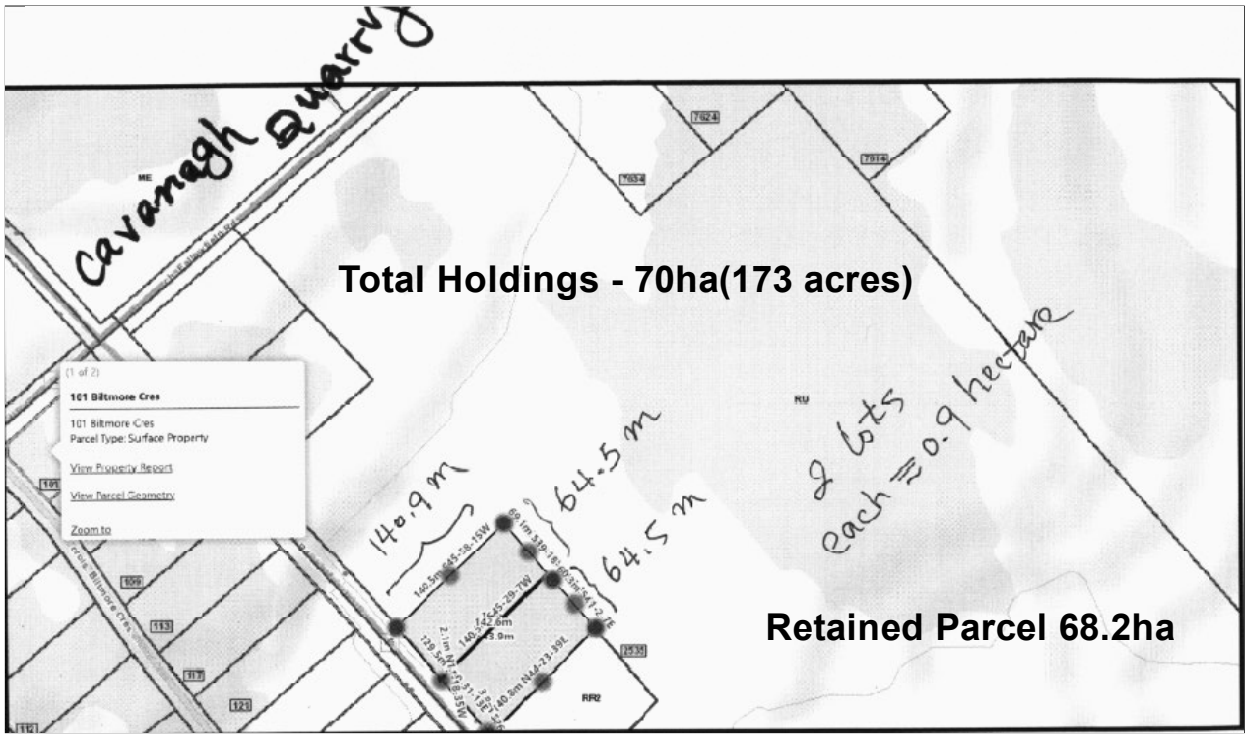
MINERAL RESOURCE IMPACT ASSESSMENT

For Potential Residential Lot Development

Prepared for: Hasan Ahangaran in consideration of residential development *at,* 2535 Munster Road, Geographic Township of Goulbourn, City of Ottawa



Location of site: 2535 Munster Road
Pt. Lot 11, Concession VII, Geographic Township of Goulbourn, City of Ottawa

Prepared By: Gary McLaren

Revised Date: Aug 1, 2024
Revision 2 Date: Oct 7, 2024

Milestone Aggregate Consulting Services Inc.

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Introduction:

Hasan Ahangaran, registered owner of a prop 70-hectare property at 2535 Munster Road, contacted me to prepare a Mineral Resource Impact Statement for the creation of two residential lots. The two lots are 0.9 hectares each leaving a retained parcel of 68.2 hectares. The lots are 380 metres from a pit and quarry operation licenced to Thomas Cavanagh Construction Limited. The quarry site is commonly referred to as the **"Goulbourn Quarry**". The site is located south of the intersection of Munster Road and Fallowfield Road directly south of the abutting pit and quarry licence. (**Figure 1 Key Map)**. The owner has pre-consulted with the City of Ottawa planning staff, who have recommended that a ***Mineral Resource Impact Assessment*** (MRIA) report be prepared to consider conformity with the city's Official Plan (OP). Specifically, the OP requires an assessment of potential impacts residential development applications could have on the pit and quarry operation and Mineral Extraction Zone (ME) overlay north of the subject application. The development proposal must consider appropriate setback and other mitigation measures to prevent any incompatible development from hindering the operation of the existing quarry operation within the 500-metre influence area identified in the Official Plan.

The intent of the MRIA is to address two equal Priorities:

- To protect residents from the adverse effects associated with the nearby mineral extraction activities; and
- To protect known high quality mineral aggregate resources from development and activities that would preclude or hinder their ability to be extracted.

The applicant is proposing to sell the said lands for the purpose of creating 2 residential dwelling units across the road from an established residential subdivision. The burden is on the applicant to ensure avoidance or mitigation measures are considered so the adjacent operating quarry is not negatively impacted and there is no hindrance to extraction and processing of adjacent resource areas.

In order to evaluate the potential impacts, the first stage of the MRIA involves a desktop exercise to review sand and gravel and limestone bedrock resource mapping and confirmation of operating pits and quarries in the vicinity of the application site. The next step would be to review the Official Plan and Zoning By-law policies and Land use Schedules to determine to what extent the city has protected these geological deposits for continued and future use. The final consideration is to evaluate to what extent that the proposed land uses, might sterilize resource or hinder current operations or make future resource areas uneconomical to extract aggregate resources.

1.0 Study Scope

The scope of this study will be;

1) To identify any resource on the subject lands and lands directly adjacent and provide an opinion regarding the feasibility of these resources for future extraction; and
2) To provide a professional opinion about whether the proposed residential development would impact or otherwise preclude the use of the resources on the adjacent licensed, "Goulbourn Pit and Quarry".

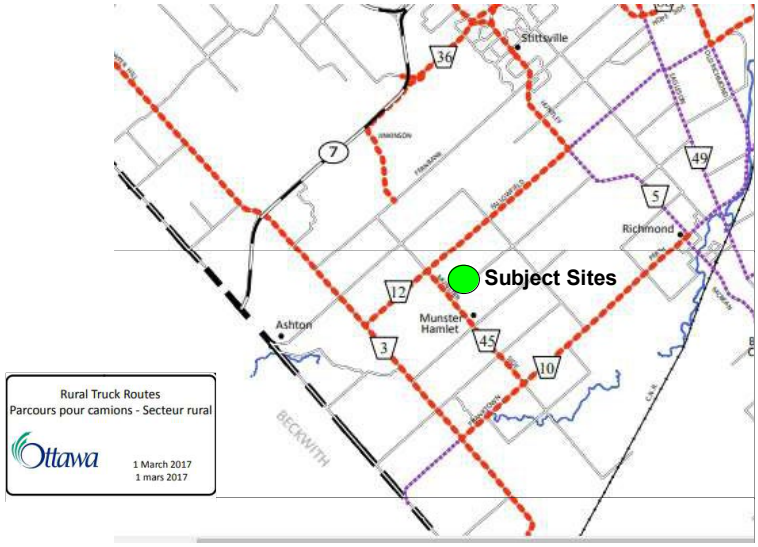
This report will consider the effects of a proposed residential development by two severed building lots as a worst-case scenario and it's impacts on the Goulbourn Quarry operation. There was a blast monitoring report for the Karson **"Huntley Quarry"** in Stittsville/west Kanata, which is relevant to this scenario, and will be referenced later in this report.

Assessment of social impacts will be accomplished by analyzing the current operational Phasing and mitigation measures directed by the *Aggregate Resources (ARA)* site plan for the Goulbourn Quarry and by reviewing the provincial regulations and guidelines for quarries licenced under the ARA. Secondly, *The Mineral Aggregate Resource Reference Manual (2001)* will be considered. This document was prepared to assist municipalities in developing policies in their Official Plan documents when reviewing development applications that could negatively impact resource areas or hinder or preclude aggregate resource utilization. The following is a list of the main social impacts that effect land use compatibility between residential development (sensitive receptors) and lands set aside for quarry operations:

i) Dust;
ii) Noise;
iii) Blasting – Ground Vibration and Air Overpressure;
iv) Traffic;
v) Groundwater (domestic water well interference); and
vi) Visual Impacts

Site specific reference to each of these potential impacts will be described in section 5.0 of this report.

Figure 1 – Key Map



GeoOttawa March 2017

2.0 Relevant Policies and Regulations

The City of Ottawa Official Plan, the 2020 Provincial Policy Statement (PPS), the Aggregate Resource Inventory Paper (ARIP) 191 for the City of Ottawa, Southern Ontario, the Aggregate Resources Act (ARA), regulations, and the policies and procedures related to implementation of the Act, regulations, and standards were used in preparation of this report. A complete list of references is included at the end of the report

2.1 Provincial Policy Statement (PPS)

The PPS provides the framework for land use planning and development policies in the local Official Plan. In the case of the city of Ottawa, there is no upper tier Official Plan but rather one tier to the O.P.

These provincial policies are adequately reflected in the current Official Plan policies and associated Land use Schedule maps and overlays for the City of Ottawa, for the protection of sand and gravel and bedrock resource areas from encroachment of incompatible development. Section 4.5 of the 2024 Provincial Policy Statement discusses how Minerals Aggregate Resources should be protected for long-term use. The policy statements relevant to this report are listed below:

> ***4.5.2 Protection of Long-Term Resource Supply***
> *1. As much of the mineral aggregate resources as is realistically possible shall be made available as close to markets as possible. Demonstration of need for mineral aggregate resources, including any type of supply/demand analysis, shall not be required, notwithstanding the availability, designation or licensing for extraction of mineral aggregate resources locally or elsewhere.*
> *2. Extraction shall be undertaken in a manner which minimizes social, economic and environmental impacts.*
> *3. Mineral aggregate resource conservation shall be undertaken, including through the use of accessory aggregate recycling facilities within operations, wherever feasible.*
> *4. Mineral aggregate operations shall be protected from development and activities that would preclude or hinder their expansion or continued use or which would be incompatible for reasons of public health, public safety or environmental impact. Existing mineral aggregate operations shall be permitted to continue without the need for official plan amendment, rezoning or development permit under the Planning Act. Where the Aggregate Resources Act applies, only processes under the Aggregate Resources Act shall address the depth of extraction of new or existing mineral aggregate operations. When a license for extraction or operation ceases to exist, policy 4.5.2.5 continues to apply.*

5. In known deposits of mineral aggregate resources and on adjacent lands, development and activities which would preclude or hinder the establishment of new operations or access to the resources shall only be permitted if:

a) resource use would not be feasible; or

b) the proposed land use or development serves a greater long-term public interest; and

c) issues of public health, public safety and environmental impact are addressed.

2.2 Official Plan for the City of Ottawa

The subject site under consideration contains 70 hectares (173 acres) with two .9 ha. lots bordering the east side of Munster Road just south of Fallowfield Road.

The City of Ottawa has recently adopted a new Official Plan (O.P.). The subject lands are designated Rural Countryside on the O.P. Schedule B Rural Transect Map. The lands abutting the lots on the south side are designated Agricultural Resource Area. There is a bedrock resource overlay directly to the north of the subject lands shown on the Schedule B9, Rural Transect Map, Appendix 1. (see **Figure 2**). There is a sand and gravel overlay shown on Schedule B9, located approximately 1,685 metres to the east on lots 13 and 14 concession 7 and 8 which is beyond the 300-metre influence area for protecting sand and gravel reserves.

The lands between Fallowfield Road and Flewellyn Road bordering the east side of Munster Road contain a licenced limestone quarry operated by Cavanagh Construction. The Agricultural Resource Area to the east contains a sand and gravel overlay. This overlap in land uses suggests that a pit operation in this area would be considered an interim land use. Following the extraction and rehabilitation of these lands, the agricultural productivity of the underlying designation would be enhanced and returned to its agricultural designation and use. See zoning **Figure 2**).

The Official Plan for the City of Ottawa contains policies that protect sand and gravel and bedrock resources using the overlay map identified as **Schedule B9, Rural Transect Plan.** The pertinent policy area is located under **section 10, Health and Safety** more specifically, the **Environmental Noise control** policy section of the O.P. Below is the pre-ample under section 10.2.1. and the pertinent sub-section of the policy dealing with influence area distances between new development and pit and quarry (sand and gravel and bedrock) resource areas and other pertinent sections dealing with aggregate resource policies shown it ***bold text***:

10.2.1 Environmental noise control

Environmental noise is characteristic of many human activities, and the proliferation of this noise has potential to negatively affect quality of life and human health.

The goal of environmental noise control is to provide guidance between land uses that are noise sensitive and land uses that are sources of noise such as roads, railways, employment areas and equipment for building facilities.

The objective of environmental noise control is to provide for improved and more liveable and healthy environments in the planning of new neighbourhoods, in development and intensification of older neighbourhoods.

