

March 31, 2021

TBTE Ref. No. 20-237

**RE: Summary Statement for Trout Lake Pit
Category 3 Aggregate Licence Application**

Introduction

TBT Engineering (TBTE) has been retained by Bruno's Contracting (Client) to prepare and submit this Summary Statement, in support of their application for a Class "A" Category 3 aggregate extraction licence for the Trout Lake Pit site (Site). The Site is located approximately 20 km northwest of Thunder Bay, at UTM Zone 16U, Northing 5387483, Easting 324529.

The following addresses each requirement listed under Section 2.1 of the *Aggregate Resources of Ontario: Provincial Standards, Version 1.0 - Category 3* document.

Section 2.1.1 - Planning and Land Use

The Site is located in Gorham Township, District of Thunder Bay and currently zoned as rural (RU)

The Site is legally described as:

62323-0025 LEMPIALA SAND & GRAVEL LIMITED P
PCL 8755 SEC TBF; PT BROKEN LT 18 CON 7 GORHAM
AS IN LPA33239 EXCEPT PT 1, 2 & 3 55R1816 & UNIT
1 PL D-72; DISTRICT OF THUNDER BAY

Neighbouring properties include residential development within 150 m of the planned area of extraction and as per Section 2.2.6 of a Category 3 & 4, a noise assessment was completed by RWDI Air Inc. in support of the aggregate license application. A detailed assessment of the proposed Trout Lake Pit sound levels was completed by modelling the individual contributions of all dominant stationary sources. The Site is predicted to below the Ministry of the Environment,

practices, and having no capability for arable culture of permanent pasture, respectively (see Figure 1). Subclasses to this area include Subclass P (i.e., stoniness), Subclass R (i.e., shallowness to solid bedrock), and Subclass T (i.e., adverse topography).

Section 2.1.3 - Quality and Quantity of Aggregate on Site

According to the Northern Ontario Engineering Geology Terrain Study (NOEGTS, 2005), the Site is located within an outwash plain consisting primarily of till, bordering a bedrock plain to the east, and a bedrock knob to the west. According to the Ontario Geological Survey (OGS) quaternary mapping, the till material is undifferentiated, predominantly sand to silty sand matrix, high content of clasts, often low in matrix carbonate content (1997). Bedrock mapping completed by the OGS suggest the underlying bedrock at the Site consists of granodiorite to granite with massive to foliated texture (2011). No laboratory testing has been performed by TBTE as part of this application to confirm the quality of the aggregate; however, sand, gravel, and crushable rock are desirable for construction purposes. This granular material is expected to occur on the Site based on available mapping and good quality aggregate is anticipated.

The overall extraction area is approximately 166,700 m² with an estimated 740,000 m³ of potential overburden material available for extraction. This quantity was determined using the current site features and extraction limits as shown on the site plans and as such, should be considered an estimate only. The exact quantity should be verified with a more detailed survey and calculation if an accurate figure is required.

The following provides a summary of prospective aggregate products from the potential pit operation. Testing will be required to confirm the suitability of the aggregate products. Screening and selection may also be required.

- General granular fill meeting Ontario Provincial Standards Specifications (OPSS) 1010 specifications (revised November 2013) such as Granular 'A', Granular 'B' – Type I and Select Subgrade Material
- Concrete aggregate
- Hot-mix aggregate
- Winter sand

Section 2.1.4 - Haulage Routes

From the Client's existing pit located on 2065, Highway 589 (i.e., Dog Lake Road), empty trucks (up to four daily) travelling to the Site will travel north along Highway 589 to the Highway 589 - 591 intersection, travel west to the Highway 591 - Mapleward Road intersection, and continue travelling north along Highway 591 to the Site.

Full trucks (up to four daily) leaving the Site will travel south along Highway 591 to the Highway 591 - Mapleward Road intersection, travel east along Highway 591 to the Highway 591 - 589 intersection, and continue travelling south along Highway 589 to the Client's property located on 2065, Highway 589.

All potential haulage routes are paved road surfaces. Since access to Site occurs along Highway 591, an entrance permit application to the Ministry of Transportation has been initiated.

Based on information provided by the Client, the maximum expected shipping rate is approximately 1,200 tonne loads in a day or 133 tonne loads in an hour, resulting in a total of 12 haul truck movements/hour (entering and departing the site) in a predictable worst-case hour. Trucks are expected to travel on the site at a mean speed of approximately 20 km/h and could potentially idle for less than 10 minutes. The haul trucks were modelled using a moving point source calculation method. One loader will be at the excavation face, placing aggregate material in the haul trucks for shipping off-site.

