

ENVIRONMENTAL IMPACT STATEMENT AND
NATURAL ENVIRONMENT STUDY

SARJEANT WAVERLEY PIT # 1

TOWNSHIP OF TINY

COUNTY OF SIMCOE

April/2006

Prepared for:
Geological Investigations

Prepared by:
Robin E. Craig, B.Sc., M.Sc.
Certified Wildlife Biologist
3092 Old Second South
Midhurst, Ontario
L0L 1X0

(705) 722-7237
E-mail robin.craig@sympatico.ca

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 METHODS	6
2.1 REVIEW OF EXISTING INFORMATION	6
2.2 FIELD STUDIES.....	6
3.0 PROPOSED DEVELOPMENT	7
4.0 EXISTING CONDITIONS	8
4.1 EXISTING LAND USE.....	8
4.2 ADJACENT LAND USE.....	8
4.3 PHYSIOGRAPHY	8
4.4 SURFACE WATERCOURSES	8
4.5 GROUNDWATER.....	8
4.6 GREENLANDS.....	9
4.7 VEGETATION	9
4.7.1 Mineral Cultural Meadow CUM 1.....	9
4.7.2 Dry-Fresh Sugar Maple Deciduous Forest FOD 5-1	9
4.8 FISH HABITAT.....	9
4.9 WILDLIFE/WILDLIFE HABITAT	9
5.0 NATURAL ENVIRONMENT AND IMPACT ASSESSMENT	11
5.1 PROVINCIALLY SIGNIFICANT WETLANDS	11
5.2 SIGNIFICANT PORTIONS OF THE HABITAT OF ENDANGERED OR THREATENED SPECIES	11
5.3 FISH HABITAT.....	11
5.4 SIGNIFICANT WOODLANDS	11
5.5 SIGNIFICANT VALLEY LANDS	11
5.6 SIGNIFICANT WILDLIFE HABITAT	11
5.7 AREAS OF NATURAL AND SCIENTIFIC INTEREST (ANSI'S)	11
5.8 GREENLANDS.....	12
5.8.1 Terrain Functions.....	12
5.8.2 Vegetation Functions.....	12
5.8.3 Attributes	13
5.8.4 Linkage.....	13
5.8.5 Status Designations.....	14
6.0 NATURAL ENVIRONMENT IMPACT PREVENTION AND MITIGATION MEASURES	14
6.1 SIGNIFICANT WOODLANDS	14
6.2 GREENLANDS.....	14
6.2.1 Terrain Functions.....	14
6.2.2 Vegetation Functions.....	15
6.2.3 Linkages	15
7.0 REHABILITATION	15
8.0 CONCLUSION	16
9.0 REFERENCES	17
APPENDIX 1: VEGETATION SPECIES LIST	18
APPENDIX 2: WILDLIFE SPECIES LIST	20
RESUME	22

LIST OF TABLES:

TABLE 1: TINY-TAY PENINSULA TTP 4 WYE RIVER VALLEY10

LIST OF FIGURES:

FIGURE 1: LOCATION MAP OF SARJEANT WAVERLEY PIT #1.....2

**FIGURE 2: PROPERTY AND EXISTING GREENLAND BOUNDARIES OF THE SARJEANT
WAVERLEY PIT #1.....3**

**FIGURE 3: VEGETATION COMMUNITIES AND PROPOSED GREENLAND BOUNDARY
SARJEANT WAVERLEY PIT #1.....4**

1.0 INTRODUCTION

This report will provide natural environment information, as required by the Aggregate Resources Act of Ontario (ARA) and the County of Simcoe Official Plan, to support an application for a Category 3, Class A (pit above the water table) aggregate operation to be located on a property in the Township of Tiny, Simcoe County, Ontario. The application is being submitted by The Sarjeant Company Ltd. and will be referred to throughout this report as “Sarjeant Waverley Pit # 1” or just “the property”. The property is located north of Simcoe County Road # 27 in Lots 78 and 79, Concession 1, WPR (west of the Penetanguishene Road) geographic township of Tiny, County of Simcoe (Figure 1), about 10 km south of Midland. A recent aerial view (2002) and the property boundaries may be seen in Figure 2. The proposed licensed area is about 52.74 hectares.

Geological Investigations contracted Robin E. Craig, Environmental Consultant, to conduct Level 1 and Level 2 Natural Environment Studies on the proposed site and adjacent areas as outlined in the regulations of the Aggregate Resources Act of Ontario. The consultant was also instructed to prepare the Natural Heritage component of an Environmental Impact Statement (EIS) as required by Simcoe County. One technical report was prepared because of the considerable overlap in the requirements of the Resources Act and the Simcoe County Official Plan.

The elements of the Natural Environment to be reported upon are established by procedures listed within the Aggregate Resources Act, Section 2.0 Report Standards, sub-section 2.2 Technical Reports:

“Technical reports accompanying an application for a license must provide information on the following:

Natural Environment Level 1: determine whether any of the following features exist on and within 120 metres of the site: significant wetland, significant portions of the habitat of endangered or threatened species, fish habitat, significant woodlands (south and east of the Canadian Shield), significant valley lands (south and east of the Canadian Shield), significant wildlife habitat and significant areas of natural and scientific interest;

Natural Environment Level 2: impact assessment where the level 1 identified any features on and within 120 metres of the site in order to determine any negative impacts on the natural features or ecological functions for which the area is identified, and any proposed preventative, mitigative or remedial measures.”