> *3) Development proposals for a new or expanded noise sensitive land-use shall require a noise feasibility study and/or detailed noise study pursuant to the Environmental Noise Control Guidelines in the following locations:*

a) Within 100 metres of:

i) The right of way of an existing or proposed arterial road or collector or major Collector Street identified on Schedules C4; or

ii) The right-of-way of a rapid transit or transit priority corridor identified on Schedule C2; or

iii) Lands designated as Industrial and Logistics or Mixed Industrial identified on the B-series of schedules, or lands zoned for industrial use; or

iv) from an existing stationary noise source described in provincial certificate of approval under the Environmental Protection Act.

b) Within 250 metres of:

i) The right-of-way of an existing or proposed provincial highway, of Ottawa Highway 174, or of a secondary main railway line.

c) Within 300 metres of a pit licensed under the Aggregate Resources Act or lands with a Sand and Gravel Resource Overlay; and

d) Within 500 metres from the right-of-way of:

i) A 400-series Provincial highway; or

ii) A Principal Main railway line; or

iii) A quarry licensed under the Aggregate Resources Act; or

iv) Lands with a Bedrock Resource Overlay.

The MRIA was triggered by the 500-metre influence area for social impacts (noise, dust, blasting etc.) between the bedrock overlay map and the proposed consent applications. The 500-metre influence area is not a ridged setback requirement, but rather a minimum distance where social and environmental impacts must be assessed to determine hinderances on existing or in this case, a future bedrock extraction operation. Such an analysis will consider setback distances or other mitigation measures that would allow a satisfactory co-existence between two incompatible land-uses.

In this case, there is a licenced quarry within 500 of the consent application. There are no additional bedrock overlay areas within the 500-metre influence area and beyond, and the sand and gravel overlay on Schedule B is approximately 1,685 metres to the east well outside the 300-metre influence for surficial resource protection in the O.P.

This report will therefore focus on impacts to the existing Goulbourn Quarry pertaining to section 5.6.3.2. of the O.P. policy as follows:

'Protect existing licensed mineral aggregate operations from incompatible development and minimize negative effects on neighbourhoods". In particular, subsection (b) in section 5 states the following:

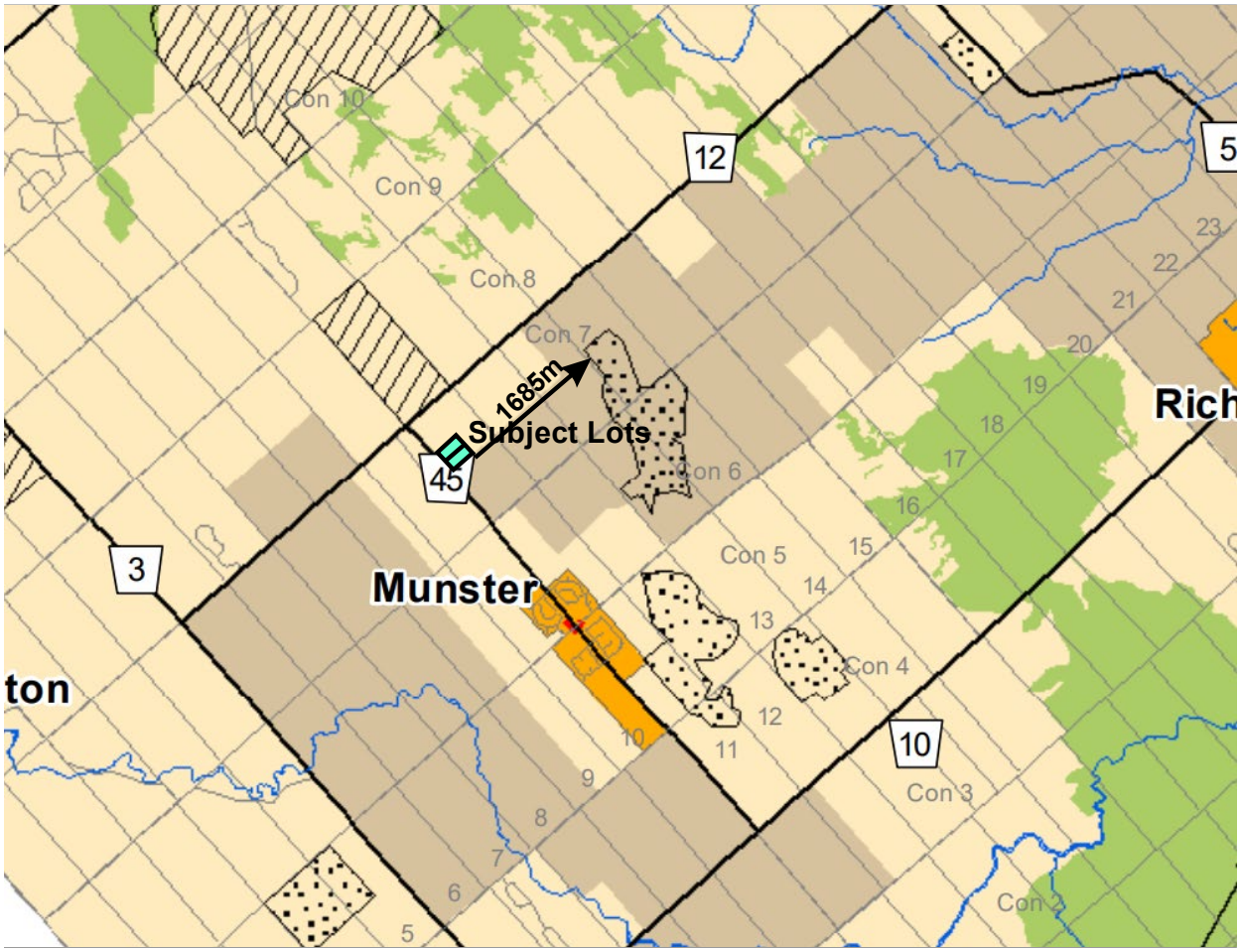
b. *Where the City approves the development of land in accordance with the Policies 3) or 4) above,* ***it may impose conditions to ensure the development provides adequate***

buffering and/or separation between the new proposed use and the mineral aggregate area/operation.

The retained lands that are part of the consent application abut the quarry boundary and area zoned ME. There is a farm home on a portion of the retained lands further south of the building lots which restricts further development on the remainder of the retained lands along Fallowfield Road immediately adjacent to the quarry. The applicant is prepared to add a condition to the consent approval restricting any further development on the retained lands north of the building lot locations nearer to the quarry. It is intended to continue using the Fallowfield end of the retained lands for farm related uses.

There is a 380-metre separation between the quarry and the western edge of the consent applications. This distance is within the 500-metre influence area from a bedrock resource area as stipulated in the O.P. which has triggered the MRIA. Operational setbacks and other existing mitigation conditions for the quarry will be assessed later in this report. The combination of these distances and current mitigation measures will help establish the potential impacts to future quarry operations from the proposed building lots.

Figure 2 – City of Ottawa Official Plan - Schedule B9 – Rural Transect Plan



DESIGNATIONS / DESIGNATIONS

- Agricultural Resource Area / Zone de ressources agricoles
- Rural Countryside / Campagne rurale
- Greenspace / Espace vert
- Rural Industrial and Logistics / Industrie rurale et logistique
- Village / Village
- Village Core / Centre du village

OTHER / AUTRE

- Solid Waste Disposal Site / Site d'enfouissement des déchets solides
- Urban Boundary / Périmètre d'urbanisation

OVERLAYS / AFFECTATION SUPPLÉMENTAIRE

- Bedrock Resource Area Overlay / Superposition de la ressource en substrat rocheux
- Sand and Gravel Resource Area Overlay / Superposition de la ressource en sable et en gravier

2.4 Zoning - geodata Satellite Image 2019 – Detailed Land Use

The following are excerpts from the zoning by-law with pertinent polies bolded to highlight this particular consent application:

ME – Mineral Extraction Zone (Sections 213-214)

Purpose of the Zone

The purpose of the ME – Mineral Extraction Zone is to:

*(1) permit licensed mineral extraction operations in areas mainly designated as Sand and Gravel Resource Area or **Limestone Resource Area** in the Official Plan;*

(2) allow a limited range of permitted uses which are related to or compatible with mineral extraction operations, as well as interim uses that would not sterilize the potential of future mineral extraction operation on the lands within the ME zones;

(3) impose regulations to minimize the impact of mineral extraction operations on the surrounding area.

213. In the ME Zone:

Permitted Uses

(1) The following uses are permitted subject to:

(a) the provisions of subsections 213(3) and (4);

*agricultural use**,** see Part 2, Section 62*
agriculture-related use, see Part 3, Section 79B (By-law 2021-222)
environmental preserve and educational area
equestrian establishment
forestry operation
kennel, see Part 3, Section 84
on-farm diversified use, see Part 3, Section 79A (By-law 2019-41) (By-law 2021-222)
*leaf and yard waste composting facility **mineral extraction operation***

(2) The following conditional uses are permitted subject to the following: (a) the provisions of subsections 213(3) and (4);

*(b) the use is located on the same lot as an operating **mineral extraction operation**;*

(c) the use mobile home is for a security guard or caretaker;

*(d) the waste processing and transfer fac**i**lity is limited to inert construction materials such as concrete and asphalt;*

ME SUBZONES

214*.* *In the ME Zone, the following subzones apply:*

ME1 SUBZONE – MINERAL EXTRACTION OPERATION WITH DETACHED DWELLING

(1) In the ME1 Subzone:

(a) the following are additional permitted uses:

one detached ***dwelling***
home-based business*, see Part 5, Section 127*

(b) Despite the regulations of Table 213, in the ME1 subzone the detached ***dwelling*** *must provide a minimum front yard setback of 15 m and a maximum front yard setback of 45 m. The purpose of these setbacks is to ensure that the detached* ***dwelling*** *is located near the road to minimize encroachment onto potential mineral aggregate resources in order to permit mineral extraction on other portions of the lands not located in close proximity to the dwelling.*

ME2 SUBZONE – MINERAL EXTRACTION OPERATION - PIT ONLY

(2) In the ME2 Subzone the use ***mineral extraction operation*** *shall be limited to a pit.*

ME3 SUBZONE – MINERAL EXTRACTION OPERATION – PIT ONLY WITH DETACHED DWELLING

(3) In the ME3 Subzone:

(a) the use ***mineral extraction operation*** *shall be limited to a pit*

(b) the following are additional permitted uses:

one detached ***dwelling***
home-based business*, see Part 5, Section 127*

(c) Despite the regulations of Table 213, in the ME3 subzone the detached ***dwelling*** *must provide a minimum front yard setback of 15 m and a maximum front yard setback of 45 m. The purpose of these setbacks is to ensure that the detached* ***dwelling*** *is located near the road to minimize encroachment onto potential mineral aggregate resources in order to permit mineral extraction on other portions of the lands not located in close proximity to the dwelling.*

MR – Mineral Aggregate Reserve Zone (Sections 215-216)

Purpose of the Zone

The purpose of the MR – Mineral Aggregate Reserve Zone is to:

*(1) identify those areas that are designated as **Sand and Gravel Resource Area or Limestone Resource Area** in the Official Plan for which at present there is no licensed mineral extraction operations, and are not along a rural truck route;*

(2) identify those lands where as yet unexploited mineral aggregate resources exist, until a request is made for a rezoning to the Mineral Extraction – ME zone to permit a mineral extraction operation;

(3) allow for an interim period a limited range of permitted uses of a nature that would not sterilize the potential of future mineral extraction operation on the lands or neighbouring lands; and,

(4) impose regulations reflective of the ME zone as lands in the MR zone may potentially be rezoned to ME to permit mineral extraction operations.

***215**. In the MR Zone:*

Permitted Uses

(1) The following uses are permitted subject to:

(a) the provisions of subsections 215(2) and (3);

***agricultural use**, see Part 2, Section 62*
***agriculture-related use**, see Part 3, Section 79B (By-law 2021-222)*
environmental preserve and educational area
equestrian establishment
forestry operation
kennel, see Part 3, Section 84
***on-farm diversified use**, see Part 3, Section 79A (By-law 2019-41) (By-law 2021-222)*

The 70-hectare subject lands, including the two proposed residential lots, as indicated on the City of Ottawa Geoportal (Teranet Enterprises Inc. 2020), are zoned rural (RU). The subdivision lands abutting the proposed lots to the west on Biltmore Cresent are zoned rural residential (RR2) as are the scattering of single residential lots in the vicinity of the subject lands (see **Figure 3**). The quarry to the north is zoned mineral extraction (ME). The focus of this report will be on the two residential lots bordering Munster Road 380 metres south of the Munster/Fallowfield intersection. The portion of the retained lands to the north abutting Fallowfield Road contain low wet marginal farmland with a slight grading toward the north and there is no intension of developing these lands or using them for anything other than marginal farmland. The farm home on the retained lands further to the south would limit any building on the Fallowfield buffer portion of the retained lands. The O.P. Plan and zoning supply an

accurate picture of the rural landscape and approved land uses in this particular area approximately 4 kms north of the village of Munster.

Section 67 of the Zoning By-law, dealing with residential setbacks from mineral aggregate zones, contains provisions a) and b) where the residential building envelope for a proposed new development should be shown as a minimum 150 meters to property zoned MR, and 210 meters from the property zoned ME1r-h.

