e., must remain open). These include open habitat such as wetlands, rivers, lakes, grasslands, and open fields.

The reserved breeding habitat must be maintained at a sufficient size so that excavation activities will not alter the stability of the Bank Swallow colony (MNRF, 2015). The current (i.e. in 2019) area of reserved habitat in the Brazeau Sandpit is 100 m long and with a 50 m buffer projecting outward from the cliff face, equaling approximately 0.7 ha in size. Note that the cliff face here is, and should be, curved such that the sides of the breeding colony habitat are, to some extent, naturally shielded from louder activity in other portions of the pit.

3.1.1 Breeding Colony Protection

The area within 50 m of the reserved breeding habitat cliff face shall be cordoned off with signs warning personnel to keep out of the area to avoid disturbance to Bank Swallows (see below for more details on signage). This 50 m buffer is protected to allow for unobstructed access of Bank Swallows to their burrows.

Only personnel trained in the recognition of Bank Swallows shall be allowed access into the area within 50 m of the burrows. Moreover, while working in this area personnel should be aware of the behaviour

of Bank Swallows in the nearby colony to determine if they are showing signs of stress and perceiving the work as harassment. All visitors to the site must be made aware of the presence of Bank Swallows on the site and the protections applied to the species.

3.1.2 Signage

Signs must be created and used to cordon off the protected breeding colony and should warn personnel from entering an area set aside for Bank Swallow breeding colonies. The signage should also indicate that the species is a provincially protected and threatened species under the ESA and they shall not be harmed, harassed, or killed. Additional signage indicating that Bank Swallows are breeding in the area and that they are a threatened species should be placed at entrances to the Brazeau Sandpit to inform all visitors to the site.

3.1.3 Breeding Colony Maintenance

If ongoing pit development does not require the relocation of a breeding colony area from a given location between two consecutive years, the breeding colony area shall be maintained during the winter (i.e. in the non-breeding season from September through April) as required, to keep cliff faces vertical between 75° and 105° and thereby attractive to Bank Swallows. The established area must be maintained to provide a minimum colony space 200 m in length with at least 10 m of vertical facing. The total vertical height of the colony area including toe slopes will be higher.