The County of Simcoe Official Plan (Revised 2000) outlines the requirements of an EIS in Appendix 1-Environmental Impact (EIS) Statement Requirements:

“An EIS:

Is required for development proposed within the Greenlands Designation.”

Figure 1: Location Map of Sarjeant Waverley Pit # 1

Figure: 2 Property and Existing Greenland Boundaries of the Sarjeant Waverley Pit # 1

Figure: 3 Vegetation Communities and Proposed Greenland Boundary Sarjeant Waverley Pit #1

An EIS shall include the following where appropriate:

A description of the physical features including buildings, structures, soils, vegetation, wildlife, topography, watercourses/bodies and other relevant features on the subject land.

A description of physical features on surrounding properties.

A summary of the development proposal.

A description of potential impacts of the development on existing physical features.

A review of options to mitigate the impacts.

Exploration of opportunities for environmental enhancement.

The following natural features were specifically investigated on and within 120 m of the Sarjeant Waverley Pit # 1. Fish habitat was also evaluated beyond 120 m.

Provincially Significant Wetlands

Significant Portions of the Habitat of Endangered or Threatened Species

Fish Habitat

Direct Impacts on Fish Habitat

Indirect Impacts off the Site

Fish occurrence and distribution

Fish spawning and nursery areas

Significant Cold Water Streams

Significant Woodlands

Significant Valley Lands

Significant Wildlife Habitat

Important Deer Wintering Areas

Waterfowl Production and Staging Areas

Forest Interior Bird Habitat

Rare Plant Communities

Significant Biological Areas (heronries, osprey nesting sites, etc.)

Significant Areas of Natural and Scientific Interest (ANSI's)

County of Simcoe Greenlands attributes

Impacts to all the above mentioned natural features will be identified and appropriate recommendations will be presented to prevent and mitigate any real or potential environmental impacts of this proposal. Rehabilitation recommendations will also be presented.

2.0 METHODS

2.1 Review of Existing Information

All accessible, natural resource information at the Ontario Ministry of Natural Resources (OMNR) Midhurst Office was reviewed before any field studies were initiated. In particular, the following were checked; Geographical Information System (GIS) data, aerial photography, fish and wildlife resource mapping, management reports, wetland mapping and data files. Resource staff were also interviewed.

The Natural Heritage Information Centre (NHIC) at OMNR in Peterborough was contacted regarding rare, threatened and endangered species and spaces that may be found on or near the property. The OMNR District Ecologist at Midhurst assisted with this process because only authorized OMNR staff have access to these data.

The County of Simcoe Official Plan (June 2000) was reviewed, especially Schedule 5.4 "Natural Heritage System" and the background report, "Development of a Natural Heritage System for The County of Simcoe", June 1996. The Simcoe County web site was also accessed to obtain 2002 ortho photos used in the figures and to review planning layers.

Site plans and operation notes prepared for the proposal by Geological Investigations and hydrogeological information provided by Waterloo Geoscience Consultants Ltd. (2005) were also reviewed when preparing this report.

Other information reviewed include the "Soil Survey of Simcoe County", (Hoffman, Wicklund and Richards, 1962) and the Elmvale 31 D/12 topographic map Edition 4, 1980 containing information current to 1976 produced by the Federal Department of Energy, Mines and Resources.

The generally accepted common names of all plant and animal species are used throughout this report. Corresponding scientific names are listed in appendices at the end of the report.

2.2 Field Studies

The Sarjeant Waverley Pit # 1 and area were visited 5 times to observe and record information about natural features. The property was visited on the following dates in 2004; May14, and August 18 and in 2005; May 19, 25, and 31.

During those field visits, the general topography, physiography, soils and land use on and surrounding the property were recorded.

All direct and indirect observations of wildlife were recorded. Wildlife directly observed included mammals, birds, reptiles, amphibians and large insects. Indirect observations included wildlife tracks, burrows, food caches, feeding activity, scats, songs, calls, nests and eggs, insect larvae and other non-adult life stages. Field trips were timed to coincide seasonally and temporally with maximum wildlife activity on the site.

Many plant species were identified and listed. Vegetative communities and representative species were also noted and mapped using “Ecological Land Classification for Southern Ontario: First Approximation and Its Application” (Lee et. al, 1998). Again, visits to the property were timed to coincide with the best opportunities to record species and community information.

All surveys were at a reconnaissance level and no attempt was made to do complete wildlife and plant inventories on the property. Common, important and representative examples, including endangered, threatened and rare species were searched for and noted to assist in determining the potential impacts of the proposal on the natural features and in developing mitigation.

In addition to reviewing existing information about endangered and threatened species, the status designations and provincial rank of all species encountered on the property were compared with the current “Species at Risk in Ontario” and OMNR ranking lists. This ensured that any previously unidentified endangered or threatened species such as butternut (*Juglans cinerea*) would be noted and included in the impact assessment of the proposal.