> *67. Despite any other provisions to the contrary, in the AG, EP3, and RU zones no new building consisting of a dwelling, dwelling units or rooming units may be constructed any closer than:*
>
> *(a) 150 metres to an ME2 or ME3 - Mineral Extraction Pit Only subzones, or an MR - Mineral Aggregate Reserve zone boundary, or*
>
> *(b) 210 metres to an ME zone."*

The purpose of these setbacks is to help ensure that new dwelling units are not located in close proximity to an existing or future noise or vibration–generating use such as a mineral extraction operation.

The northern lot for the proposed consent application is 380 meters from the ME zone and is therefore in compliance with the zoning setback of 210 metres stated in section 67 (b) of the zoning by-law. (see **Figure 3.**

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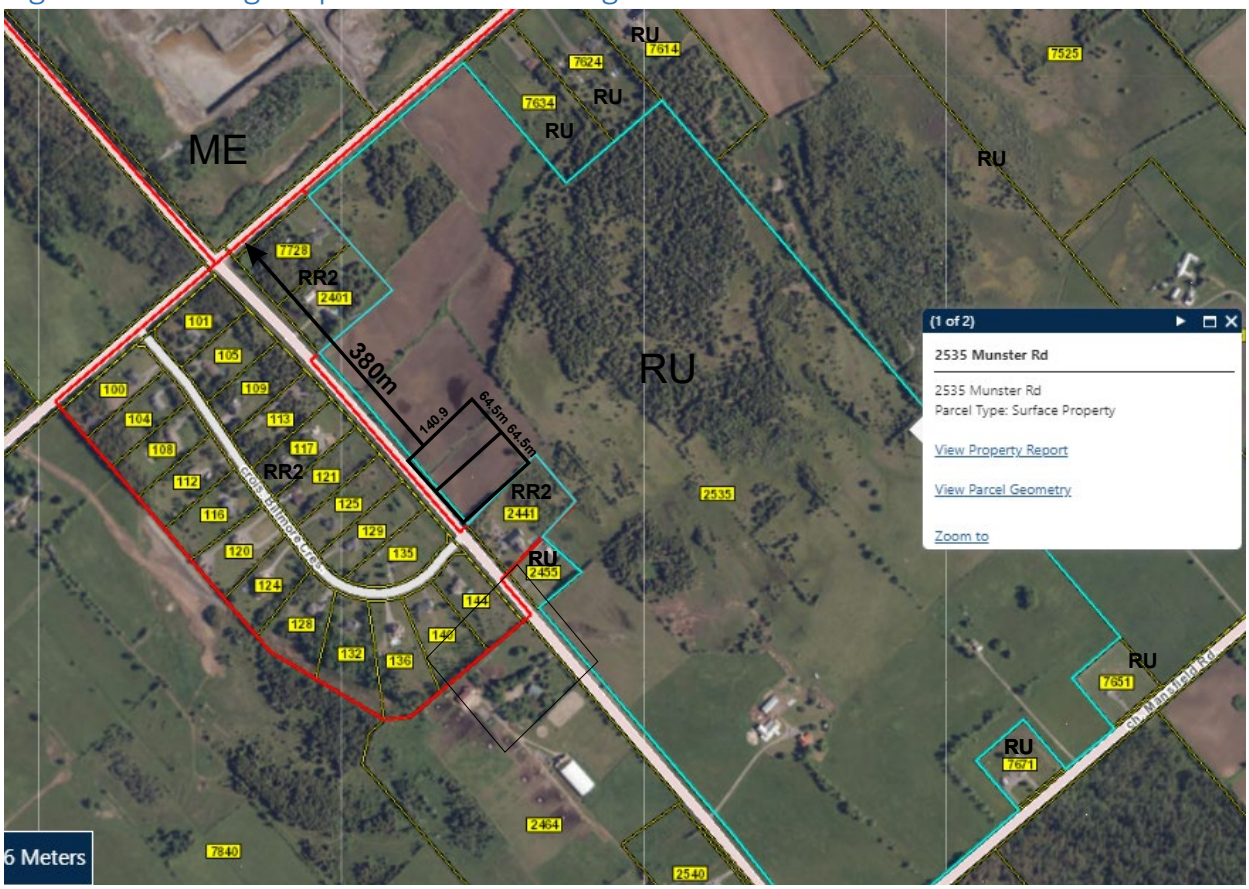
Figure 3 – Zoning Map referenced from geoOttawa 2021



3.0 Mineral Aggregate Resource Mapping

Provincial aggregate resource mapping, is a tool prepared by the Province to assist Municipalities in applying the Provincial policies for protecting aggregate resources for the construction needs. The current mapping, the ***Aggregate Resource Inventory Paper 191 (Lee, V. F. 2009 (ARIP 193)*** for the City of Ottawa, indicates a tertiary deposit of granular fill overlying the Gull River bedrock formation. **(See Figure 4a)**. The tertiary deposit varies considerably but averages from 1 to 3 metres in depth according to the ***Limestone Industries of Ontario, Eastern and Northern Ontario, Volume 2, 1989***. The shaley granular fill material was extracted in advance of quarrying operations and has been depleted. Some of the finer overburden was stored on site for future cover of final quarry slopes. Explanation of primary, secondary and tertiary surficial deposits is explained further on in **section 3** of this report. The Gull River Formation Limestone Resource underlies the surficial deposits on and adjacent to the application site to a depth 10.4 metres at the time of 1989 Limestone Industries Report. **(See Figure 4b**). This rock formation would be considered a secondary source of aggregates but crushed stone has been used for a variety of products from clear crusher run to HL stone products.

3.1 Geology

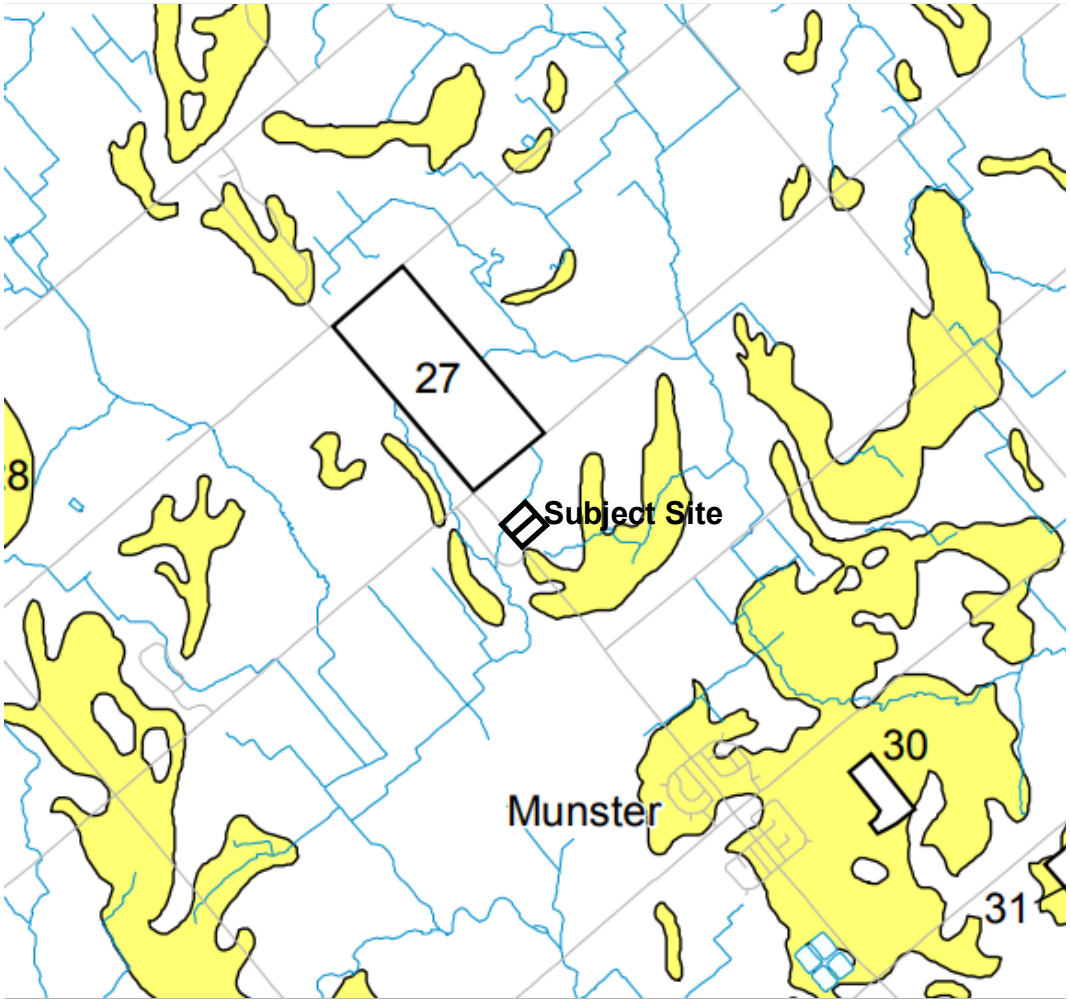
a) Surficial Sand and Gravels

The ***Ontario Geological Survey, (ARIP 191)*** Ontario Geological Survey, Aggregate Resource Assessment Report, 191 for the City of Ottawa, 2013.

'*Selected Sand and Gravel Resource Areas of primary significance are not permanent, single land use units. They represent areas in which a major resource is known to exist, and may be reserved wholly or partially for extractive development and/or resource protection'.*

There is a shallow tertiary sand and gravel resource area further to the east as identified on the Surficial Geology Map (see Figure 4a of which a portion is identified on the OP land use schedule. The tertiary deposits in this area range from 1 to 4 metres in depth and are broken up in several separated land forms. The author of this report can verify that the Goulbourn quarry contained a good representation of the overlying shaley gravel that was stripped and excavated following the early 1990's expansion for this quarry to the present 88.7 hectares (219 ac.) acres licenced site.

Figure 4a– Surficial Geology



SAND AND GRAVEL RESOURCES

1 Selected Sand and Gravel Resource Area, primary significance; deposit number (see Table 3)

Sand and gravel deposits that have been substantially extracted in the past, but where limited resources may still be available

Selected sand and gravel resource area, secondary significance

Sand and gravel deposit, tertiary significance

Other surficial deposits or exposed bedrock

SYMBOLS

1 Licenced property boundary; property number (see Table 2)

18 Unlicenced sand or gravel pit (i.e., abandoned pit or wayside pit operating on demand under authority of a permit); property number (see Table 2)

Borehole location; identification number (see Table 7)

11-VLL-004 Sample site; identification number (see Table 9)

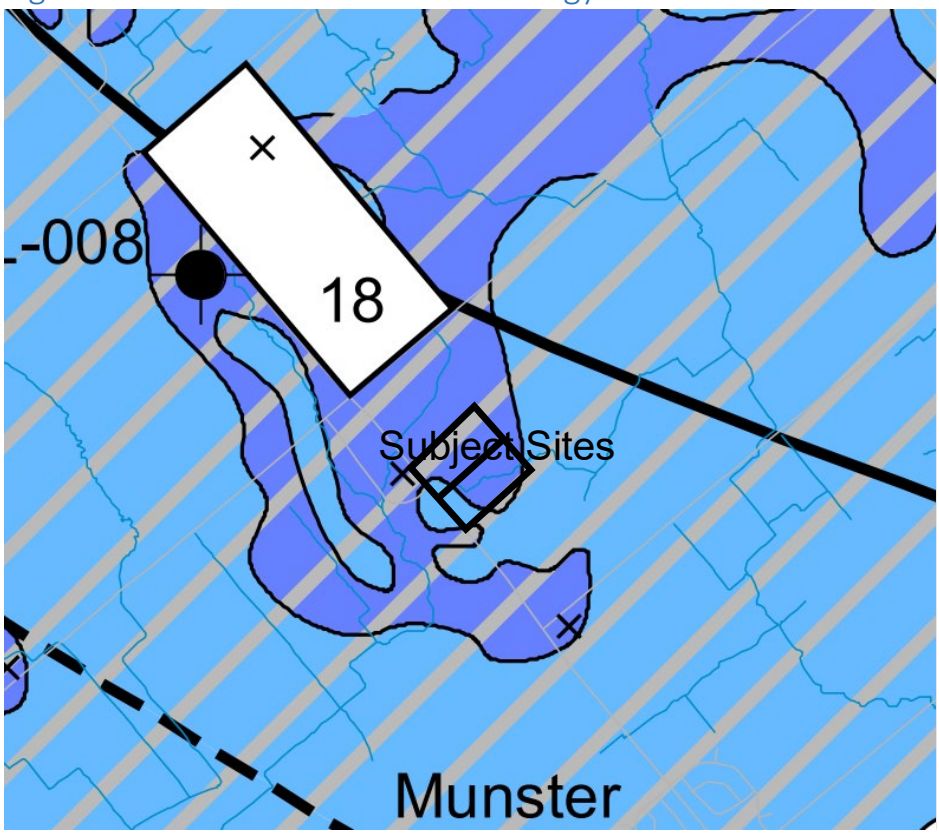
Geological and aggregate thickness boundary of sand and gravel deposits

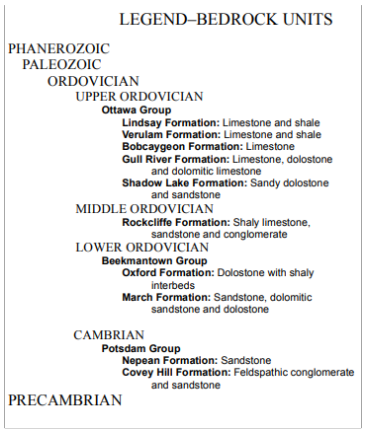
Buried geological and aggregate thickness boundary of sand and gravel deposits

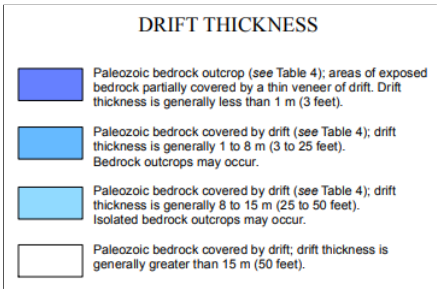
b) Bedrock Resource

ARIP 191 for the City of Ottawa indicates the bedrock as Gull River formation Limestone of lower quality but acceptable for secondary construction purposes. (**See Figure 4b**).
There is a 1 to 4 metre veneer of shaley sand and gravel overburden covering the underlying Gull River formation limestone bedrock. As indicated, the bedrock in the Goulbourn quarry has been used for various products from clear, crusher run aggregates to and including HL stone for asphalt mix for highways. Figure 4b clearly shows the outline of the Cavanagh pit and quarry licence area and the location of the subject lots proposed for residential use.