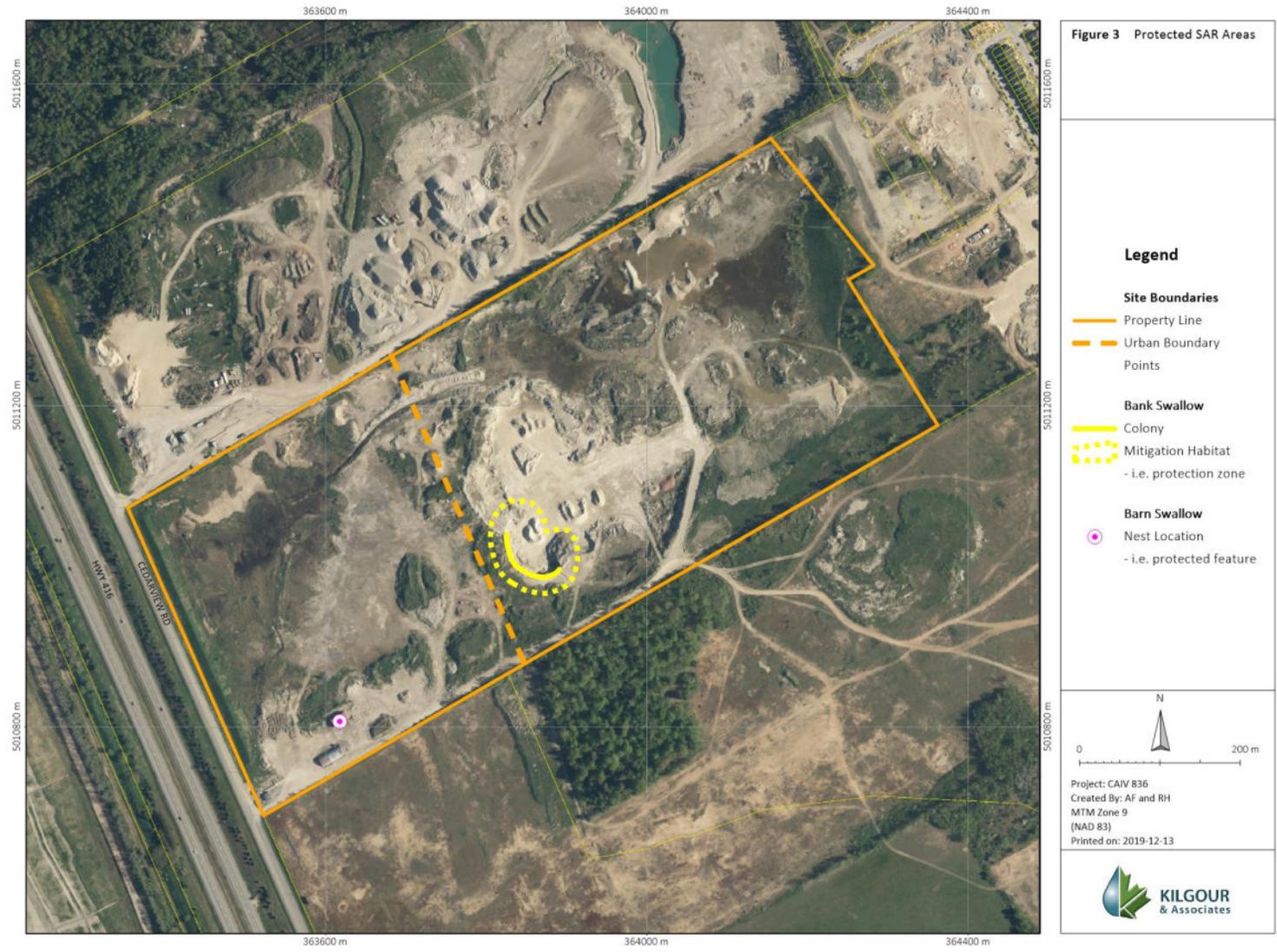


Figure 3. Map showing the area to be maintained and protected as mitigation habitat for swallows.

3.1.4 Breeding Colony Relocation

Bank Swallow habitat (e.g., riverbanks) may change substantially from year to year through natural erosion. Therefore, Bank Swallows have adapted to the unstable and ephemeral nature of their nesting sites by remaining flexible in the specific colony site they select, while maintaining fidelity to a general breeding area. Thus while birds generally return to within a few kilometres of the original colony site, the specific burrowing area frequently changes. For sand extraction operations, this means that colony areas may be mined once the birds have left for the season, so long as suitable new banks are in place somewhere nearby within the pit area by the following breeding season. Moreover, the species can be contained within newly created areas by carefully limiting the degree of slope within other active areas of the pit, so that activities in those areas may continue unimpeded by the species during the breeding season.

The reserved area in the Brazeau Sandpit may be relocated for operational need. If this area needs to be relocated, the work must be completed in the non-breeding season for the species (September through April). The new reserved breeding colony area to be created will have the cliff faces contoured to vertical (75° to 105°), and a new 50 m buffer projecting outward from the cliff face shall be created and cordoned off with signage. The old colony area shall be contoured to remove vertical cliff faces during the non-breeding season making it less attractive to Bank Swallow.

3.1.5 Bank Swallow Encounters

If Bank Swallows are encountered in the Brazeau Sandpit outside of the designated reserved colony area, then all work must cease in that area to provide the Bank Swallow with time to leave the area. If Bank Swallows do not leave the area in a reasonable amount of time, efforts must be taken to relocate the animals to a nearby suitably safe area. The relocation of Banks Swallows must only be carried out by a person who is knowledgeable about or has training in handling the species, and in consultation with the MECP.

