

# **Summary Statement & Consultant Reports**

## **Proposed Gravel Pit**

**Category 1 "Class A" Pit Below Water Application  
Aggregate Resources Act**

located on

**Part Lots 1 & 2, Concession 2  
Geographic Township of Lobo  
Municipality of Middlesex Centre  
County of Middlesex**

Prepared for:

**Johnston Bros. (Bothwell) Limited  
21220 Johnston Line, RR 1, Wardsville, ON, N0L 2N0**

PREPARED BY:

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Kitchener, Ontario**

**October, 2017**

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## **Introduction**

This Summary Statement has been prepared in support of an application to the Ontario Ministry of Natural Resources and Forestry (MNR) for a Category 1, Class A, Pit Below Water aggregate licence by Johnston Bros. (Bothwell) Limited of, Wardsville, Ontario. This proposal is for a 24.7 hectare site of which 21.3 hectares are proposed to be extracted.

The site is located on Part Lots 1 and 2, Concession 2, in the Geographic Township of Lobo, now in the Municipality of Middlesex Centre, County of Middlesex and is owned by Mr. Ken Maes. Amiens Road borders the site to the southwest. The site is paralleled on some parts of the northwest side by a CN rail line and by natural areas. Adjacent agricultural lands are located to the southwest, the southeast and the northeast. A small pond is currently located on site and was constructed by the landowner. Other small ponds are located off site between the CNR and the proposed licence area and have been historically and presently used for irrigation.

Pit access is proposed to be to Amiens Road. An entrance permit will be required from the Municipality.

The lands within the proposed licensed area are currently in agricultural use (various crops). There are no buildings onsite.

Upon approval of a new licence the maximum amount of aggregate that could be removed in any calendar year would be 200,000 tonnes.

Enclosed, in support of this application, are the following drawings:

Drawing 1 of 4: Existing Features

Drawing 2 of 4: Operational Plan

Drawing 3 of 4: Consultant Recommendations

Drawing 4 of 4: Progressive Rehabilitation and Final Rehabilitation Plans

Submitted along with this Summary Statement are:

### **Hydrogeological Report (Level 1 and 2)**

A Hydrogeological Study has been conducted by Novaterra Environmental Ltd., London, Ontario, to assess and mitigate any possible adverse effects to groundwater resources and their uses by the operation of this pit.

### **Natural Environment Report (Level 1 & 2)**

A Natural Environment Level 1 & 2 study has been conducted by Biologic Incorporated, London, Ontario, to determine if there are any significant natural environment features on or within 120 metres of the proposed development. Where the Level 1 report identifies any such features a Level 2 report is conducted to assess if the proposed development could possibly have any negative impacts

on the identified features and if so, to make recommendations for preventive, mitigative and remedial measures which can be implemented on the MNRF site plans.

### **Noise Feasibility Report**

Noise from equipment used in extractive operations is analyzed in this report by HGC Engineering, Mississauga, Ontario, with respect to potential noise receptors within 120m of the proposed licensed boundary as per the requirements of the Aggregate Resources Act. Recommendations for attenuation measures are made where required to ensure the proposal meets the requirements of the Ministry of Environment and Climate Change (MOECC) environmental noise guidelines.

### **Cultural Heritage Study**

A Cultural Heritage study was conducted by Timmins Martelle Heritage Consultants Inc., London, Ontario. This study assesses the cultural heritage resources on the site and the details of the site archaeological investigation.