Figure 4b – Limestone Bedrock Geology







4.0 History and Site Investigation

The author of this report reviewed a number of background and technical reports satellite images from google earth, Pits and Quarries on line, a government mapping tool indicating pit and quarry licence locations and the MNRF licences and regulatory site plans for the Goubourn Quarry subject to this assessment (see a complete list in **section 9. References**).

MNRF is the agency lead for policy development, approvals and regulator of pit and quarry operations under the Aggregate Resources Act, in the province of Ontario. The author of this report was the local aggregate resources technical specialist/inspector responsible for the processing of the quarry applications and amendments for license number 4114, the "Goulbourn Pit and Quarry", and was responsible for oversight of the regulations pertaining to the Cavanagh's Goulbourn Quarry from 1988 to 2008.

The Goubourn Quarry was established in 1975 for the 20 hectare (50 acres) in the NE corner of Lot 11, Concession 8. The quarry licence was expanded in 1991 to include the majority of the remaining lands in Lot 11, excluding a residential lot off the northwest corner of Munster and Flewellyn Road in Lot 11. This made up the 88.7 hectares of the present licenced area. A site plan amendment to deepen the quarry an additional lift, was also approved by MNRF in 2001 following hydrogeological assessment and review by Ministry of Environment. The final depth of extraction was limited to elevation 110.0 mASL.

There was no ARA Technical Report Standard for a noise impact assessment or blast design report required at the time of the expansion application in 1991. However, it was recommended through circulation to MECP at the time, that a 200-metre buffer along the north licence boundary adjacent Flewellyn Road and 150 metre buffer along the south boundary adjacent Fallowfield Road would be adequate to mitigate impacts on surrounding residential use provided tree screens and berms were implemented and maintained and processing areas remained below ground grade. There is a 3- to 4-metre-high earth berm along the Fallowfield Road setback area and berming and tree screen along the Munster Road and Fallowfield Road boundaries.

The subdivision located directly west of the subject lands on the west side of Munster Road was approved and built after 2002 and after the quarry expansion as indicated in **Figure 7a & b**. There are another 6 residents presently existing along Fallowfield Road ranging from 65 metres, 75 metres, 115 metres and 130 metres from the south boundary of the MX zone and quarry boundary. There is an existing residence on Lot 11 and an additional 2 other residences on the west side of Munster Road within 100 metres from the extraction limit. There are also residences along Flewellyn Road directly abutting the north east quarry boundary on both sides of the road some 40 metres away at the closest point. See **Figure 7b** for location orientation and comparison of residential development and quarry development between 2002 and 2019.

Quarry development and residential development around the perimeter of the quarry as depicted in 2019 satellite imagery from Geo Ottawa, indicates that minimum distances range from 60 to 150 metres from the licence boundary along the south quarry boundary and ME zone. There is a 150-metre buffer along the south licence boundary as shown in **Figure 6c** (Goulbourn Quarry Operational site plan).

There was some existing residential development in proximity of pit and quarry expansion area in 1997. These residents were considered during consultation and decision process to issue the expansion licence. The adjacent residential development, already had an impact on the Goulbourn quarry operations by limiting extraction in the 200-metre setback from the north licence boundary and 150 metres from the south boundary. Drilling and blasting operations would have the most noticeable impact to quality of life around the quarry site. The ground vibration and air overpressure limits were below provincial guidelines for the present quarry blasting program and the expansion was further away from the sensitive receptors. It can therefore be argued that the quarry site has already been hindered and has adopted to the surrounding residential land use.

A number of photos were taken to document locations of the remaining extraction operations and rehabilitation at the quarry. (See photos at the end of the report).

The Pits and Quarries on line mapping tool indicates the location of the Goulbourn Quarry. (see **Figure 5**). The pit and quarry is shown in greater detail in the Existing and Operational site plans (see **Figure 6b & 6c**).

The following Table identifies operational items on the site plan that mitigate social impacts to nearby sensitive receptors:

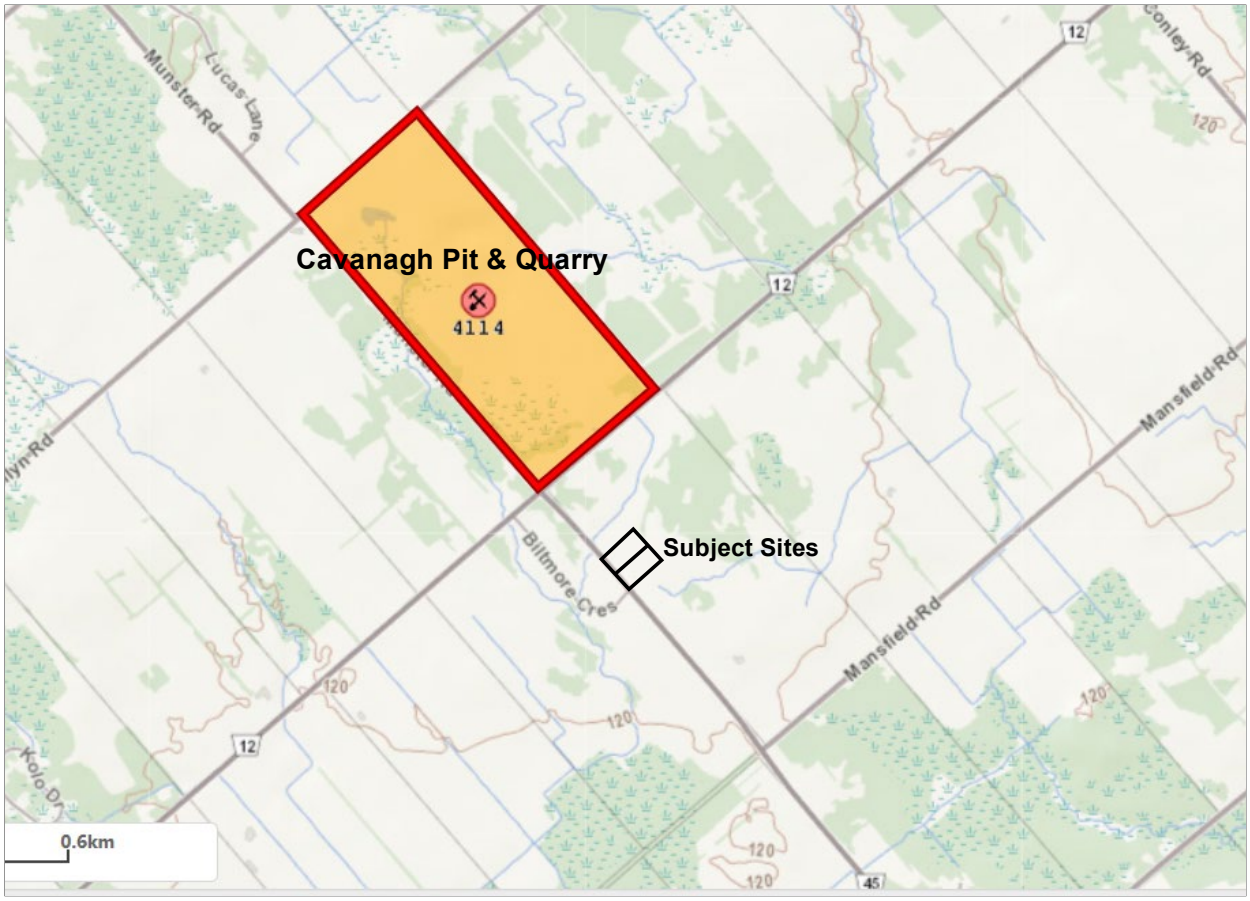
Table 1 Operational Site Plan Conditions affecting social Impacts

Impact	Site Plan Goulbourn Quarry	Comments
Visual	Tree screen and berm along north, west and south extraction limit	4-5-metre-high mature white cedar tree screen exists along the north licence boundary of the quarry. Mixed deciduous and coniferous tree screen along west boundary (Munster Rd.)
Berm	Minimum 3-metre-high vegetated earth berm exists around entire north, west, and south extraction limit and buffer.	Noise attenuation berms exist to reduce the noise impacts on adjacent sensitive receptors and provide a visual screen along portions of the boundary.

Noise	200 metre buffer area exists along the north licence boundary. 150 metre buffer along south licence boundary.	Processing area future extraction is more than 200 metres south of the north licence boundary and 150 metres from south boundary. North quarry face has been sloped and seeded for final rehabilitation. All processing equipment will operate below grade on the second lift of the quarry for the remainder of operations on this site.
Dust	Entrance/exit onto Flewellyn Road has a paved entrance and is watered regularly. The secondary entrance onto Fallowfield road is used as an entrance only as weigh scales are at the north boundary.	Condition standards require that all dust be mitigated on site. Processing equipment is equipped with spray bars for watering product coming off conveyors. Internal truck routes regularly watered with water truck. Weigh scale entrance is paved.
Traffic	Weigh scales located at the Flewellyn Road primary entrance. A secondary entrance exits onto Fallowfield rd.	Traffic leaving the site via Flewellyn Road entrance/exit moving mostly east to the Stittsville market but not restricted to local markets. Some incoming traffic enters the south boundary off Fallowfield road.
Blasting/vibration	There is no prescribed blasting condition on this "grandfathered licence"	For due diligence, all blasts are monitored using a seismograph to measure ground vibration and air overpressure (volunteer program). Air over pressure limit is 128 dBL Ground vibration limit 12.5 mm/sec. Air horns are sounded prior to blast ignition to warn persons of impending blast
Access	Trees, berms, double locked entrance gates and signage prevents inadvertent access to the site when not in operation	Reasonable measures have been taken to prevent access to the site
Impact to neighbour water wells.	Monitoring of on-site wells to create base information and flag changes to ground water table based on pumping program for the quarry (Hydro	Operators should have a spills Prevention plan. Refueling and fuel storage shall occur on an impervious surface. TSSA standards for fuel handling and

	G Report Patterson Group 1991)	storage shall be followed. Water level monitoring program exists. Quarry floor limited to 110.0 mASL to provide a 5-metre buffer from ground water table.

Figure 5 - Pits and Quarries Online



The image from Pits and quarries on line clearly indicates the location of the Cavanagh Goulbourn pit and quarry and the proposed location of two building lots.

MECP guidelines for noise were considered in the preparation of the site plans and establishment of the setbacks for the Goulbourn quarry expansion in 1991. During agency review, the Ministry of Environment was satisfied that the setbacks for this quarry could meet provincial noise and dust guidelines.

The author of this report is satisfied that the operator/licensee has developed the quarry in accordance with the site plan which regulates this site. As a previous Pits and Quarries Inspector responsible for the regulation of quarries, I do understand that drilling and blasting and crushing operations can be engineered to meet provincial guidelines at distances less than 500 metres. I am also aware that people have different nuisance tolerances that would fall below provincial guidelines and current best practices must always be considered.