3.1.6 Pit Closure

Per the site plans as approved by the MNR on June 17, 1992, excavation on the site is to proceed generally in an east to west direction with continual back filling of opened areas to re-establish final grades, such that that pit closure is completed in a progressive manner. Following the progression of excavation work, the land behind from which extraction has been completed is to be filled and leveled to an elevation of approximately 2 m above the water table.

While filling is to be completed progressively, it must not proceed so quickly as to eliminate all potential nesting space for Bank Swallows. For instance, at any time while the pit is active, some areas of vertical sand banks must be maintained within the areas of completed excavation and located a sufficiently safe distance from aggregate works activity to permit undisturbed nesting. Upon the final cessation of all excavation, however, (i.e., when the pit closes), it is recognized that all remaining areas of the site are to be levelled. As such, the property would no longer be supportive of Bank Swallow nesting, but this reshaping is necessary for post-closure human safety.

Importantly, all post-extraction regrading efforts must occur outside of the active nesting season (i.e., commence in September or later), and must be completed prior to any return of Bank Swallows in the spring (i.e., before April). Upon mine closure, no further monitoring of Bank Swallows is required as no individuals would be expected to be present.

3.2 Barn Swallow Nesting Sites

3.2.1 Nests and Feeding Areas

Active Barn Swallow nests are to be protected and maintained during the operation of the Brazeau Sandpit. The birds will actively defend and will be perturbed by human activity within an area extending 5 m out from a nest. Signage must be posted near nests to notify all staff on site to remain more than 5 m from each nest. Barn Swallow foraging habitat extends over all open habitat (such as wetlands, rivers, lakes, grasslands, and open fields) within 200 m of a nest. Away from the nest, individual birds are generally very tolerant of human activity. Pit mining and other normal site activities may continue in areas between 5 and 200 m beyond the nest (i.e., within foraging habitat), so long as these areas are also protected from development (i.e., they must remain open and supportive of insect prey).

3.2.2 Nest Site Maintenance and Relocation

Barn Swallows may reuse mud nest cups from year to year. While active nests cannot be disturbed during the nesting season (April through September inclusive), both the nest cups and the structures supporting them should be fully retained to the extent possible outside of the nesting season.

If a nest supporting structure must be altered, such alteration should be planned to occur between October and March. If any alteration of a nest supporting structure is to be carried out during the Barn Swallow active season, Barn Swallows must be excluded from any part of the building or structure that is the object of the activity by doing the following *before* the Barn Swallow active season begins:

- i. remove from the building or structure any existing Barn Swallow nests that may be impacted by the activity, and
- ii. install tarps and netting or take other such measures to prevent barn swallow from accessing any part of the building or structure that is the object of the activity.

If, despite following the measures described above, Barn Swallows enter the building or structure to establish nests, any part of the activity that would harm or harass Barn Swallow while nesting must be suspended until the end of the Barn Swallow active season (i.e., April through September; note that Barn Swallows may have more than one brood per breeding season).

If any Barn Swallow nests are removed, damaged or destroyed, suitable replacement habitat must be created prior to the beginning of the following nesting season. For each nest that is removed, damaged or destroyed, one substitute nest cup must be installed:

- a) in the building or structure that was the object of the activity and in any area of the building or structure that continues to provide conditions that are suitable for barn swallow nesting,
- b) in any building or structure that exists within one kilometre of the building or structure that was the object of the activity if it provides conditions that are suitable for barn swallow nesting, or
- c) in any building or structure that is constructed within one kilometre of the building or structure that was the object of the activity, that meets the following requirements:
 - i. provide horizontal ledges or rough vertical surfaces with a sheltered overhang;
 - ii. provide surface areas suitable for nest attachment at a height that minimizes disturbances to barn swallow and in a location that minimizes predation;
 - iii. allow barn swallow to freely enter and exit nests;
 - iv. provide suitable areas to accommodate appropriate spacing between nests; and
 - v. be structurally sound and capable of providing habitat for barn swallow on a long-term basis.