3.0 PROPOSED DEVELOPMENT

The applicant is seeking an aggregate license to operate a Category 3, Class A pit, above the water table, on a portion of land owned by the applicant (see accompanying application and site plans for details). The proposed license area is 52.74 ha while the extraction area will be about 50.7 ha. The work will begin with the removal and stock piling of topsoil to be saved for rehabilitation in the south west area of the property. Extraction will proceed in a north westerly direction and then east. All extraction will be done by heavy equipment and removed from the property by truck along a haul road to the west through property owned by the applicant but not included in this license area. The haul road will exit onto the “French Line”. There will not be any blasting. Extraction will occur entirely from cultivated fields within the property.

The water table beneath the property is below 253 m (Waterloo Geoscience Ltd., 2005). The final pit floor will be at 260 m, a minimum of 7 m above the existing water table.

Operations on the property will only involve one section of the property at a time subject to market demands. An intact, existing 1.2 m, post and page wire fence, a remnant of the farming period, will be left along the south and north boundaries of the property. Boundaries along the east and west will have new 1.2 m post and page wire fence installed, if required.

Markers will be placed along the boundary fences for safety. All fencing required will meet ARA standards.

Rehabilitation will be progressive, where feasible, and subject to local conditions. When the pit operation is complete in an area, saved soil will be spread and the land will be returned to agricultural production. Around the perimeter of the excavated area side slopes will be graded 3:1 or less.

4.0 EXISTING CONDITIONS

4.1 Existing Land Use

The land at the Sarjeant Waverley Pit # 1 is currently unoccupied. There are no buildings on the site and the proposed excavation area has been actively farmed with a variety of crops for many years. The proposal is within an area of “High Potential Mineral Aggregate Areas” (Schedule 5.2.1, The County of Simcoe Official Plan, 2000).

4.2 Adjacent Land Use

The lands to the north and south are not owned by the applicant. To the north is an existing, licensed, aggregate operation. Land to the south is under active cultivation. The land to the east and west are owned by the applicant. To the east are the original farm buildings and lands that were associated with the agricultural activities on the property. To the west is a sugar maple forest, part of Simcoe Greenlands designation Tiny-Tay Peninsula 4, Wye River Valley (Schedule 5.4, Natural Features Study, The County of Simcoe Official Plan, 2000).

4.3 Physiography

The landscape is highest in the north (304 m +) and slopes gently in three directions from its highest point. A steep ridge is located along the west boundary of the license area with three prominent gullies present. These gullies are oriented in a south-east north-westerly direction, sloping downward to the north-west. The lowest elevation on the property is in this area at the base of the gullies at about 275 m. Most of the property, however, is above 280 m. The soils over the north part of the property are Vasey sandy loam, steep phase and over the south part, Vasey sandy loam (Hoffman, Wicklund and Richards, 1962). These soils have developed on a material derived from limestone mixed with varying amounts of granite. The open porous nature of the soil and the rolling topography provide good drainage conditions. The Agricultural Classification for the property is “Class 1, 2 and 3 soil” (Schedule 5.2.4, The County of Simcoe Official Plan, 2000).

4.4 Surface Watercourses

There are no surface streams or creeks on or within 120m of the property.

4.5 Groundwater

There was not a specific groundwater study on the property because all extraction is proposed to occur at least 1.5 m above the water table, as required by the ARA. Data from an analysis of local drilled wells, provided by Waterloo Geoscience Ltd. (2005), indicate that the inferred water table beneath the property is below 253 m. This inferred water table is at least 7 m or more below the planned floor of the proposed pit.

4.6 Greenlands

The Sarjeant Waverley Pit # 1 is within the Simcoe County Greenlands designation “Tiny-Tay Peninsula, TTP4, Wye River Valley,” (Figure 2). This unit includes the entire Wye River Valley and adjacent lands. The property is located in the southern section of the designation within the MacDonald Creek sub-watershed. The following table (Table 1), taken from “Development of a Natural Heritage System for The County of Simcoe” (Gartner Lee Limited, 1996) summarizes the functions, attributes, linkages and status designations within this terrain unit.

4.7 Vegetation

About 84 plant species were recorded growing on the property and are listed in Appendix 1. All species observed were provincially ranked by OMNR as common (S4) or very common (S5).

4.7.1 Mineral Cultural Meadow CUM 1

This community occupies almost the entire property. It consists of the cultivated fields that have been maintained in this state for many years through regular plowing, planting and harvesting of crops. Hedgerows and fencerows occur between fields, running both east and west and north and south, and along boundaries throughout the property and vary in width from 5 m to 15 m. These landscape features are not identified as separate communities but are combined within this designation. These elements provide **important wildlife habitat**. They function as corridors that permit the movement of plants and animals between other, preferred habitats. The dominant tree species of the rows are sugar maple, basswood and pin cherry. The ground flora includes woodland species such as trout lily and white trillium, invasive agricultural species like common dandelion and burdock and agriculture species such as red clover and timothy.

4.7.2 Dry-Fresh Sugar Maple Deciduous Forest FOD 5-1

There is a narrow strip, 20 to 40 m wide, of this community type along the west boundary of the property. It is the eastern edge of a larger, 226.4 ha forested area west and north of the proposal. The dominant tree species is sugar maple. There are abundant tree saplings along this border area as well as an integration of woodland and old field species.

4.8 Fish Habitat

There is no fish habitat on or within 120 m of the property.

4.9 Wildlife/Wildlife Habitat

Several wildlife species, common to this area of Simcoe County, were observed on the property (Appendix 2). All species observed were provincially ranked by OMNR as common (S4) or very common (S5).