### **Aggregate Assessment Report**

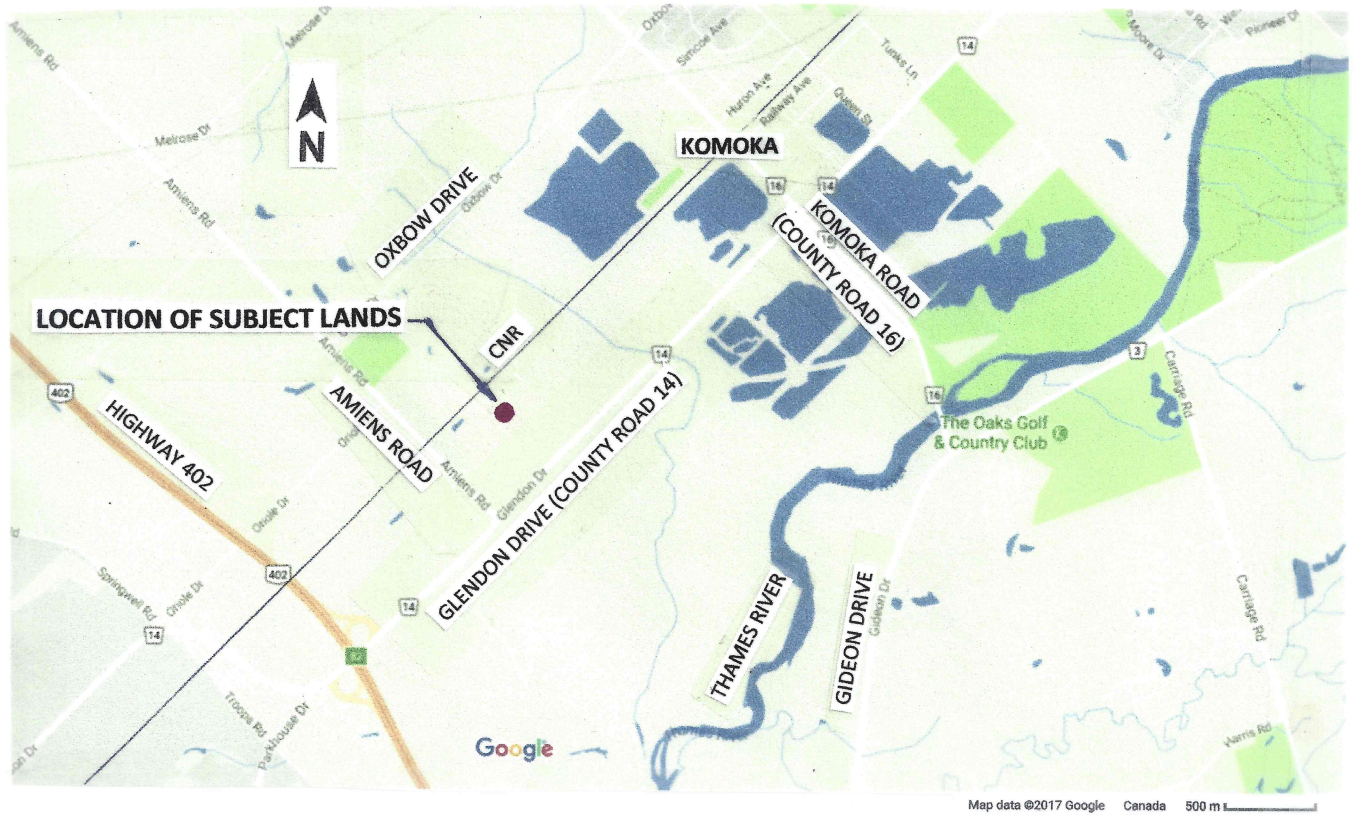
The quantity and quality of the extractable aggregates is assessed in this report by Englobe, London, Ontario.

## Planning and Land Use Considerations

The site is located on Part Lots 1 & 2, Concession 2, in the Geographic Township of Lobo, now in the Municipality of Middlesex Centre, County of Middlesex. See Figure 1.

These lands are presently zoned for agricultural use (A1). Wooded and wetland areas to the north are excluded and protected by extraction setbacks from the operational areas. The proposed licensed area is designated agricultural in the County Official Plan. A Zoning Bylaw Amendment application and Official Plan Amendment application will be required to allow for aggregate extraction.

**Figure 1: Site Location**



For the summer of 2017 the land has been in agricultural use. Once the site is licensed, the agricultural use will continue for as long as possible in lands not immediately required for extractive purposes.

The Existing Features Plan included with this report shows the proposed licensed area and lands within 120 metres of the site, including their current land uses and zoning designations.

Using an average thickness of 10m (across the extraction area), it is estimated that 2 million cubic metres of granular material could be extracted, which would translate to approximately 3.7 million metric tonnes by weight. (Englobe, 2016). If the maximum allowable tonnage of 200,000 is removed annually, the life-expectancy of the proposed pit would be approximately 18.5 years. The life span of any pit is dependent on the economy and market conditions.

Extracted lands are proposed to be returned to a natural environment after use in pond areas, with rehabilitation to agricultural uses in perimeter areas. The agricultural land shall be returned to the same soil capabilities by completing rehabilitation as outlined on drawing 4 of 4, Progressive Rehabilitation and Final Rehabilitation Plan (enclosed). The proposed final land uses are compatible with the surrounding land uses.