3.2.3 Pit Closure

Upon closure of the sandpit, the area may still be suitable to support Barn Swallow feeding areas. If so, any existing nests, whether fully natural or created as part of the nest relocation plan, can continue to function as such so long as areas within 200 m of nests remain as open land. If the landscape, however, is to be redeveloped such that open areas will not be retained, new nesting structures must be created in suitable areas nearby as per Section 3.2.2 above, except for the requirement that alternate nesting structures necessarily be located within one km of the site. If, upon pit closure, the pit lands and/or surrounding areas are subject to redevelopment such that the “one-kilometre” requirement is not feasible, any alternate nest structure(s) must still be installed in a suitably open location, but may be situated more than one kilometre from the current location(s) if and as required.

Monitoring associated with any installed nest structures must continue for three years, regardless of the pit closure.

3.3 Site Maintenance Outside of the Reserved Areas

Both Bank and Barn Swallows are generally tolerant of human activity and will continue to feed over active mine areas. Thus, so long as birds do not establish nests within an active area, ongoing mine activities are unlikely to impact the species. To discourage individual Bank Swallows from establishing new nests within active areas outside of those planned and reserved as breeding colony spaces, all vertical sand/gravel banks, faces and/or piles within the mine area must be continually maintained at slopes shallower than 70°. Temporary piles may have steeper sides while they are subject to active work but must be reshaped

to have slope angles $>70^\circ$ at the completion of the work period. To discourage individual Barn Swallows from establishing new nests within active areas, ensure that structures are not set up that provide vertical walls with a horizontal extension on top (e.g., accessible internal walls below a roof, or external walls below eaves). Additional nesting deterrents such as owl statues may be used, but they must be removed once a colony or nesting site has been established so they do not interfere with nesting activities.

4.0 MONITORING

Active monitoring of the sandpit for Bank and Barn Swallows shall be conducted during the breeding season from mid-May through mid-August for as long as the pit is operational. Monitoring of Bank Swallow colonies shall be conducted weekly during the breeding season. The monitoring visits to the mitigation habitat shall include a minimum of ten minutes of observations of active Bank Swallow colonies. The entirety of the Brazeau Sandpit must also be surveyed once per week to determine if additional Bank Swallow colonies or Barn Swallow nests are present elsewhere in the sandpit.

Any activities that occur within the 50 m buffer defining the reserved Bank Swallow colony area should be recorded for time, date, and duration, and monitoring of the colony should occur concurrently to determine if Bank Swallows are showing agitation in response to the activities.

Any compensatory nesting structures created for Barn Swallows must be monitored annually for a period of three years (i.e., for three nesting seasons) after their creation. This annual monitoring must continue regardless of whether the pit has been closed as compensatory nest structures are to be designed and located such that they will be expected to continue to be effective regardless of changes at the pit. The monitoring report must provide a description and photograph of each new nest cup and/or structure and detail their location and the extent of the available feeding habitat surrounding them. The report must also determine the number of active nests present and estimate the number of Barn Swallows using them.

4.1 Training

Personnel responsible for the monitoring of Bank and Barn Swallows in the Brazeau Sandpit shall have knowledge and experience in the identification of the species or be trained by someone who has this knowledge (i.e., biologist or ecologist with experience in identifying the birds). Only trained personnel shall act as monitors at the sandpit.

Swallow monitoring datasheets are included in Appendix 1 of this report. Population of this datasheet shall be included in the training administered to site monitors.

5.0 REPORTING

An annual report of the results of the mitigation plan shall be prepared on or before December 31st of each year. This report must include the steps taken by the operator of the pit to minimize adverse effects of the operation of the Brazeau Sandpit on Bank and Barn Swallows.

The annual report will include but is not limited to:

- name and contact information of the person who operates the pit;
- map indicating the geographic location of Brazeau Sandpit;
- the size of the area reserved as the Bank Swallow colony habitat (with pictures and a map);
- all data collected during the weekly monitoring (in a table format);
- records of activities carried out in accordance with the mitigation plan (e.g., installing signs, training personnel, etc.);
- the steps taken by the person operating the pit or quarry to minimize adverse effects of the operation of the pit or quarry on Bank and Barn Swallow;
- copies of all Swallow reports and datasheets; and
- details of additional species at risk and incidental wildlife observed on Site.