The following mammals were observed, white-tailed deer, coyote, raccoon, red and black squirrel. White-tailed deer were visiting the agricultural fields to feed on planted crops or residue remaining after harvest. The squirrels were seen in the fencerows or in the forested area to the west and also fed on crop residue. It is also expected that other mammals including small rodents, not listed, are present on the property and would be found during more intensive inventory.

Table 1: Tiny-Tay Peninsula TTP 4 Wye River Valley

Terrain Functions	Recharge	
	Discharge	X
	Flood Storage	X
	Conveyance	X
Vegetation Functions	Erosion Protection	X
	Temperature Control	X
	Water Quality Enhan.	X
	Aquatic Habitat	X
	Terrestrial Habitat	X
Attributes	Coldwater Habitat	X
	Warmwater Habitat	X
	Fish Spawning	X
	Deer Concentrations	
	Waterfowl Concent.	X
	Prov. Rare Animals	X
	Prov. Rare Plants	X
	Uncommon Vegetation	X
Linkage	Large Core Area	
	Number of Links	2
	Aquatic	X
	Riparian/Lowland	X
	Upland	
	Narrow Link In Agric.	
	Linkage Beyond Simcoe	
	Restoration Opportunity	X
Status Designation	Provincial ANSI	
	Regional ANSI	
	Site of Interest	
	ESA	
	Prov. Sig. Wetland	2
	Local Sig. Wetland	1
	Prov. Park/Con. Area	X

There were also 36 bird species observed. The six sparrow species observed were likely breeding on the property but few other species used the property as breeding habitat because of constant disturbance by cultivation and lack of suitable habitat. Most visited the property to feed on weed seeds or crop residue. Some species were likely breeding in the adjoining forest area and many such as the ovenbird, wood thrush and veery were only observed along the interface between the forest and the cultivated fields.

Only 3 butterfly and 3 dragonfly species were encountered.

5.0 NATURAL ENVIRONMENT AND IMPACT ASSESSMENT

5.1 Provincially Significant Wetlands

There are no Provincially Significant Wetlands on or within 120 m of the property.

5.2 Significant Portions of the Habitat of Endangered or Threatened Species

Butternut was not found on the property. There are no other endangered or threatened species habitats on or within 120 m of the property.

5.3 Fish Habitat

There is no fish habitat on or within 120 m of the property and there is no surface water connection to any nearby fish habitat.

5.4 Significant Woodlands

Significant woodlands in this portion of Simcoe County are defined as being larger than 40 ha and/or containing trees in excess of 100 years old (Gartner Lee Limited, 1996). Although these conditions do not exist on the property, there is a large, 226.4 ha woodland (Severn Sound Environmental Association, 2005) immediately west and within 120 m of the proposal. This woodland is within Greenland unit Tiny-Tay Peninsula 4, Wye River Valley. This woodland would be considered significant. A small portion, a 20 - 40 m wide strip, of this woodland is within the western boundary of the proposed license area, but is not, however, included within the proposed extraction area. The haul road from the pit will travel from the extraction area to French Road within 50 m, parallel to the southern boundary of this woodland. Some trees will be removed to develop the road but this will be minimal and have no impact to the remaining woodland.

Buffers and other mitigation will be identified for incorporation into the design and operation of the pit in the subsequent sections of this report to further protect this significant woodland.

5.5 Significant Valley Lands

There are no significant valley lands on or within 120 m of the property.

5.6 Significant Wildlife Habitat

There are no significant wildlife habitats on or within 120 m of the property.

5.7 Areas of Natural and Scientific Interest (ANSI's)

There are no ANSI's located on or within 120 m of the property.

5.8 Greenlands

Current Simcoe County mapping indicates that some of the western portion of the proposed license area is included in Greenlands designation Tiny-Tay Peninsula TTP4, Wye River Valley. The original mapping was completed at a scale of 1:125,000 (Gartner Lee Limited, 1996). It is recognized by Gartner Lee that Greenland boundaries may shift as a result of detailed, site specific information becoming available. The existing boundary of Greenland unit TTP4 currently extends eastward into agricultural land on the subject property and does not include some forested land south-west of the property (Figure 2). A modified Greenland boundary is proposed (Figure 3) and it closely follows the existing and well defined tree line along the western edge of the proposed license area thereby excluding the agricultural land now within the unit and including some woodland not currently included.

If this proposed boundary shift is accepted most of the proposed license area and all of the proposed extraction area would be located east of and not within the Greenland unit TTP4. TTP4 would, however, still lie within 120 m of the proposal and therefore qualify as “adjacent lands” and require this EIS.

5.8.1 Terrain Functions

Three functions are considered important in “Tiny-Tay Peninsula TTP4, Wye River Valley”, “discharge”, “flood storage” and “conveyance”. (Table 1). No discharge currently occurs on or adjacent to the property. “Flood storage” and “conveyance” are more related to the flood plains of the Wye River and MacDonald Creek which are more than 500 m to the west. Neither the property nor the portions of TTP4 adjacent to the property contribute to either function.

5.8.2 Vegetation Functions

Five functions are significant in TTP4, “erosion protection”, “temperature control”, “water quality enhancement”, “aquatic habitat” and “terrestrial habitat”. Vegetative cover helps reduce erosion, maintain cool water temperatures in streams in summer, reduce nutrient and sediment flow to streams and provide habitat for aquatic organisms (Gartner Lee Limited, 1996). The first four functions are most important to the fisheries of MacDonald Creek, which is 500 m west of the property. The operation of this pit will not impact these functions.