The licensing of this site prevents the sterilization of primary aggregate resources and complies fully with the Provincial Policy Statement (PPS), including section 2.5.1 which stipulates “Mineral aggregate resources shall be protected for long-term use.”

Aggregate deposits such as the one underlying the subject lands are to be protected and utilized.

Section 2.5.2 of the Provincial Policy Statement states: “As much of the mineral aggregate resources as is realistically possible shall be made available as close to markets as possible.”

The subject site is located with access to Amiens Road. From Amiens Road, trucks travelling southerly for +/-600m will reach Middlesex County Road 14 (Glendon Drive). Highway 402 and Komoka are also relatively close to the site.

## **Hydrogeological Report Findings**

Appendix A contains a report by Novaterra Environmental Ltd. (NEL) that outlines the findings of their hydrogeological study. Based on Figure 10 in the NEL report, the elevation of the seasonally highest water table varies across the site from 234.90m to 235.92m.

The report concludes: “The hydrogeological site assessment and associated calculations indicate that the proposed mining of sand and gravel deposits will not have any adverse effect on water resources, including the natural environment in the area and domestic water wells.”

The NEL hydrogeological recommendations are shown on Drawing 3 of 4, Consultant Recommendations and are implemented on drawing 2 of 4, Operational Plan. The site plans are enclosed with this report.

## **Natural Environment Report Findings**

Appendix B contains a report by Biologic Incorporated (BI) outlining the Natural Environment study.

The BI report concludes that:

“If the mitigation measures recommended in Section 6 are followed, the aggregate extraction operation can proceed as proposed under the *Aggregate Resources Act (ARA) (1990)*.”

The BI natural environment recommendations are shown on Drawing 3 of 4, Consultant Recommendations and are implemented on the Site Plans. The site plans are enclosed with this report.

## **Environmental Noise Study**

Appendix C contains a report by HGC Engineering Ltd. (HGC) that outlines the findings of the Noise Feasibility study. The report makes recommendations for the construction of attenuation berms and local shielding.

The report states:

“...HGC has reviewed the Operational Plan prepared an acoustic model of the proposed activities in the pit and conducted an analysis of those operations based on a worst case scenario. Using the modelling assumptions detailed in Section 4, along with incorporation of the noise control recommendations detailed in Section 5 and Figure 3, sound levels were predicted at each of the selected receptors as summarized in Table 3.

The results indicate that the sound emissions from the proposed operations, with the noise control measures in place, are expected to comply with MOECC guideline limits at the neighbouring, noise-sensitive receptors under worst case operating scenarios.

The recommendations presented in the HGC report have been shown on drawing 3 of 4, "Consultant Recommendations" and have been implemented on the Site Plans. The site plans are enclosed with this report.

### **Cultural Heritage Report Findings**

Appendix D-1 and D-2 contain reports by Timmins Martelle Heritage Consultants Inc. that outline the findings of the archaeological assessment for this site.

There were significant archaeological findings at this site. When the site is licensed, there are 2 areas that will be protected by fencing until any remaining archaeological issues are dealt with.

Report recommendations are shown on Drawing 3 of 4 of the site plans "Consultant Recommendations". The site plans are enclosed with this report.

### **Quality and Quantity of Aggregate:**

Appendix E contains the findings of the Aggregate Assessment Report by Englobe.

The report states:

"Using an average thickness of 10 m, it is estimated that 2 million cubic metres of granular material could be extracted, which would translate to approximately 3.7 million metric tonnes by weight. The sand and gravel could be manufactured into Granular 'B', which is a classification of the Provincial Ministries for road sub-base material. The sandier materials could be blended into the sand and gravel to produce Granular "B'. The sand could also be used to manufacture winter sand and Granular 'C'. Approximately 90% of the deposit (3.3 million tonnes) will require a below water extraction license."



## **Agricultural Land Classification**

The Canada Land Inventory (CLI) system “Soil Capability Classification for Agriculture” is the recognized system in Ontario for classifying mineral soils according to their inherent capability for agriculture. The best soils, with no significant limitations for crop use, are designated Class 1. Soils designated Class 2 to Class 6 have decreasing capability for common field crops. Class 7 soils have no agricultural capability. Class 1 to 3 lands are considered prime agricultural lands.

According to the Ontario government’s “Agricultural Information Atlas” the soils at these sites are CLI Class 3.

The atlas can be accessed online at:

<http://www.gisapplication.lrc.gov.on.ca/AIA/Index.html?viewer=AIA.AIA&locale=en-US>

The final rehabilitation of this site shall be predominantly to natural environment uses with perimeter areas being returned to agricultural uses.