A copy of the annual report must be delivered to the MECP within 14 days of receiving a request for it. Copies of the annual report must be retained for at least five years after they are prepared. A report template is included in Appendix 2.

6.0 CLOSURE

This report was written for Caivan Communities by the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.



Anthony Francis, PhD

7.0 LITERATURE CITED

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**Appendix 1:
Bank Swallow Monitoring Datasheet**

Bank Swallow Monitoring data sheet

Observer: _____

Date: _____

Site Location: _____

Observations:

Location: _____

Orientation: _____

Pictures: _____

UTM coordinates: Zone: _____ Easting: _____ Northing: _____

Nesting burrows present (y/n): _____ Number of burrows: _____

Distance between outermost burrows: _____

Activity within 50 metres: _____

Habitat: _____

Comments: _____

Observations:

Location: _____

Orientation: _____

Pictures: _____

UTM coordinates: Zone: _____ Easting: _____ Northing: _____

Nesting burrows present (y/n): _____ Number of burrows: _____

Distance between outermost burrows: _____

Activity within 50 metres: _____

Habitat: _____

Comments: _____

Barn Swallow Monitoring data sheet

Observer: _____

Date: _____

Site Location: _____

Observations:

Location: _____

Pictures: _____

UTM coordinates: Zone: _____ Easting: _____ Northing: _____

Nest cup description: _____

Description of the nest-supporting structure: _____

Surrounding Feeding Habitat (extent and description): _____

Observations:

Location: _____

Pictures: _____

UTM coordinates: Zone: _____ Easting: _____ Northing: _____

Nest cup description: _____

Description of the nest-supporting structure: _____

Surrounding Feeding Habitat (extent and description): _____

**Appendix 2:
Annual Mitigation Report Template**

**SAR Mitigation Report for Brazeau Sandpit
Ottawa, Ontario**

To:
Ontario Ministry of Environment, Conservation and Parks
10-1 Campus Drive,
Kemptville, Ontario,
K0G 1J0

Introduction:

This is the annual report of the results of the Bank and Barn Swallow Mitigation Plan for the Brazeau Sandpit 3809 Borrisokane Rd. (Nepean Township; Con 3 RF W Pt Lot 8; RP5R-13403 Parts 2 AND 3; Less RP 5R-13374 Parts 15 & 16; PIN: 045920037) (Figure 1).

The sandpit is managed _____ under the direction of _____ and operated by _____.