Vegetation also provides terrestrial habitat. Forest interior bird habitat is an important component of terrestrial habitat in the Greenlands of Simcoe County (Gartner Lee Limited, 1996). Forest birds are defined as any birds that regularly occur in the forest (Canadian Wildlife Service (CWS) Forest Bird Monitoring Program standards). Forest associations are defined by CWS to relate habitat to bird species and these associations are forest interior, forest edge, and forest interior/edge. Forest interior species are declining across their range in Ontario for a number of reasons including interior forest habitat loss. For these species the most important area in the forest is the central patch. Interior bird species only nest successfully more than 200 m from the forest edge (How Much Forest is Enough?, Environment Canada, 2004 (HMFE)). Forest interior habitat normally consists of mature hardwoods such as sugar maple, white ash, trembling aspen, etc., mature conifers like eastern hemlock, white pine, white spruce etc. or combinations of these two tree types. Forests in Southern Ontario consist mainly of maples and sugar maple, the predominant species, grows best in deep, fertile, moist, well drained soils (Farrar, 2003). The canopy closure in forest interior habitats is greater than 60 per cent. The understory of good forest interior habitat

consists of shade tolerant shrubs, tree saplings and herbaceous plants. Amount of forest cover within a watershed, forest patch size, shape, proximity to other patches, and forest quality are also important in determining the suitability of forest habitats for interior birds.

Only a narrow section along the western boundary of the property is included within TTP4. There is no forest interior bird habitat (more than 200 m from the forest edge) on or adjacent (within 120 m) to the property. Bird surveys revealed that most species using the property were edge or interior/edge species. This would be expected because the entire property consists of agricultural lands, narrow fencerows and is on the edge of a large forested area that does not contain any forest interior habitat.

The haul road to remove gravel from the property will pass within 50m of the southern boundary of the forest associated with TTP4 and will not impact forest interior habitat.

Buffers and other measures will be identified for incorporation into the design and operation of the pit in the subsequent sections of this report to further protect terrestrial habitats.

5.8.3 Attributes

Seven attributes are considered important in TTP4, “coldwater habitat”, “warmwater habitat”, “fish spawning”, “waterfowl concent.”, “Prov. Rare animals”, “Prov. rare plants”, and “uncommon vegetation”. As discussed above, there are no fish habitats on or near the property, therefore the three attributes dealing with fish and fish habitat will not be impacted.

The major waterfowl concentration area within TTP4 is Wye Marsh, 9 km north of the property. There is no waterfowl habitat on or within 120 m of the property. There are no rare animals, plants or uncommon vegetation on or within 120 m of the property.

No attributes will be impacted by the proposal.

5.8.4 Linkage

Linkages or corridors between natural areas provide opportunities for the secure movement of wildlife and dispersal of plants that enhance the long term, ecological viability of the region (Gartner Lee Limited, 1996). There appears to be one link identified for TTP4 to another Greenland area in Schedule 5.4 Natural Heritage System (County of Simcoe Official Plan, 2000), although two are identified in “Development of a Natural Heritage System for The County of Simcoe” (Gartner Lee Limited, 1996). The only link found is to “Copeland Creek” (TTP5) to the north-west. This link will not be impacted by this pit proposal because the property is not located near TTP5. Three other linkage values are also noted in Table 1, “aquatic”, “riparian/lowland” and “restoration opportunity”. As discussed earlier, there are no “aquatic” or “riparian” habitats because the property is more than 500 m from MacDonald Creek. Two linkage restoration opportunities have been identified to “Tiny Marsh-Balm Beach” (ECP3) to the west on Schedule 5.4 but neither is near the property.

No linkage values listed will impacted by this proposal.

Although not identified, the existing hedgerows and fencerows do provide local travel corridors for area flora and fauna. The most significant fencerow is along the southern boundary of the property adjacent to the active agricultural land to the south.

Buffers and other measures will be identified for incorporation into the design and operation of the pit in subsequent sections of this report to protect the southern most fencerow.

5.8.5 Status Designations

Three status designations are considered important in TTP4, “Provincially Significant Wetlands”, “Locally Significant Wetlands” and “Provincial Park/Conservation Area”.

None of these are located on or near the property and, therefore, will not be impacted by the proposal.

6.0 NATURAL ENVIRONMENT IMPACT PREVENTION AND MITIGATION MEASURES

6.1 Significant Woodlands

- A 15 m buffer will be established along the western boundary of the property between the extraction area and the significant woodland to the west.

6.2 Greenlands

6.2.1 Terrain Functions

Although ground water recharge is not identified as a function within TTP 4, ground water discharge is identified and both go hand in hand when evaluating impacts of gravel extraction. The following mitigation is recommended to protect both these functions;

- No extraction will occur anywhere on the property below the 260 m contour and the pit floor will always remain at least 1.5 m above the water table.
- If the water table is encountered at other than the anticipated level the depth of extraction will be adjusted to remain 1.5 m above.
- Fuel tanks, re-fuelling area(s) and an area for the maintenance of equipment will be located more that 50 m from the limit of extraction and the steep slopes to the west and in accordance with Ontario Ministry of Environment guidelines and Provincial Legislation.
- All surface water from disturbed areas will remain on site and permitted to infiltrate into the ground.
- No surface water will be discharged from the site.
- A Spills Response Plan will be prepared, implemented and enforced.