During rehabilitation in the agricultural areas the soils shall be replaced in a manner that approximates the original soil profile. Prior to soil placement compacted areas of the pit floor shall be ripped and scarified. As such, the same average soil capability will be restored in these areas. Refer to the Progressive and Final Rehabilitation Plan (enclosed) for more details.

## **Addressing Provincial Policies Regarding Extraction in Prime Agricultural Areas**

As noted above, this site is proposed to be returned to natural environment and agricultural uses. The natural environment use involves the creation of a pond which will remove the agricultural capabilities.

With respect to provincial policies regarding agricultural land and below water extraction as found in the **2014 Provincial Policy Statement (PPS)** the following statements can be made.

**Section 2.5.4.1** of the PPS states that in prime agricultural areas, complete rehabilitation to an agricultural condition is not required if “outside of a speciality crop area, there is a substantial quantity of mineral aggregates below the water table warranting extraction, or the depth of planned extraction in a quarry makes restoration of pre-extraction agricultural capability unfeasible.”

There is a substantial amount of quality mineral aggregates below the water table warranting extraction and most of the total amount of the aggregate is located close to and below the water table.

Section 2.5.4.1 also exempts a pit or quarry from complete rehabilitation to an agricultural

condition where “other alternatives have been considered by the applicant and found unsuitable. The consideration of other alternatives shall include resources in areas of Canada Land Inventory Class 4 through 7 lands, resources on lands identified as designated growth areas, and resources of prime agricultural lands where rehabilitation is feasible. Where no other alternatives are found, prime agricultural lands shall be protected in order of priority: specialty crop areas, Canada Land Inventory Class 1, 2 and 3.”

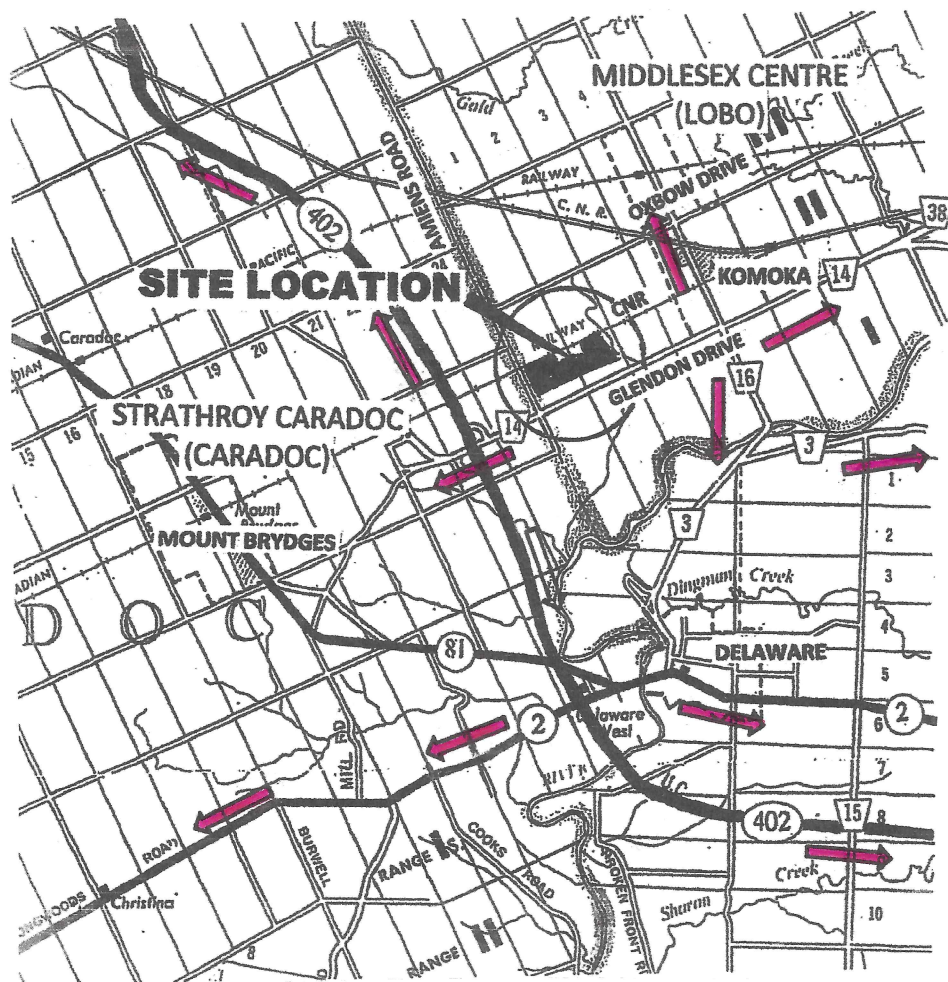
The applicant has explored the possibility that there may be alternative mineral aggregate locations within the area that are located on less-prime agricultural land. However, the results of this investigation conclude that there are no agricultural lands in the nearby geographical townships that can be classified as Class 4 to 7 with known sources of primary and secondary aggregates and that are currently available for extraction. The applicant has also searched for resources on lands identified as designated growth areas and for resources on prime agricultural lands where rehabilitation to an agricultural use is feasible, but again, to date no suitable alternatives have been found.