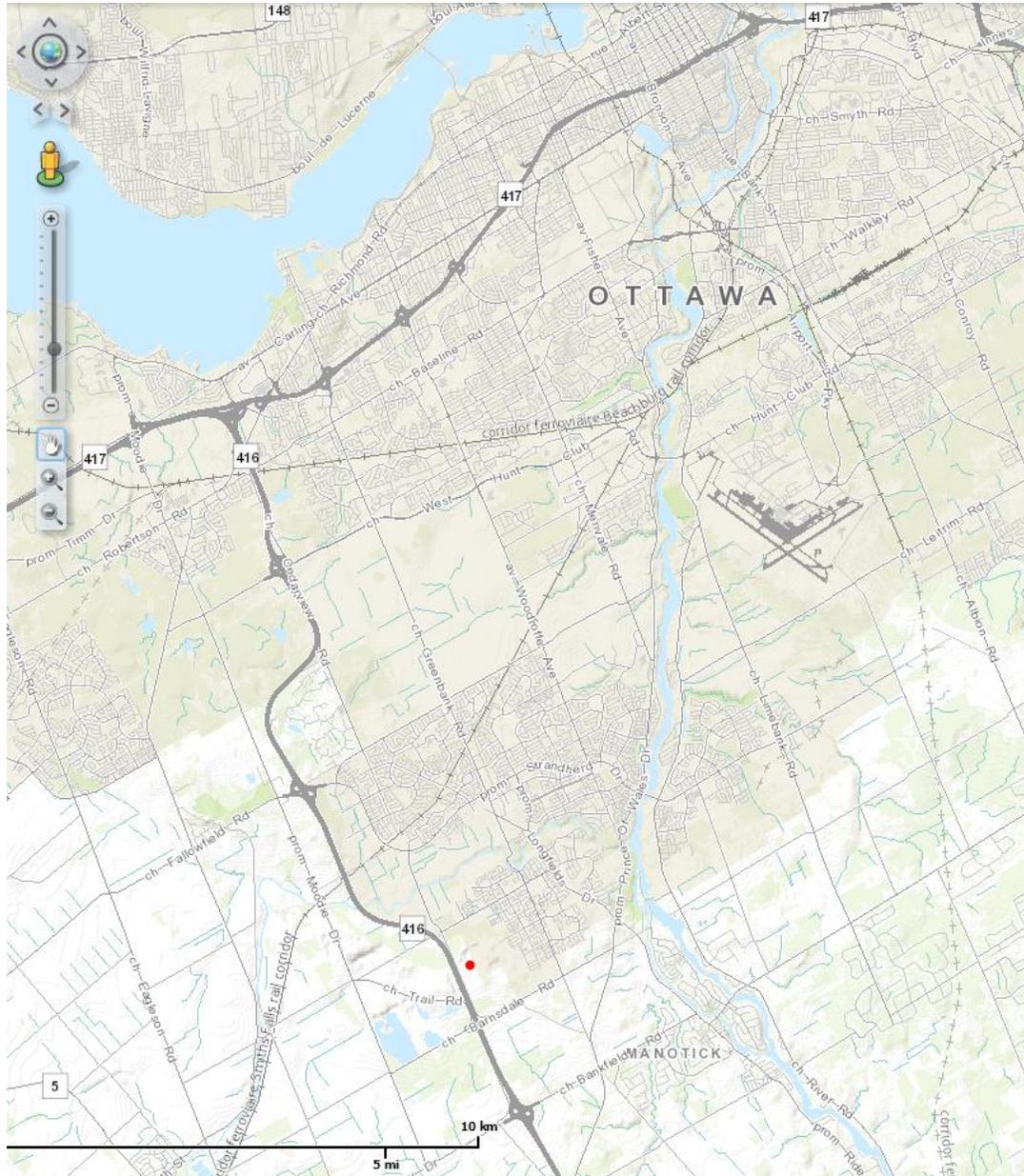


Figure 1: Location of Brazeau Sandpit in Ottawa, Ontario.

Bank Swallow Reserved Colony Area:

A Bank Swallow colony area has been reserved within the Brazeau Sandpit that has been deemed inactive from excavation activities. Banks in this area have been contoured to between 75° and 105° making this attractive to Banks Swallows for breeding colony habitat. In the remaining sandpit, the cliff faces have been contoured to less than 70° thereby making them unattractive as potential breed colony habitat. This area is defined in Figure 2 and is composed of approximately _____(minimum 100)____ meters of cliff face for breeding colony establishment. The vertical portion of this cliff face (i.e. excluding toe slope areas inclined) averages _____(minimum 10) metres in height. A _____(minimum 50) metre buffer projecting outward from the cliff face has also been established, within which only limited access and work is permitted by personnel trained in the recognition of Bank Swallows.



**Figure 2: Location of the reserved Bank Swallow colony area in the Brazeau Sandpit.
Mark the reserved colony Area in the map**



Anthony Francis <afrancis@kilgourassociates.com>

RE: Barn Swallow registrations

May Pham <may.pham@caivan.com>
To: Anthony Francis <afrancis@kilgourassociates.com>

Thu, Apr 9, 2020 at 1:33 PM

Hi Tony,

I just received confirmation from Dan Cooper at the RVCA that the barn swallow structure and nests are installed as of today:

- Brazeau: 6 nests
- Drummond: 4 nests
- SNTC: 1 nest

...



May