6.2.2 Vegetation Functions

The haul road from the pit is proposed to pass within 50 m of the southern boundary of the forested area within TTP4 on the adjacent property owned by the applicant. The following mitigation is proposed to minimize impacts to this habitat.

- Pre-extractive timber harvest and land clearing for the haul road will not occur during breeding seasons, usually April to June, to minimize the impact to breeding birds and other wildlife.
- Commercially valuable trees will be harvested prior to land clearing for the haul road.
- Stumps will be burned and/or stored on site for possible use as wildlife habitat during rehabilitation.
- A 15 m buffer will be established along the western boundary between the extraction area and the forested habitat of TTP4. This buffer may be altered from that described here with the approval of an aggregate license for Sargeant Waverley Pit # 2 on the adjacent property.

6.2.3 Linkages

- A 15 m buffer will be established along the southern boundary of the property protecting vegetation in an existing fencerow. This will allow the continued use of this vegetated corridor by plants and other wildlife.
- Berms consisting of soils, for future rehabilitation, will be created within the 15 m buffer along the south boundary. The berms will be placed in areas where no trees or other corridor vegetation will be destroyed and corridor functions will not be impacted.

7.0 REHABILITATION

Extraction will occur at a rate depending upon the supply and market demand.

All topsoil and subsoil will be removed prior to excavation and stored in berms along the south boundary, in on site stockpiles, or used immediately to rehabilitate depleted areas.

All berms and stockpiles will be seeded with grass/legume mixtures to create short term wildlife habitat and prevent erosion and dust from leaving the site.

Rehabilitation will be progressive, where feasible, to allow immediate re-vegetation of extracted areas and details are described in the accompanying site plans.

Rehabilitated areas will be returned to agricultural uses as soon as possible after the available pit material has been extracted.

If return to agriculture is not deemed suitable or desirable, a grass/legume mixture and/or trees will be planted on the slopes and native species will be allowed to re-establish to prevent erosion and create wildlife habitat

The pit face, adjacent to the excavation setback, will be backfilled with on site, unmarketable material and graded to a slope of 3:1. If insufficient backfill material is available the excavation will terminate short of the setback, retaining adequate material to allow the pit face to be graded to the required 3:1 slope.

Stockpiled soils and/or soils from newly stripped areas will be spread to a depth of 10 cm on the graded 3:1 slopes.

With OMNR approval, topsoil or other materials that will aid rehabilitation may be imported if on site supplies are inadequate.

8.0 CONCLUSION

This report provides Natural Environment information about the Sarjeant Waverley Pit # 1 as required by the ARA, to support an application for a Category 3, Class A aggregate operation located in the south half of Lot 79, and the north half of Lot 78, Concession 1, WRP geographic Township of Tiny, Simcoe County, Ontario. Natural Heritage data are provided to satisfy the requirements of the Aggregates Resources Act and an Environmental Impact Statement is provided regarding impacts to Simcoe County Greenlands unit Tiny-Tay Peninsula, Wye River Valley (TTP4).

No Provincially Significant Wetlands, significant portions of the habitats of endangered or threatened species, fish habitat, significant valley lands, significant wildlife habitats, or ANSI's are found on or within 120 m of the Sarjeant Waverley Pit # 1 property. None of these natural features will be impacted by the proposal. There is a **significant** woodland to the west of the property and a haul road will be cut along it's the southern boundary. The intrusion of the haul road will be minimal and no impact is expected. Mitigation has been proposed to further protect this woodland.

The boundary of the Greenland unit (TTP4) nearest the proposal has been refined and described as it exists on the site. Information and analyses are presented to ensure that the proposed aggregates operation will not have any adverse impacts on the natural features of TTP4 and mitigation is recommended where required.

When extraction operations cease, saved soil will be re-distributed and agricultural functions will be restored or new wildlife habitat created.

9.0 REFERENCES

Environment Canada, 2004. How Much Habitat is Enough? Second Edition.

Environment Canada, Canadian Wildlife Service, Appendix 6. Forest Bird Species Breeding in Southern Ontario/Location Map for Species Distribution.
www.on.gc.ca/wildlife/docs/frame-app6-e.html

Farrar, J. L., 2003. Trees of Canada.

Gartner Lee Limited, 1996. Development of a Natural Heritage System For The County of Simcoe.

Lee, H. T., W. D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, South Central Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

Natural Heritage Reference Manual For Policy 2.3 of the Provincial Policy Statement. Ontario Ministry of Natural Resources, Midhurst District. 2003.

Hoffman, D. W., R. E. Wicklund, and N. R. Richards. 1962. Soil Survey of Simcoe County, Report No. 29 of The Ontario Soil Survey. Research Branch, Canada Department of Agriculture and the Ontario Agricultural College.

Ontario Ministry of Natural Resources. 1983-2003. Maps of Fish and Wildlife Resources in Tiny Township.

Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide.

Ontario Ministry of Natural Resources. 2005. Species At Risk in Ontario.

Severn Sound Environmental Association. 2005. Forest Cover Analysis, Proposed Sarjeant Pit.