## Main Haul Routes

Access to the site is proposed to be to Amiens Road. An entrance permit will be required from the Municipality. Amiens Road is a paved road. After exiting the pit trucks will proceed south easterly towards Glendon Drive (County Road 14) before turning right towards Highway 402, or left towards Komoka. Figure 2 below shows the possible haul routes that would be used.

If the maximum amount of aggregate is extracted in a calendar year, an average of 24 trucks per working day will enter and exit the site. In reality, there may be some days when there will be more trucks coming and going. There may also be many days when there will be no trucks on site.

**Figure 2: Haul Routes** →



(not to scale)

## **Progressive and Final Rehabilitation**

During the removal of aggregate this site shall be progressively rehabilitated to a natural environment after use in pond areas, with rehabilitation to agricultural uses in all other areas. The agricultural land shall be returned to soil capabilities that are the same as the present capabilities.

The proposed final land uses are compatible with the surrounding land uses. Rehabilitation shall be ongoing as extraction is completed in areas no longer required for operations and where the extents of extraction have been reached.

The following notes are taken from the Progressive and Final Rehabilitation Plans (enclosed) and address the details of the progressive rehabilitation and final rehabilitation for this site.

### REHABILITATION NOTES

1. The area to be rehabilitated is 21.3 hectares.
2. This site is to be rehabilitated to natural environment and agricultural after uses.
3. The sequence and direction of rehabilitation is as follows: Perimeter slopes shall be rehabilitated as the limits of extraction are reached. Slopes shall be no steeper than 3:1. Below water slopes and shoreline zones will vary from 1:1 to 10:1 to enhance shoreline diversity. Slopes shall be created by excavation or by backfilling with onsite overburden. Slopes shall be spread with topsoil (minimum depth 0.15m) and shall be planted with a native grass seed mix and a native wildflower mix.
4. Rehabilitation operations such as stripping and earth moving shall take place only when the soil is dry to reduce compacting of the soils.
5. Agricultural uses will continue in perimeter areas around the future pond. Where possible the size of the pond will be minimized and the depth maximized. This will keep as much as possible of the rehabilitated areas above water available for agricultural uses.
6. During rehabilitation in the agricultural areas the soils shall be replaced in a manner that approximates the original soil profile. Prior to soil placement compacted areas of the pit floor shall be ripped and scarified. As such, it is expected that the same average soil capability will be restored.
7. Rehabilitated agricultural areas shall be planted with a grass/legume mixture such as alfalfa and red clover. These areas shall be ploughed under in the fall of the first year and reseeded the following spring to enhance soil structure. Sloped areas around the pond shall be planted as outlined in the Natural Environment Recommendations on Drawing 3 of 4.
8. Areas shall be graded to direct drainage towards the pond as shown. Most surface water in perimeter areas will percolate into the ground.
9. Rehabilitated areas are to be re-graded and reseeded in the event of washouts.
10. Any vegetation that dies or is otherwise damaged shall be reseeded or replanted.

11. Shoreline zones may be sculpted where practical to enhance the natural environment aspects and biodiversity of the pond. Examples are shown.

12. Shallow aquatic benches shall be created at various locations along the limit of the proposed aggregate pond. Along the pond edges and on these shallow benches, marsh habitats shall be created by planting rooted aquatic plants as outlined in the Natural Environment Recommendations. Large woody debris and boulders may be placed on the benches depending on availability. Examples are shown. See the detail below.