Figure 6a – Cavanagh Construction Pit/Quarry Class "A" Licence #4114

Ontario

LICENCE
Aggregate Resources Act
PERMIS
Loi sur les ressources en agrégats

License No.
No du permis 4114

Amended Licence

Pursuant to the Aggregate Resources Act and Regulations thereunder, and subject to the limitations thereof and to the conditions of the licence and the requirements of the site plan,

Conformément à la Loi de 1997 sur les ressources en agrégats et à ses règlements, et sujet aux restrictions qu'ils comportent, aux conditions d'octroi du permis et aux exigences du plan du site,

this Class **licence is issued to:**
nous délivrons ce permis de classe: A à:

THOMAS CAVANAGH CONSTRUCTION LIMITED

8084 Cavanagh Rd
Ashton, ON
CANADA
K0A 1B0

to operate a
pour exploiter un/une Both Pit and Quarry on a
sur le terrain de 88.7 hectare site located in:
hectares situé à l'endroit suivant:

Lot	Concession	Section	Geographic Township	Local Municipality	County / Regional Municipality / District
11	VII		GOULBOURN	OTTAWA	OTTAWA-CARLETON R

The licence is subject to the following conditions:
Ce permis est assujetti aux conditions suivantes: As shown on attached Schedule

Effective the
En vigueur le 19 day of
jour de February 20 14

Minister of Natural Resources
Ministre des Richesses Naturelles

Figure 6b – Cavanagh Construction Pit/Quarry Existing Features Site Plan Licence #4114

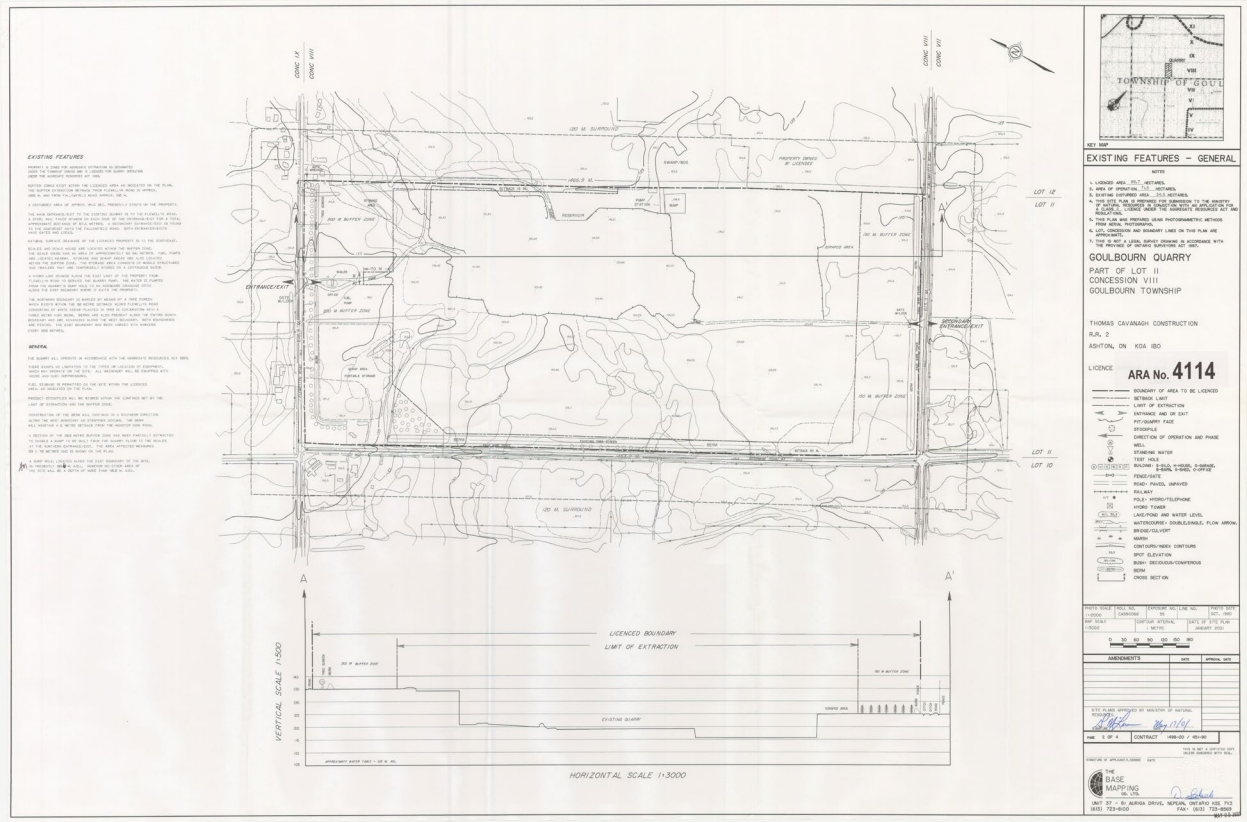
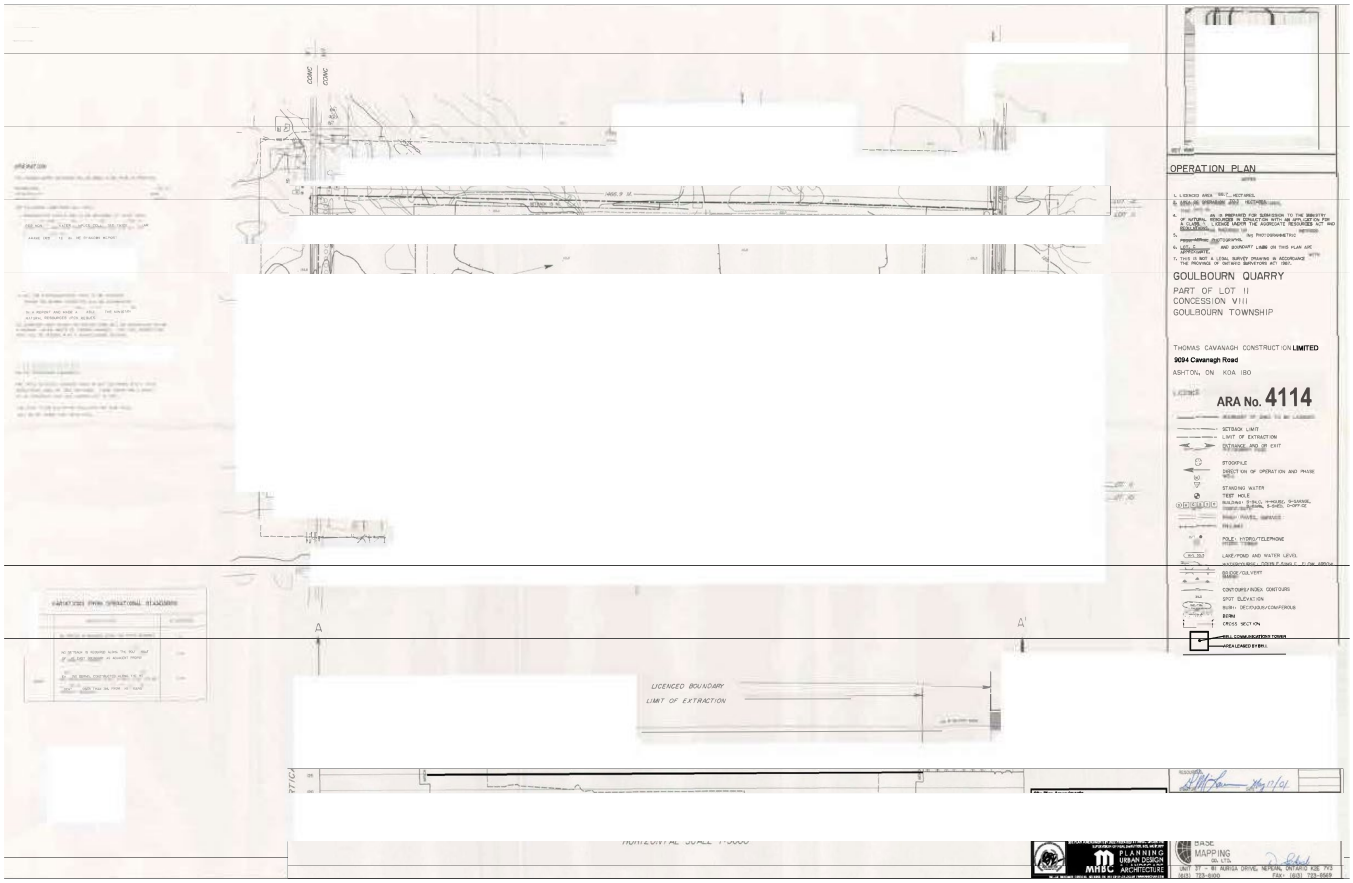


Figure 6c – Cavanagh Construction Pit/Quarry Operational Plan Licence #4114



5.0 Social Impacts from the Pit and Quarry Operation

Generally, the regulations under the ARA and the site plan issued under the licence, are the primary mechanisms to control social impacts from extraction, processing and hauling activities at a pit or quarry operation. O. Reg. 466/20, s.2 (1), section 0.12 deals with conditions for licenses and permits issued after April 1, 2021. Prior to April of 2021, similar prescribed conditions were placed on licenses or amended licences issued since 1997. The MNRF Inspector has the ability to resolve and mitigate concerns or complaints. The MNRF can also investigate complaints jointly with the Ministry of Environment, Conservation and Parks MECP) if additional expertise is required or there is a matter that is more appropriately dealt with under the EPA or the Water Resources Act rather than the ARA.

The sections below in ***italics*** refer to sections of the ARA regulations that would pertain to pit and quarry operations. These sections can be used reciprocally to access the negative impacts that encroaching incompatible development could have on the utilization of a quarry operation or bedrock reserve area. The MNRF as the lead regulator would investigate any complaints from adjacent residents, and involve MECP staff if additional expertise is required or issues more appropriately relate to considerations under the EPA.

I) Dust: Dust control from a quarry operation must be mitigated on the site at the source (excavation areas, processing equipment, haul route, drilling, blasting, crushing and screening operations). If visible dust is generated, the licensee shall take action to control the dust which is in violation of O.Reg. 466/20, s.2.1 subsection 0.12 under the ARA and/or regulations under Environmental Protection Act.

Pertaining to Dust emissions, O.Reg.466/20s.21, under the ARA indicates under, subsection 0.12) A licence, aggregate permit or wayside permit is subject to the following conditions:

Subsection (2)

1. ***The licensee or permittee shall apply water or another provincially approved dust suppressant to internal haul roads and processing areas, as necessary to mitigate dust, if the pit or quarry is located within 1,000 metres of a sensitive receptor.***
2. ***The licensee or permittee shall equip any processing equipment that creates dust with dust suppressing or collection devices if it is located within 300 metres of a sensitive receptor.***
3. ***The licensee or permittee shall obtain an environmental compliance approval under the Environmental Protection Act where required to carry out operations at the pit or quarry.***

4. ***The licensee or permittee shall obtain a permit to take water under the Ontario Water Resources Act where required to carry out operations at the pit or quarry.*** (6) A licence is subject to the following condition:

Sub section (6)

1. ***The licensee shall mitigate the amount of dust generated at the site of the pit or quarry to minimize any off-site impact.***

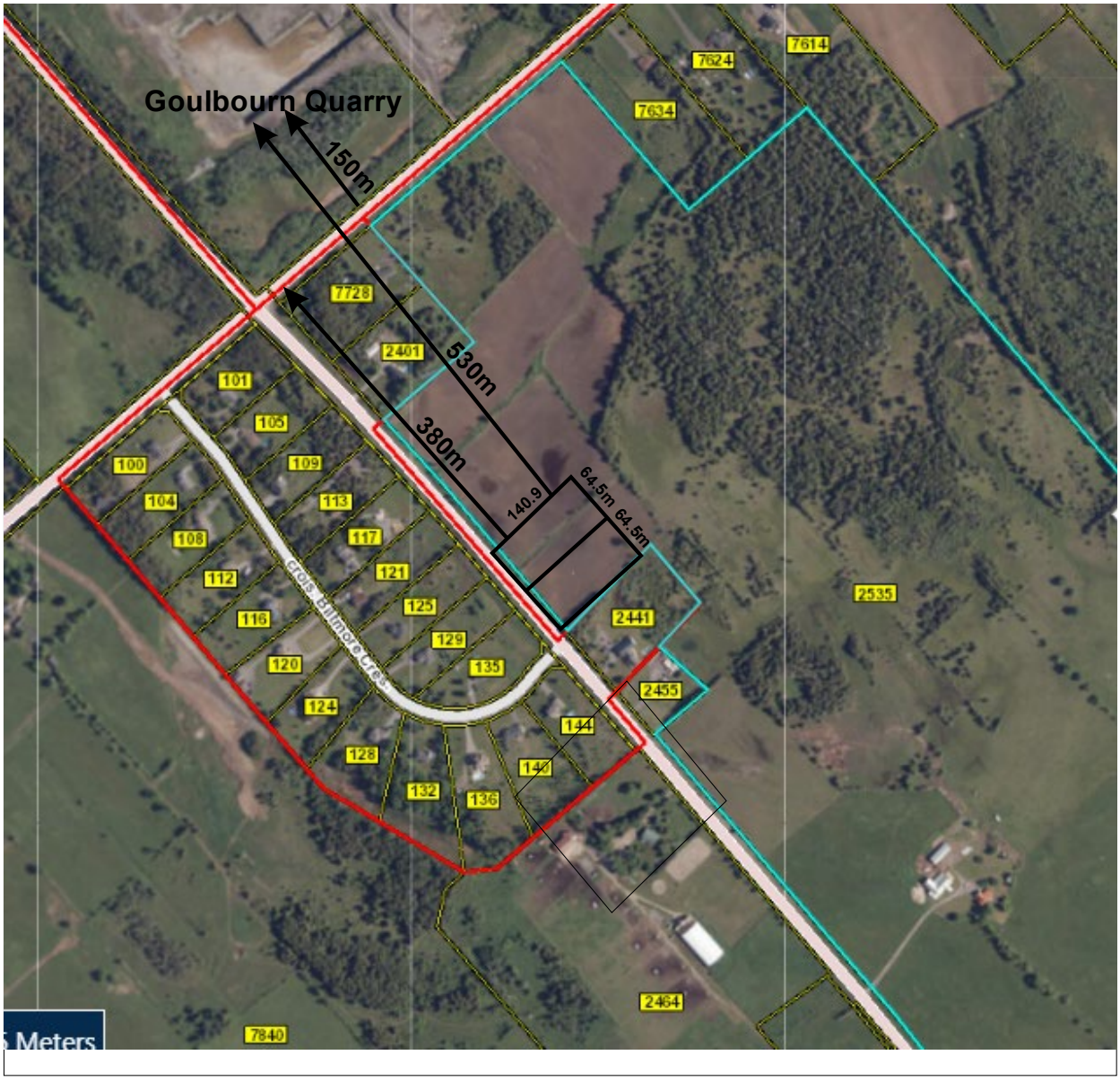
There are several causes for dust emissions at a quarry site. Dust can be generated from haul stone on internal and external haul routes, drilling and blasting operations, crushing screening and processing equipment. The internal routes shall be watered or treated with a provincially approved dust suppressant. Internal truck routes would be watered if there is visible air bourn dust. The entrance road to the Goulbourn quarry site and weigh scales is paved and is swept and watered when the site is in operation. Because limestone bedrock is dense consolidated rock, dust can not be prevented during blast operations. The dust disperses into the atmosphere within seconds of the blast firing. Unlike sand and gravel which can retain moisture from surface and ground water, consolidated rock contains no moisture. Dust created from crushing and screening rock shall contain water spray bars to control dust. Processing equipment used for this purpose is issued an environmental compliance approval (ECA) by the Province (MECP). The purpose of the ECA is to mitigate or avoid social impacts from quarry operations on the environment and on adjacent sensitive receptors