The County of Simcoe Official Plan. 1997. Revised October 2000.

Waterloo Geoscience Ltd. ????? 2005.

APPENDIX 1: VEGETATION SPECIES LIST

TREES

Common Name

Hawthorn
Basswood
White Elm
White Ash
Sugar Maple
Red Maple
Wild Apple
White Pine
Alternate-leaf Dogwood
White Elm
Glossy Buckthorn
Showy Mountain Ash
Downy Serviceberry
Pin Cherry

Scientific Name

Crataegus spp.
Tilia americana
Ulmus americana
Fraxinus americana
Acer saccharum
Acer rubrum
Malus pumila
Pinus strobus
Cornus alternifolia
Ulmus americana
Rhamnus frangula
Sorbus decora
Amelanchior arborea
Prunus pensylvanica

HERBACEOUS PLANTS

Common Name

Alfalfa
Annual Daisy Fleabane
Bird's Foot Trefoil
Bladder Campion
Blue Field Madder
Burdock
Calico Aster
Canada Anemone
Canada Goldenrod
Clammy Ground Cherry
Climbing False Buckwheat
Common Dandelion
Common Milkweed
Common Mullein
Common Ragweed
Common St. John's-wort
Common Strawberry
Common Winter-cress
Cow Vetch
Curled Dock
Downy Yellow Violet
Field Pussy Toes
Goat's-beard

Scientific Name

Medicago sativa
Erigeron annuus
Lotus corniculatus
Silene vulgaris
Sherardia arvensis
Arctium minus
Symphotrichum lateriflorus
Anemone canadensis
Solidago canadensis
Physalis heterophylla.
Polygonum scandens
Taraxacum officinale
Asclepias syriaca
Verbascum thapsus
Ambrosia artemisiifolia
Hypericum perforatum
Fragaria virginiana
Barbarea vulgaris
Vicia cracca
Rumex crispus
Viola pubescens
Antennaria neglecta
Tragopogon dubius

Hairy Wood Mint	<i>Blephilia hirsuta</i>
Heal-all	<i>Prunella vulgaris</i>
Hemp Nettle	<i>Galeopsis tetrahit</i>
Intermediate Wood Fern	<i>Dryopteris intermedia</i>
Lady's Thumb	<i>Polygonum</i>
Motherwort	<i>Leonurus cardiaca</i>
Mouse-ear Hawkweed	<i>Hieracium pilosella</i>
Northern Blue Violet	<i>Viola nephrophylla</i>
Ox-eye Daisy	<i>Chrysanthemum leucanthemum</i>
Panicled Aster	<i>Symphotrichum lanceolatum</i>
Prickly Lettuce	<i>Lactuca scariola</i>
Queen Ann's Lace	<i>Daucus carota</i>
Red Clover	<i>Trifolium pratense</i>
Rough Fruited Cinquefoil	<i>Potentilla recta</i>
Solomon's Seal	<i>Polygonatum biflorum</i>
Tall Goldenrod	<i>Solidago altissima</i>
Trout Lily	<i>Erythronium americanum</i>
Viper's Bugloss	<i>Echium vulgare</i>
White Baneberry	<i>Actaea pachypoda</i>
White Trillium	<i>Trillium grandiflorum</i>
Wild Basil	<i>Clinopodium vulgare</i>
Yarrow	<i>Achillea millifolium</i>
Zig Zag Goldenrod	<i>Solidago flexicaulis</i>

SHRUBS AND VINES

<u>Common Name</u>	<u>Scientific Name</u>
Bittersweet Nightshade	<i>Solanum dulcamara</i>
Black Raspberry	<i>Rubus occidentalis</i>
Prickly Gooseberry	<i>Ribes cynosbati</i>
Red Osier Dogwood	<i>Cornus stolonifera</i>
Wild Grape	<i>Vitis riparia</i>

APPENDIX 2: WILDLIFE SPECIES LIST

MAMMALS

Common Name

Raccoon
Coyote
Red Squirrel
Black Squirrel
White-tailed Deer

Scientific Name

Procyon lotor
Canis latrans
Tamiascurus hudsonicus
Sciurus carolinensis
Odocoileus virginianus

BIRDS

Common Name

Canada Goose
Northern Harrier
Red-tailed Hawk
Wild Turkey
Killdeer
Ring-billed Gull
Rock Dove
Black-billed Cuckoo
Ruby-throated Hummingbird
Downy Woodpecker
Pileated Woodpecker
Eastern Kingbird
Eastern Wood Pewee
Great Crested Flycatcher
Red Eyed Vireo
Raven
Common Crow
Black Capped Chickadee
White-breasted Nuthatch
American Robin
Wood Thrush
Veery
Gray Catbird
Brown thrasher
Black-throated Blue Warbler
Ovenbird
Rose-breasted Grosbeak
Field Sparrow
Chipping Sparrow
Grasshopper Sparrow

Scientific Name

Branta canadensis
Circus cyaneus
Buteo jamaicensis
Meleagris gallopavo
Charadrius vociferus
Larus delawarensis
Columba livia
Coccyzus erythrophthalmus
Archilochus colubris
Picoides pubescens
Dryocopus pileatus
Tyrannus tyrannus
Contopus virens
Myiarchus crinitus
Vireo olivaceus
Corvus corax
Corvus brachyrhynchos
Poecile carolinensis
Sitta carolinensis
Turdus migratorius
Hylocichilla mustelina
Catharus fuscescens
Dumetella carolinensis
Toxostoma rufum
Dendroica caerulescens
Seiurus aurocapillus
Pheucticus ludovicianus
Spizella pusilla
Spizella passerine
Ammodramus savannarum