13. No buildings or structures associated with aggregate operations will remain on site.

## **Conclusions**

It is recommended that the application for a Category 1 Class "A" Pit Below Water Aggregate Licence be permitted. The site plans and technical reports prepared for this application demonstrate that the proposed operation has addressed any potential impacts on natural features and surrounding land uses, while at the same time maximizing the utilization of the mineral aggregates in the Municipality of Middlesex Centre.

The Site Plans have been designed to allow for an environmentally sensitive development.

The rehabilitation to natural environment and agricultural uses is compatible with surrounding land uses.

There is a substantial amount of sand and gravel on this site which will provide economic benefits to the local economy and royalties to local governments when extracted.

Prepared and respectfully submitted by:

A handwritten signature in black ink, appearing to read "Wm Bradshaw". The signature is written in a cursive, flowing style.

**Wm. Bradshaw, B.Sc.(Eng), P.Eng.**

## **References**

1. OMAFRA (2014): Agricultural Information Atlas at:

<http://www.gisapplication.lrc.gov.on.ca/AIA/Index.html?viewer=AIA.AIA&locale=en-US>

2. Base mapping for Figure 1 in this report from Google Maps

## PROFESSIONAL RESUME

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### **Career History**

**President** of Wm. Bradshaw, P.Eng., Kitchener, Ontario, providing professional surveying and engineering services to the engineering, construction and aggregate resources industry in Southern Ontario.  
Since 1991.

**Project Engineer** with R. G. Shugg Engineering Ltd., Kitchener, Ontario, providing professional surveying and engineering services to the land development, construction and aggregate resources industry in Southern Ontario.  
From 1987 to 1991.

**Project Engineer** with McElhanney Services Limited, Dartmouth, Nova Scotia, providing geodetic and navigation services world-wide.  
From 1983 to 1987.

**Party Chief** with the Northwest Survey Group, Edmonton, Alberta, providing geodetic control surveys in support of mapping and pipeline projects in the Canadian Northwest.  
From 1980 to 1983.

**Party Chief** with Canadian Engineering Surveys, Edmonton, Alberta, providing geodetic and navigational services to the oilfield industry in Western Canada and the Canadian Arctic.  
From 1975 to 1979.

### **Education**

1979 to 1984

**Bachelor of Science (Engineering)**, Department of Geomatics, University of New Brunswick.

1973 to 1975

**Survey Technician**, Fanshawe College, London, Ontario

### **Project Experience:**

**1975-79** - Esso Resources - Island construction, drilling and seismic programs, Beaufort Sea, McKenzie River, Norman Wells, NWT, Tuktoyaktuk, NWT

**1975-79** - Amoco, Pacific 66, Petro Canada - Pipeline and well site geodetic surveys, Alberta, Canada.

**1976** - Dome Petroleum - seismic programs in the Beaufort Sea area.

**1978** - Public Works Canada - Dredging Volume Controls, Churchill, Manitoba

Project Experience cont'd .....

**1980** - Alberta Power - precise geodetic control of power station construction, Hanna, Alberta.

**1980-81** - Foothills Pipelines - Alaska Pipeline project, Yukon portion, geodetic surveys.

**1982** - Northwest Survey Group - Crow's Nest Pass, Alberta - 1st order GPS and conventional geodetic control survey comparison research.

**1982** - CN Rail - geodetic control in support of railway mapping, Jasper, Alberta to Prince Rupert, BC

**1984-86** - Mobil Oil - Sable Island gas field. Geodetic surveys and navigation support

**1984-86** - Petro Canada - Hibernia oil field (Newfoundland). Navigation support

**1985** – Teleglobe Canada – Transcontinental offshore cable repairs, navigational & mapping support.

**1986** – Petro Canada International– Satellite surveys for seismic & 3D seismic programs, SE Asia.

**1986** – AT&T – Taiwan to China Telecommunications Underwater Cable Installation

**1986** – Hydro Quebec – geodetic control, Iles de la Madeleine and Prince Edward Island.

**1986** - Canadian Hydrographic Service - Hydrographic surveys, Vancouver Island.

**1986** – Public Works Canada - Dredging Volume Controls, Miramichi River, New Brunswick

**1996** - Ontario Ministry of Transportation - Highway 403 - Geodetic control survey.

**1991- present** - Various engineering companies - surveying services in support of various civil projects, wetland mapping, pre-engineering surveys, accident reconstruction.

**1991- present** - Various aggregate companies - Project manager for aggregate pit licensing, site plans and site plan amendments in Southern Ontario.

**1997- present** - Compliance assessment reporting for more than 75 licensed aggregate operations in Southern Ontario