It is the licensee's responsibility to control dust at the source. The author is aware that many of the residents along the east and south parts of the quarry existed when operations at the quarry were at ground grade which was the worst-case scenario for social impacts. Since future operations would be setback from the south boundary significantly and future operations would be below grade, it is anticipated that social impacts would be significantly decreased both for surrounding residents and any proposed development further to the south.

The prevailing winds are predominantly from the west which would carry any airborne dust in an easterly direction away from the subject site. However, if there is visible airborne dust leaving the site, there is a violation under the EPA which must be addressed.

The proposed lots have been situated tight to an existing residential dwelling to the south and outside the agricultural resource designation. This location put the most northerly building lot approximately 380 metres from the ME zone (see **Figure 7**).

Figure 7a – Geo Ottawa 2021 –Existing residents adjacent to south end of Goulbourn Quarry



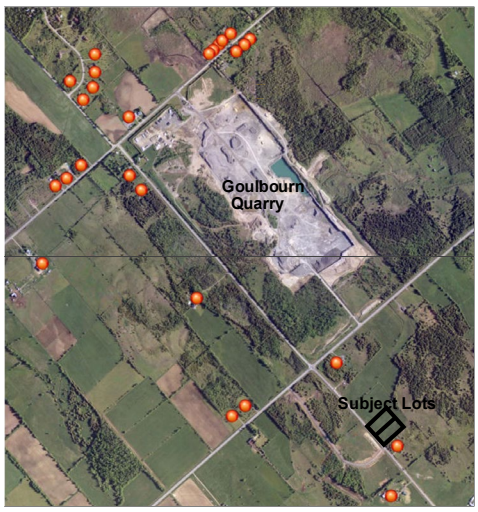
The creation of a residential lot along Fallowfield Road east and immediately adjacent to the Goulbourn quarry boundary was appealed by MNRF in and around 1994. A subsequent OMB decision ruled that the appeal be denied based on the 150-metre setback along this boundary, lack of complaints from nearby residents and the fact that MNR had not objected or appealed other land use decisions (severances, zoning by-law amendments, building permits) granting

residential development in the vicinity of the south quarry boundary. It is worth noting that the quarry operator was also not a party to the hearing.

Figure 7b shows a comparison of the quarry development and residential development between the years of 2002 and 2019. As indicated, while development within the quarry has expanded to 73 % of its resource reserve area, residential development within 150 metres of the pit and quarry has nearly doubled with approval of the Munster subdivision and strip development around the periphery creating 26 new residential homes. The quarry setbacks have not changed since the 1991 licence approval by MNRF. Residential development in close proximity of the quarry has continued with a low volume of reported complaints. This would lead the author to believe the initial setbacks and mitigation measures developed during the 1991 expansion application are still adequate for planning and development considerations

Figure 7b – Geo Ottawa 2021 –Quarry and Residential Development Comparison

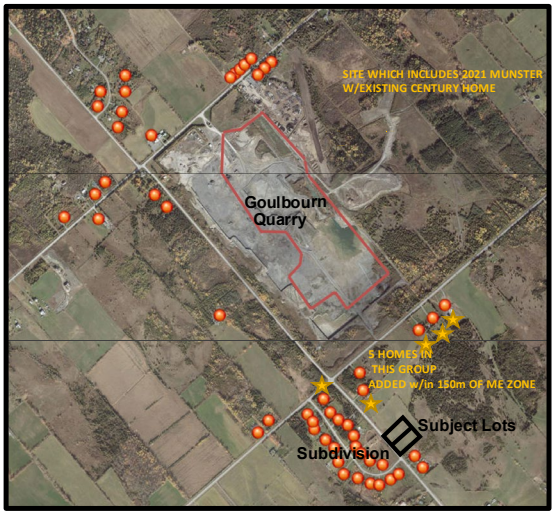
AERIAL COMPARISON OF CHANGE DURING SPAN OF CURRENT OFFICIAL PLAN



AERIAL PHOTOGRAPH OF QUARRY AND
SURROUNDING ENVIRONS CIRCA 2002;
PREVIOUS TO CURRENT OFFICIAL PLAN

NUMBER OF HIGHLIGHTED RESIDENTIAL LOTS: 27

APPROXIMATE AREA OF WORKED QUARRY (2002): 310,362.6 m²



AERIAL PHOTOGRAPH OF QUARRY AND
SURROUNDING ENVIRONS CIRCA 2019

NUMBER OF HIGHLIGHTED RESIDENTIAL LOTS: 53
*INCREASE OF APPROXIMATELY 96%
OUTLINED AREA REPRESENTS BOUNDARIES OF WORKED AREA OF QUARRY SITE FROM 2002

APPROXIMATE AREA OF WORKED QUARRY (2019): 539,147 m²
*INCREASE OF APPROXIMATE 73.5%

- NEAR DOUBLING OF RESIDENCES IN THE 20 YEARS OF THE OP HAS NOT HAD AN APPARENT EFFECT ON THE QUARRY OPERATIONS

The majority of the original licence area in the NE portion of the lot was exhausted of bedrock and sand and gravel resource prior to the expansion being granted in 1991. The approved site plans indicate a 200-metre setback ("buffer zone") along the north licence boundary of the quarry. The north-east and south-east sections of the quarry face has been backfilled, sloped and vegetated along the setback/buffer limits (see attached photos) and no further bedrock extraction will occur along the 200-metre setback limit. At the time of the expansion, the ramp accessing the quarry was re-located from the centre of the east boundary to straight in past the scales and down to the second lift. Also, during the expansion, a new substantial tree screen of white cedar was transplanted along the entire north licence boundary to screen the quarry and assist with the noise and dust impacts. As indicated in the photos at the end of the report, the south quarry face has also been extracted to the 150-metre setback limit on the second lift (110.0m ASL). Further extraction or processing will not occur along these sections of the quarry boundary and the proposed building envelope as presented would have no additional restrictions where resource has been extracted to the 150-metre setback limit.

In review of the Goulbourn quarry file, all conditions relating to the Permit to Take Water (PTW) and the Hydro Geological Assessment (Paterson Group 1991) for the quarry expansion are in compliance. All processing equipment (crushers screeners, conveyors) contain the required Environmental Certificates of Approval issued under the EPA. All conditions of the PTTW and ECA's for statuary equipment and blast monitoring are in compliance and meet provincial guidelines for dust, noise and blasting.

In discussions with the MNRF Pits and Quarries Inspector and an employee of Cavanagh Construction in 2023 (Phil White - Quality and Compliance), very few complaints have been received from regular operations at the Goulbourn Quarry. Occasionally blasting does create a concern. The licensee does monitor all their blasts for ground vibration and air overpressure and stay within the provincial guidelines. It is recognized that people's sensitivities regarding blasting differ and it is understandable that caution will continue to be taken and neighbours notified prior to blasting events.
Though dust is more prevalent in a quarry operation due to the lack of moisture when crushing solid rock, it is a regulatory requirement for the licensee to mitigate all dust on site. Therefore, dust from processing aggregates is not an issue.

II) Noise: The operation of the Goulbourn Quarry would include drilling and blasting and the use of excavators, dump trucks, portable crushing and screening equipment which do generate noise. Drilling and blasting have ceased at the extraction limit along both the north and south quarry faces at their respective setback limits. Concussion from the blast and noise from excavation and processing equipment is decreased significantly on adjacent sensitive receptors where operations are occurring below grade. Environmental compliance approvals for processing equipment are less restrictive for below grade operations than for operations at the ground surface. All remaining operations for the Goulbourn quarry will be below grade. Details regarding blast concussion and ground vibration are addressed in **section III) below.**

The following are regulations which pertain to noise emissions under the ARA:

O.Reg.466/20s.21, section 0.12)

Subsection (4)

A Class B licence, wayside permit or aggregate permit is subject to the condition that the licensee or permittee must mitigate the amount of noise emitted at the source with appropriate noise attenuation devices and site design if there is a sensitive receptor situated,

- ***(a) within 500 metres of the boundary of the site in the case of a Class B licence or an aggregate permit; or***
- ***(b) within 150 metres of the boundary of the site in the case of a wayside permit.***

The author of this report has extensive experience with the review of Noise Feasibility Studies and development of site plans to incorporate recommendations into enforceable site plan conditions for new pit applications. As a Pits and Quarries inspector, I attended joint investigations with MECP Environmental Officers responding to complaints relating to noise from extraction and processing equipment and drilling and blasting operations. These complaints are evaluated in consideration of the MECP noise guidelines, NPC-233, *Information to be Submitted for Approval of Stationary Sources of Sound*, October 1995. Noise from the facility is assessed according to MECP Documents: NPC-300, *Stationary and Transportation Sources – Approval and Planning*, August 2013. Noise levels of operating equipment are measured in decibels (dBL) using hand held equipment to ensure compliance with environmental regulations and provincial guidelines for noise.

The distance that noise will be transmitted varies upon, vegetation height and density, wind direction, natural topography, man made berms and other noise barriers, the depth of the excavation (above or below grade), the direction of operation, and the distance between quarry activities and sensitive receptors.

The noise restrictions for the quarry site are enforced by the province pursuant to the site plans and regulations under the Aggregate Resources Act and regulations under the Environmental Protection Act. Noise limits must be mitigated at the source. Mitigation of noise and ground water involving the extensive setback limits for the quarry, berm placement and heights, tree screens, phasing of operation and final depth of extraction were established and accepted by the Ministry of the Environment and Ministry of Natural Resources in 1991 during the expansion application of the quarry site. It has been determined that worst case scenarios for proximity to the quarry and operations above grade have already been experienced. Future operations below grade and further away from residences are anticipated to be less intrusive, resulting in fewer nuisance complaints and can easily meet provincial guidelines and regulations concerning noise.

III) Ground Vibration and Air overpressure

Typically, blasting operations, which generate concussion and ground vibration, would be the most common social impact complaint generated by adjacent neighbours.

All remaining drilling and blasting operations will occur below grade moving northward away from the south quarry face on the second and third lifts as indicated by the photos at the end of this report.

The following regulations pertaining to quarry blasting, are stated in O.Reg.466/20s.21, under the ARA, section 0.12 Sub-section (5):

A licence, aggregate permit or wayside permit that authorizes blasting at the site is subject to the following conditions:

1. No blasting shall occur on a holiday, or between 6 p.m. and 8 a.m., unless the permittee holds an aggregate permit and there is no sensitive receptor located within 2,000 metres of the area in which the blasting takes place.
2. The licensee or permittee shall monitor all blasts for ground vibration and blast overpressure and prepare blast monitoring reports in accordance with provincial guidelines on limits on blast overpressure and ground vibration for blasting operations, unless the permittee holds an aggregate permit and there is no sensitive receptor located within 500 metres of the area in which the blasting takes place.
3. The licensee or permittee shall retain the blast monitoring reports prepared under paragraph 2 for a period of seven years after each blast.

In addition to the ARA Regulations, the NPC-300 also contain parameters for ground vibration limits of 12.5 mm/second and air overpressure of 128 dBL from a blast. These limits are measured using a seismograph equipment. Although the licensee is not bound by conditions with respect to blast monitoring and reports, the blasting company provides this service as part of the contract with the operator. This record provides information to regulators responding to

complaints and provides a due diligence case to all involved parties in consideration of liability issues.