Savannah Sparrow
Vesper Sparrow
Song Sparrow
Brown-headed Cowbird
Baltimore Oriole
American Goldfinch

Passerculus sandwichensis
Pooecetes gramineus
Melospiza melodia
Molothrus ater
Icterus galbula
Carduelis tristis

INSECTS

Common Name

Scientific Name

Butterflies

Monarch
Spring Azure
White Cabbage Butterfly

Danaus plexippus
Celastrina ladon
Pieris rapae

Dragonflies

Mosaic Darner
Twelve Spotted Skimmer
White Faced Meadowhawk

Aeshna sp
Libellula pulchella
Sympetrum obtrusum

RESUME

Robin Edward Craig, B.Sc., M.Sc.
Certified Wildlife Biologist
3092 Old Second South
Midhurst, Ontario
L0L 1X0
(705) 722-7237

2001-present Environmental Consultant

- Ontario's Ambassador to Canada's Recreational Fisheries Award Program (Federal Department of Fisheries and Oceans)
- assembled wildlife/fisheries data for Severn Sound Remedial Action Plan (SSRAP) de-listing report
- contracts with Ducks Unlimited and private landowners, trade shows, ponds advice and wetland boundaries
- Natural Environment Reports and Environmental Impact Statements for aggregate proposals
- Barrie District Hunters and Anglers Secretary and Bulletin editor
- Barrie Ducks Unlimited Fund Raising Committee (Past Chairman)

1999-2001 Provincial Community Fisheries and Wildlife Involvement Program (CFWIP) Coordinator

- chair of Provincial Committee that developed program policies and procedures and annually allocated \$1.0 million to support over 500 volunteer groups with resource projects
- developed procedures to ensure CFWIP followed revised Fisheries Act protocol and assisted with review of all OMNR programs to ensure adherence to new protocols

1998-1999 Resource Liaison Officer, Midhurst District OMNR

- facilitated agreements with multi-interest volunteer groups regarding operations of Copeland Forest and 4 Simcoe County Provincial Wildlife Areas (PWA's)
- facilitated agreements with Ducks Unlimited to operate OMNR dams at Tiny and Wye Marsh PWAs
- managed SSRAP riparian Habitat project including supervising staff, budgeting, approving projects; more than 85 projects completed, 65 km of stream buffers created and over \$2.0 million in work completed
- worked with First Nations regarding resource issues

1973-1998 OMNR Field Biologist, Niagara and Huronia/Midhurst Distirctcs

- SSRAP planning team member from 1986 involved with identifying issues, developing remedial options and implementing actions
- Provincial CFWIP Committee member for Southern Ontario from 1992-1999
- provided resource input to multi-agency, water quality improvement, landowner funding committees such as NVCA Lands and Waters Committee and SSRAP Non Point Source Committee

- managed various resource inventory and data collection projects such as lake, stream and wetland inventories and angler and hunter surveys
- lead development of local OMNR Fisheries Management Plan, wildlife area management plans, fish and wildlife Land Use Guidelines
- lead team that developed a Controlled Deer Hunt for Simcoe and Dufferin Counties, 1978
- member of a multi-agency team that developed guidelines for harvesting aquatic plants in Ontario
- worked with City of Barrie to develop a “Fish Habitat Study” to guide waterfront development and protect fish habitat, one result was the “habitat” islands created by the Barrie Rotary Club in 1998
- conducted radio telemetry studies of walleye and muskellunge to determine spawning habitats
- conducted workshops for contractors about Provincial Work Permit system and fish habitat protection
- accepted as an expert witness in court cases and Ontario Municipal Board hearings in issues about fish habitat and wetlands
- published papers in peer reviewed journals about wildlife diseases and fish habitat
- trained OMNR and Conservation Authority staff about Fisheries Act fish habitat protocols and procedures
- member of team that trained senior OMNR managers about sustainable development
- member of team that developed a wetland restoration training course for Ontario Biologists
- worked with proponents of marina, housing, aggregate, etc. development proposals to ensure compliance with various resource protection policies and legislation including Federal Fisheries Act and Provincial Wetland Policies

Other Qualifications and Training

- B.Sc. U. of Guelph, (1970)
- M.Sc., U. of Guelph, (1972)
- Certified Wildlife Biologist, The Wildlife Society (since 1979)
- Ontario Wetland Evaluation Training
- Aquatic Habitat Inventory Training
- Wetland Restoration Training
- Larval Fish Identification Training
- Law Enforcement Training
- Ontario Municipal Board Training
- Negotiation Training
- First Nations Culture Training
- Stresses and Management of Cold and Warmwater Fish communities Training
- Fish Culture Training
- Fish and Wildlife Population Modeling Training
- Ecosystem Management Training
- Ecological Sustainability Training
- Waterfowl Identification and Management Training
- Provincial Planning Policies Training
- Federal Fisheries Act Habitat Policies Training
- Wildlife Management Area Planning Training
- St. John’s Ambulance CPR/First Aid Training
- Ontario Health and Safety Act Training