There was a local study completed by Austin Powder Ltd. technical services division, 2013, to assess how a proposed development by West Ottawa Holdings Inc. would have on the blasting design and impacts for Karson "Huntley Quarry" north of Stittsville and west of Kanata. Routine monitoring was performed at the structures nearest the blasts which are to the north and northwest of the active quarry faces. The monitoring measured the ground vibration and concussion (air overpressure) of each blast operation to ensure compliance with provincial blast guidelines. West Ottawa Land Holdings Inc. is planning to build on property to the south east of the quarry. This new development will become the nearest structure to the blasting. As the new structure would be in a direction opposite of the current monitoring locations, a new data set in directions relative to the blasting was required to properly determine the potential impact that this new receiver would have upon blasting practices at the quarry.

The following is an except from the Austin Powder Ltd. report:

The maximum reported charge weight in a blast with respect to this study was 158 Kg (blast # 2013-26). The ground vibration regression implies that a similar blast with a maximum charge weight of 158 Kg could be fired and be compliant to a 12.5 mm/s PVS with 95% confidence with a receiver approximately 560 m behind or beside the closed end of a blast. As the blasts become closer to the receiver, the blaster should avoid simultaneous detonation of holes that are in close proximity to one another in order to help reduce blasting induced ground vibration.

The scenarios below consider some changes to the blast design that could allow the quarry to continue to operate at various distances to a receiver behind, or, beside the closed end of a blast. The designs attempt to utilize a realistic ratio of explosives used to rock blasted (powder factor) in order to portray viable designs which would produce muck comparable to that which is currently processed. Industry experience has shown that electronic initiation, along with computer simulation can lower vibration amplitudes. The use of these techniques may allow for a lower scaled distance to be used.

An estimated cost difference for drilling and blasting is expressed in terms of a percentage increase of the current cost. The percentages were calculated using two primers per explosive column/deck where possible. Change of cost estimates for both non-electric and, electronic initiation systems are given.

A change in blasting cost is only one factor that should be considered when examining the overall impact a new receiver may have on a quarry. Karson should also consider other factors such as: quarry development, breaking oversize from the collar zone and, increased handling time, among others when attempting to forecast future mining costs.

Implications:

To summarize the Huntley Quarry report, according to the regression analysis, ground vibration behind the blast is more restrictive to compliance than overpressure beyond about 150 metres from the receiver. Closer than 150 m, the overpressure levels are more restrictive. However, at this distance from a receiver, the blasthole collars will likely have to be increased to mitigate a potential of flying rock from the collar zone falling outside of the property boundary. This increase in blasthole collar would likely reduce air overpressure to levels below those predicted by the regression.

The report further suggests that no changes to general drilling and blasting techniques and best practices were required to meet provincial air overpressure and ground vibration guidelines from blasting when **within 250 metres of a sensitive receptor**. Blasting is an engineered science and provincial guidelines can be met for distances **less than 250 metres**, but there are economic costs and other risks that factor into the blast design program as stated in the report.

For the purposes of the subject application, the 2 building lots would be a minimum of where the closest predicted quarry face would be a minimum of 380 metres from the edge of the ME zone and licence boundary of the quarry. There is a 150-metre setback or extraction limit inside the south licence boundary. These setbacks would separate the building locations from the drilling blasting, excavation and processing areas by a minimum distance of 530 metres. The 530-metre distance would be beyond the 250-metre threshold stated in Huntley Quarry Blasting Report and would meet the intent of 500 metre influence area of the OP. In planning, the separation distances are from the zoned or designation line to the sensitive receptor. However, in this case we are using the more practical extraction and processing limit line. The quarry face on the second lift of the quarry is also an additional 100 metres north of the setback limit, bumping the impact zone to 630 metres from the south east boundary. There is a Bell communication tower and easement in the SW corner which also contains a setback for further protection.

NOTE: A link to the ***Karson Huntley Quarry, Regression Analysis Report*** can be accessed in this report under **section 10 References**.

IV) Truck Traffic Impacts:

The main entrance/exit for the haul route from the Goulbourn Quarry is located near the weigh scales onto Flewellyn Road. There is some incoming truck traffic from the full load Fallowfield entrance, but the dust from this direction is toward the quarry. The traffic moves east and west along Flewellyn supplying the Carleton Place and Stittsville markets. Traffic may also go north to highway 7 and the Ottawa market and south toward Munster and Richmond. The Goulbourn quarry more supplies the local market and the Cavanagh Henderson quarry further north would move toward the Ottawa market.

Since traffic is leaving the site via Flewellyn Road, there is no conflict or impact caused to the proposed building lots and the lots would not effect the quarry truck movement. Here is a photo of the entrance onto Flewellyn Road at the end of this report.

V) Ground Water (Water Wells)

There was a site plan amendment application to deepen the quarry during the expansion application in 1991 to extract to a lower quarry floor elevation. A hydrogeological assessment was prepared by Paterson and Assoc. at the time. The Ministry of Environment, Conservation and Parks reviewed the hydrogeological assessment in context of adjacent water wells and pumping operation and monitoring for the quarry. The final quarry floor elevation was approved to a final depth 110.0 m ASL, 5 metres above the water bearing aquifer.

Subsection 2 of the regulations under the ARA state:

4. The licensee or permittee shall obtain a permit to take water under the Ontario Water Resources Act where required to carry out operations at the pit or quarry.

Subsection 3 of the regulations under the ARA state:

A licence or aggregate permit is subject to the following conditions:

1. ***The licensee or permittee shall ensure that fuel storage tanks are installed and maintained in accordance with the Technical Standards and Safety Act, 2000.***
2. ***The licensee or permittee shall ensure that a spill contingency plan is developed prior to any operation of the pit or quarry, and followed during the operations***

The quarry has a clear compliance record.

6.0 Potential Impact of two residential lots on the Goulbourn Quarry Operation

In addition to the Provincial Policy Statement, the Aggregate Resources Act (ARA) regulates the operation and rehabilitation of pits and quarries in Ontario and is administered by the Ministry of Natural Resources and Forestry (MNRF). Pit and quarry applications are subject to appropriate zoning, operational standards that were designed to minimize impacts of pits and quarries on nearby sensitive receptors and the environment. Mitigation measures are developed based on technical report recommendations which are transferred to enforceable conditions on the site plan which regulate the operation and rehabilitation of the site. Conversely, MNRF developed guidelines for municipalities to use for assessing development impacts on currently licensed pits and quarries and sand and gravel and bedrock reserves. These guidelines are referred to as the ***Mineral Aggregate Resource Reference Manual dated 2001.*** The City of Ottawa has adequately adopted the spirit of these guidelines in their current O.P. which acts as the basis for assessing compatibility for new developments on sand and gravel and bedrock resource areas. City staff have also developed a Terms of Reference for a Mineral Resource Impact Assessment study in November 2023 which assist in the preparation of this report.

The site plans regulating the "Goulbourn Quarry" indicate reasonable mitigation measures and operational phasing. The first and second lifts of the quarry have been extracted to the allowed extremities of the licence. All future operations will be below grade lessening the impacts on surrounding land uses and sensitive receptors. Remedial measures are in place to ensure, dust, noise, vibration, traffic and water well concerns will continue to be in compliance with provincial guidelines and conditions of the quarry license. Rehabilitation has commenced in the north end of the Goulbourn quarry where resources have been depleted. Backfilling and sloping could also commence on the upper lift along the south boundary where extraction limits have been met.

The Goulbourn Quarry is being operated in accordance with their site plan and in consideration of low impact to adjacent neighbours since this quarry is secondary source to local supply with the 'flag ship Henderson Quarry". This does not mean there will not be nuisance complaints received, but it is recognized operations will be below grade for the remainder of the life of this quarry.

The Karson Huntley quarry blast report indicates there would be little to no change in operations where blasting is beyond 250 metres of the quarry blast face. **Figure 7a** indicates that the proposed northern most building lot is **380 metres** from the quarry boundary and **530 metres** from the active extraction and processing area which includes the **150-metre** quarry extraction setback. All other operations at the lower lift to elevation 110 m ASL will be significantly beyond 500 metres of the subject building lots and will be below grade.

7.0 Land Use Compatibility Analysis

The concept of an influence area is recognized as a means of protecting mineral aggregate resources and/or operations from the encroachment of incompatible land uses. The influence area in this case is 500 metres as indicated by the Official Plan. The influence area is not a strict buffer or setback area in which development is prohibited, but rather, it is an area where impacts may be assessed and mitigation measures, avoidance and monitoring considered.

In the context of the proposed development lands, the 500-metre influence area is used to evaluate possible impacts of the proposed residences on the Quarry operation or future expansion of the operation beyond the site and the adjacent lands. Due to the depletion of the resource at the south end of the quarry and the surrounding development, an expansion to the current quarry operation is not feasible. The quarry expansion in 1991 was approved after technical scrutiny, to operate to full extent allowed on Lot 11 within the licence boundary.

The subject property containing the building lots and retained parcel is not designated for bedrock resource and is further constrained by the agricultural resource designation. The subject site development has no impact of the existing quarry operation or future expansion. There are substantive bedrock reserves on either side of Jinkinson Road between Fernbank Road and Highway 7.

The Goulbourn Quarry has seen a reduced annual production since the approval and development of the "Henderson Quarry, but will continue to supply the local market as a lower impact operation until it is depleted of reserves. Extraction and processing at the Goulbourn Quarry is moving north and east away from the subject site on the 2nd and 3rd lifts below grade. Because of the distance between future operations and residences and the fact that extraction will be below grade, social impacts are significantly reduced. The 530-metre separation distance will ensure the proposed residences do not impact the quarry which must comply with provincial guidelines and regulations to protect several dwellings in closer proximity then the subject application.

8.0 Summary

In summary, there is a bedrock resource area licenced as a pit and quarry located immediately north of the retained portion of the subject lands. No other bedrock is protected in the immediate vicinity beyond the limit of the existing quarry boundary. The O.P. has not designated bedrock resource on the adjacent subject lands . There is a sand and gravel overlay located 1685 meters east of the consent application and therefore beyond the 300-influence area of the O.P. for the protection of sand and gravel reserves. The licensee, represented by Phil White, an employee of Thomas Cavanagh Construction Limited, has confirmed by emails during consultation on this application, that the company has removed all of marketable bedrock in the south west area of the quarry to the final depth and to a quarry face on the second lift that is in excess of 530 metres from the closest proposed lot. There is therefore no impact on the existing quarry and no opportunity for a future pit and quarry expansion in the vicinity of the subject lands.

Two potential building lots on the subject property will have little to no negative effect or place undue restrictions or conditions on the current quarry operation directly to the north. The quarry has already gone through a licence expansion application in 1991 and an amendment to deepen the quarry in 2001 and has operated to the limits allowed by those approvals. There were several residential dwellings already existing at the time of the quarry expansion which affected the operational phasing, setbacks, berming and screening to mitigate impacts to those residences. Since the quarry operation must comply with regulations to be in conformity with residences within the 500-metre influence area, the subject lands would not be impacted nor would the quarry be hindered by this development being 380 metres from the licence and zone MX boundary and 530 metres from the extraction area (northern quarry face moving north and east).

West Ottawa Land Holdings Inc. commissioned a blast study for proposed development directly east of the most active area of the Karson Hunley Quarry. The results of the study resulted in the development proceeding within the 500-metre influence zone. The Goulbourn quarry operations are below grade and 530 metres away which exceeds the thresholds stated in the Spratt Quarry Blasting report which is the main trigger for noise and vibration impacts. This study was relevant to the subject application.

The author of this report has demonstrated that complaints about the quarry operation would be of very low risk of occurring from the proposed residential lots indicated in the subject application.

9.0 Recommendation

Based on the lack of bedrock reserves and sand and gravel resources in the vicinity of the subject site, the location of future extraction and processing area being below grade and moving away (north and east) from the proposed development at a distance of 530 metres, the acknowledged separation distances proposed between the ME zone and the proposed development lands being 380 metres, OMB decision approving an abutting residential lot directly abutting the quarry zone on the south east side, the lack of complaints and the licensee's good compliance record, showing the two conflicting land uses are being compatible at the current separation distances, I conclude that the adjacent development lands would have no effect or constraint on the existing quarry operation to the north and that additional resource areas in close proximity are not available for extraction.

I would therefore support the consent application for development of two building lots on the under the condition that no development occurs within the 380-metre retained parcel of the subject lands.

Yours sincerely,

Gary McLaren
President
Phone: 613-272-6795
Mobile: 613-893-6227
Email: gmclaren@milestoneaggregate.com

Milestone
Aggregate Consulting Services Inc.

10.0 References

Pit Licenses for the Cavanagh Construction, Goulbourn Quarry Licence #4114

Site Plan “Goulbourn Quarry” prepared by Base Mapping Company Ltd.
Site Plan “Goulbourn Quarry” prepared by Base Mapping Company Ltd. and amendments by McNaughton (MBHC Planning).

City of Ottawa Official Plan
City of Ottawa Official Plan Schedule "A"

Lee, V .L. 2013. Aggregate Resources, Inventory for the City of Ottawa, Southern Ontario; Ontario Geological Survey, Aggregate Resources Inventory Paper 183.
ARIP 191

Limestone Industries of Ontario, Volume II – Limestone Industries and Resources of Eastern and Northern Ontario, by Derry Michener Booth and Wahl and staff of the Engineering and Terrain Geology Section, OGS, Ministry of Northern development and Mines 1989.

Aggregate Resources Act Ontario Regulation 244/97
ARA Ontario Regulation 244/97

ARA of Ontario Technical Reports and Information Standards
ARA of Ontario Site Plan Standards

Ministry of Natural Resources Mineral Aggregate Resources Reference Manual 2001
Aggregate Resources Policies and Procedures

Pits and Quarries on line provincial mapping tool (MNRF)
Pits and Quarries Online

geoOttawa Satellite Map

Ministry of Environment, Conservation & Parks Noise Guidelines – NPC/300
NPC/300 Provincial Noise Guidelines

Blast Report Karson Huntley Quarry

11.0 Site Photographs

Entrance to subject site off the east side of Munster Road south of the “Goulbourn Quarry”.
December 11, 2023, G. McLaren

Showing both lots off the east side of Munster Road
December 11, 2023, G. McLaren

Subject south along Munster Rd. toward the interaction of Munster Rd. and Fallowfield Rd.
December 11, 2023, G. McLaren

Looking west at subdivision along Munster Road adjacent to the subject building lots
December 11, 2023, G. McLaren

Looking west at subdivision along Munster Road
December 11, 2023, G.McLaren

Looking west at the southern entrance to the subdivision adjacent to the proposed building lots
December 11, 2023, G. McLaren

December 11, 2023, G.McLaren

Looking south west toward subdivision along Munster Road
December 11, 2023, G. McLaren

South portion of Retained lands, Farm entrance off Munster Road
December 11, 2023, G. McLaren

Retained lands to the south at farm entrance off Munster Road. .
December 11, 2023, G. McLaren

Goulbourn Quarry entrance off Flewellyn Rd.
May 31, 2021 G McLaren

Looking at south west quarry face 2nd lift, toward intersection of Munster and Fallowfield Rd. South west area of quarry depleted of marketable stone to final depth and setback limits.
May 31, 2021 G McLaren

Looking at west face, quarry 2nd lift, toward Munster Rd. Area depleted of marketable stone.
May 31, 2021 G McLaren

Goulbourn Quarry north quarry face at extraction limit 200 metres from Flewellyn Rd.
May 31, 2021 G McLaren

Appendix A Curriculum Vitae

GARY D. MCLAREN

EDUCATION

Secondary School Graduation Diploma, 1977
Napanee District Secondary School

OTHER SPECIAL QUALIFICATIONS

Ontario Police College Law Enforcement Certificate Course – Aylmer (MNR-Level 1)
Pits and Quarries Inspection Certificate (Ministry of the Environment)
Pits and Quarries Enforcement (Ministry of Natural Resources)
Aggregates/Petroleum Resources Enforcement and Compliance (MNR)
Lands and Waters Certificate
Restricted Radio Operator's Certificate
Transportation of Dangerous Goods Basic Emergency Management Training Course
Temperate Wetlands Restoration Training Course
Small Non-Pleasure Vessel Basic Safety
CCG Pleasure Craft Operators Certificate
Occupational Health and Safety Certification Course (Level one, basic and level two, site specific)

EMPLOYMENT HISTORY

President of Milestone Aggregate Consulting Services Inc. (2015 to present)

Over the past 8 years my company has provided the following services to the aggregate industry in Eastern and South-Central Ontario:

- Provided compliance monitoring and reporting (completion and submission of annual Compliance Reports for licensees under ARA), and prepared comprehensive compliance strategies for licensees based on site audits;
- Project Management services for complex pit licence applications under the Aggregate Resources Act (ARA);
- Facilitated licence and site plan amendment approvals under the ARA, the Planning Act, the Environmental Registry, and the Water Resources Act, and various other related legislation, policies and guidelines intended to develop mining and sand and gravel operations and protect significant features of a provincial interest;
- Provide credible planning advice to support the protection of Aggregate Resource areas pursuant to the Provincial Policy Statement (PPS). Preparation of 25 Mineral Resource Impact Assessment Reports to support planning applications (severances, minor variances, building permits) near active pit and quarry operations and designated aggregate resource areas across eastern Ontario (City of Ottawa, Counties of Lanark, Renfrew and Leeds and Greville);

- Act as an approvals liaison representative for the industry when seeking licence, permit, approvals and amendments from local and upper tier municipalities, provincial government agencies, non-government organizations, stakeholders and the general public;
- Contracted to represent MNRF Aggregate Program Inspectors with a job specification special case presentation to Provincial Government and union task teams;
- Contracted to develop and facilitate an MNRF Issues Management scoping list for Ontario Stone, Sand and Gravel Association (OSSGA);
- Commented on Government initiatives (Blue Print for Change – Aggregate Resources and Mining Modernization Act);
- Member of working Group for OSSGA East Region Committee reviewing several draft documents for submission to provincial initiatives (e.g. Prov. Gov. Red tape Review, MNRF Scoping Issues Report, preparation for Meeting with MNRF regarding proposed regulations under the Aggregate Resources Act;

Senior Program Adviser, Aggregates (MNR) – **September 2014 to December 2014**

- Lead an Operations Division working group to scope potential delivery mechanisms resulting from the 2013 Aggregate Resources Act Review;
- Develop a performance matrix for provincial aggregate inspectors; and
- Develop and deliver training for a risk-based compliance program for supervisors and inspectors.

Aggregate Resources Coordinator (MNR) – January 2008 to September 2013

- Provide advice and leadership for all matters related to the Ministry's Aggregate Resources program to operations division;
- Provide leadership and direction to regional directors and assistant deputy minister in the resolution of highly complex issues;
- Collaborate with others in the preparation of Ministry (and Inter-Ministry) policy initiatives related to aggregate resources and the Aggregate Resources Act and regulations;
- Provide expert advice and assistance on all matters related to the Aggregate Resources program;
- Act as expert witness at provincial tribunals (Ontario Municipal Board hearings and Mining Lands Commissioner);
- Contribute to and deliver training packages to Ministry staff as required;
- Lead and participates on planning policy teams identifying and developing provincial policy initiatives and issues relating to Aggregate Resources;
- Consult and liaise on a regular basis with other ministries, industry, non-government organizations and stakeholders;
- Promote cooperative partnerships and develop and implement strategies to achieve aggregate resources program goals and objectives; and
- Develop an approvals template for Inspectors following the 2011 change in Delegation of Authority under the Aggregate Resources Act.

Mineral Resource Administrator and Pits and Quarries Inspector (MNR) – April 1977 to December 2008.min

- Implement, administer and enforce the Aggregate Resources Act, regulations and related Ministry policies and guidelines;
- Provide advice on Aggregate Resource deposit areas, license properties and other planning matters to Ministry front line field staff responsible for plan input and review;
- Coordinate the implementation of abandoned pit and quarry rehabilitation projects for the area office;
- Monitor and inspect on a regular basis aggregate extraction sites under licence or permit to assess compliance with the Aggregate Resources Act, regulations, provincial operational standards, and conditions of the license and the site plan;
- Investigate complaints and provide direction on remedial action and recommend enforcement action where warranted;
- Coordinate pit and quarry license and permit applications as well as site plan amendment approvals in accordance with the Aggregate Resources Act policy and procedures manual; and
- Consider other related federal, provincial and municipal legislation as part of compliance monitoring and approval processes using current inspection techniques. (e.g. Environmental Protection Act, Water Resources Act, Environmental Bill of Rights, Occupational Health and Safety regulations for Mining and Mining Plants, Planning Act, Municipal Act, etc.).

AFFILIATIONS, ACCREDITATIONS AND ACCOMPLISHMENTS:

- Associate Member of the Ontario Stone, Sand and Gravel Association (OSSGA) Active since 2017
- Member of the OSSGA Eastern Region Committee and working Group;
- Received Approval from MNRF to prepare site plans under the Aggregate Resources Act (Mar. 2017);
- Member of Aggregate Resources Program Policy and Procedures Manual 2006;
- Member of Aggregate Resources Program Policy, Procedures Manual Apr. 1986;
- Co-chair of Non-Renewable Resources task team for the 2010 Provincial Policy Statement review;
- Co-chair of the Southern Region Aggregate Inspector Task Team and the Lands, Aggregates and Waters NE Regional Forum and lead Inspector task teams with development of annual work plans, performance measures and annual reports;
- MNR Member of the City of Ottawa Steering Committee, for the 1993-95 Aggregate Resource Mapping and O.P. Policy Review;
- Lead the Planning exercise for the development and approval of the Mississippi River Water Management Plan;
- Prepared and monitored Southern and Northeast region Aggregate Program work plans, performance measures and annual reports;
- As a member of one of MNR's Southern Region Operational Forums (Safety and Health forum) MNR's southern region was presented with the Canada Award for Excellence for achievements in quality, customer service and a healthy workplace;
- Member of inter-ministerial committee (federal provincial and local government) responsible for the development of the Cornwall Sediment Strategy to protect the Cornwall water front;
- Member of the Health and Safety committee for the Nepean Relay for Life (Cancer Fundraiser);
- Chair of Joint health and Safety Committee Kemptville MNR office and member of JHSC MNR Peterborough Robinson Place;
- Acting District Planner, member for Inter-ministerial committee reviewing comprehensive municipal official plans;
- Peer reviewer, MNR member for eastern Ontario Source Water Protection Plans; and
- Tracking and tagging moose calves in Algonquin Park

PUBLICATIONS AND PRESENTATIONS

- Working Group member for the Risk Based Compliance Handbook for Aggregate Inspectors;
- Co-authored the Aggregate Resources Program Administration Manual 2005 and the previous ARA Administration Manual 1986;
- Co-authored the Kemptville District Health and Safety Plan;
- Strategic Operations Report for Aggregate Resources Kemptville District – 1998;
- Co-authored with Stacy Robertson, Background Report for Mineral Extraction Policy Areas in Drummond Township – 1991;
- Co-authored with Amarjit Sandhu and Stacey Robertson, Aggregate Resources Annual Review, 1988 and 1990, MNR Carleton Place District;
- Guest lecturer for the Ministry of Natural Resources, Land and Waters Certificate Course on the Aggregate Resources Act, 1989;
- Guest lecturer on the Aggregate Resources Act, 1989 for the Ministry of Transportation's Municipal Update Course;
- Co-authored with S.M. Thatcher and M. McMaster, Hazard Mine Inventory, Tweed and Napanee Districts, 1986; and
- Co-authored with S.M. Thatcher and M. McMaster, Abandoned Pits and Quarries Inventory Reports for Tweed District (Middle Hastings County) 1983 and Abandoned Pits and Quarries Inventory Report for Napanee District (Prince Edward County) 1985;

PRIOR ONTARIO MUNICIPAL BOARD EXPERIENCE

I have been qualified by the Board to provide opinion evidence for matters under the Aggregate Resources Act and the Provincial Policy Statement including the following examples:

- 2023 prepared witness statement for OLT hearing for zoning referral to Crain Construction Pit Application under the Planning Act;
- 1996 – Hostile licence transfer under the ARA (Secaspina, Polowin, Wilson), West Carleton Twp.;
- 1995 - Environmental, Social and Economic impacts relating to a Quarry Licence application
- referral under ARA in Montague Township, Lanark County;
- 1992 - Dust, noise, ground vibration and air overpressure impacts, truck traffic and other environmental, social, economic impacts in an MNR appeal to a severance application under the Planning Act Goulbourn Township (Leubert);
- 1991 - Environmental, social, and economic criteria for identifying and protecting bedrock reserve areas in a municipal official plan, Aggregate Producers Association of Ontario and Dechan Construction appeal to Beckwith Township Official Plan;
- 1990 - Dust, noise, truck traffic, ground vibration and air overpressure impacts of an operating quarry on lands adjacent to proposed residential development – MNR appeal of severance application under P.A. in Pakenham Township, Lanark county (Kennedy);
- 1989 - Acting as Agent for the appellant in a land consent appeal (severance application). Prepared all background evidence, e.g. photographs, aerial photos, O.M.B. maps, pertinent O.P. policies, Provincial legislation, zoning by-laws, influence areas, etc.; and
- 1982 - Haul route impacts on nearby residents during referral of a pit licence application under the Pits and Quarries Control Act (PQCA) in Hungerford Township, Hastings county.

PRIOR COURT EXPERIENCE

On ten occasions, I have provided opinion evidence as an investigating officer and also as a witness for charges in cases of non-compliance with the Aggregate Resources Act and the Pits and Quarries Control Act. Evidence included the auditing of production figures, truck box measurement, site plan interpretation, calculation of disturbed areas, digital and paper photographs, sketches, etc.

I have prepared Crown Briefs, Information's, Subpoenas, Supplemental Information documents, Guilty Plea Synopsis for convictions with recommended deterrents. I have prepared recommendations for fines and court orders for restoration and rehabilitation to bring sites back into conformity with regulations, site plans and conditions of the licence.

Prepared by:

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