Section 2.1.5 - Progressive and Final Rehabilitation

Progressive rehabilitation of the Site will follow the below procedures.

- Staging of progressive and final rehabilitation will follow the direction and sequence of extraction as shown on the Operational Plan view supporting this application.
- As the limit of extraction is reached, the operator will extract to the limit of extraction and backfill to produce a 3:1 slope for Category 3 operations and 2:1 slope for Category 4 operations.

- Native/local plant material (i.e., shrubs and trees) will be planted or transplanted in random groups in different areas within the pit/quarry to facilitate naturalized re-vegetation. Stockpiled overburden and topsoil will be used for rehabilitation of the Site.
- The pit / quarry floor and slopes will be graded using a dozer and ripped or tilled to alleviate compaction in a varied approach throughout the pit/quarry.
- All available overburden, topsoil and organic matter will be applied to the slopes and pit/quarry floor, with some areas having greater depths. All slopes and graded pit/quarry floor areas will be seeded with a native grass seed mix as soon as possible to control erosion.
- It is not anticipated that imported topsoil will be required to facilitate rehabilitation.

Final rehabilitation of the Site will follow the below procedures.

- Stockpiled overburden and topsoil will be used for rehabilitation of the Site. It is not anticipated that imported topsoil will be required to facilitate rehabilitation.
- All available overburden, topsoil, and organic matter will be applied to the slopes and pit/quarry floor, with some areas having greater depths. The pit/quarry floor and slopes will be graded using a dozer and ripped or tilled to alleviate compaction in a varied approach throughout the pit/quarry.
- Native/local plant material (i.e., shrubs and trees) will be planted or transplanted in random groups in different areas within the pit/quarry to facilitate naturalized re-vegetation. Stockpiled overburden and topsoil will be used for rehabilitation of the Site. It is not anticipated that imported topsoil will be required to facilitate rehabilitation.
- All equipment and buildings will be removed from the Site.
- Roads may remain to access the property.
- Drainage will be contained within the rehabilitation pit/quarry and will infiltrate into the pit/quarry floor. Uneven ripping and depths of soil replacement will provide for localized areas that may be wetter than others providing for habitat.

Additional details of the progressive and final rehabilitation of the Site, including contour data and cross-sections, are documented in the site plans supporting this application.

Section 2.1.6 - Surface Waters

The surface water bodies surrounding the Site are discussed in the Groundwater Summary Statement (GWSS) and the Natural Environment Level 1 technical report supporting this application. As shown in Figure 2, surface waters appear to flow radially from the topographic high near the centre of the Site. According to Land Information Ontario’s Metadata Management Tool, the Site is located in the Dog Lake Watershed. Surface waters from the Site eventually drain to Lake Superior.

Surface water features in the area surrounding the Site are summarized in Table 1.

Table 1: Characteristics of the nearby surface water features.

Feature	Distance from Site	UTM Zone 16U		Approximated Elevation (masl)
		Easting	Northing	
Trout Lake (1)	88 m NE	324785	5387800	451
River (2)	45 m E	324916	5387291	450
Floodplain (3)	S side	5387288	5387288	450

Section 2.1.7 - Groundwater

The elevation of the interpreted groundwater table for the Site is identified in the GWSS and included with the technical reports supporting this application. The statement specifies an extraction limit that maintains a 1.5 m vertical buffer between pit activities and the established water table. The extraction limit is also included on the site plans supporting this application. Below summarizes the GWSS.

Based on the surface water features, the groundwater table is anticipated to grade from 455 to 452 metres above sea level (masl) along the western boundary with groundwater mounding to 460 masl near the centre of the Site and grading from 455 masl at the northeast corner sloping to 450 masl at the southeast corner. In general, the gradient of the groundwater radially flows outward from the centre of the Site and is anticipated to mimic the shape of ground surface (see Figure 2).

For a pit above water, the final depth of extraction must be at least 1.5 m above the established groundwater table. Based on the estimated groundwater levels, the extraction limit to maintain a 1.5 m vertical buffer between the pit extraction limit and the estimated groundwater table ranges from 456.5 masl to 453.5 masl in the west, grading upward to 461.5 masl within the centre of the Site, and 456.5 to 451.5 masl along the eastern boundary.

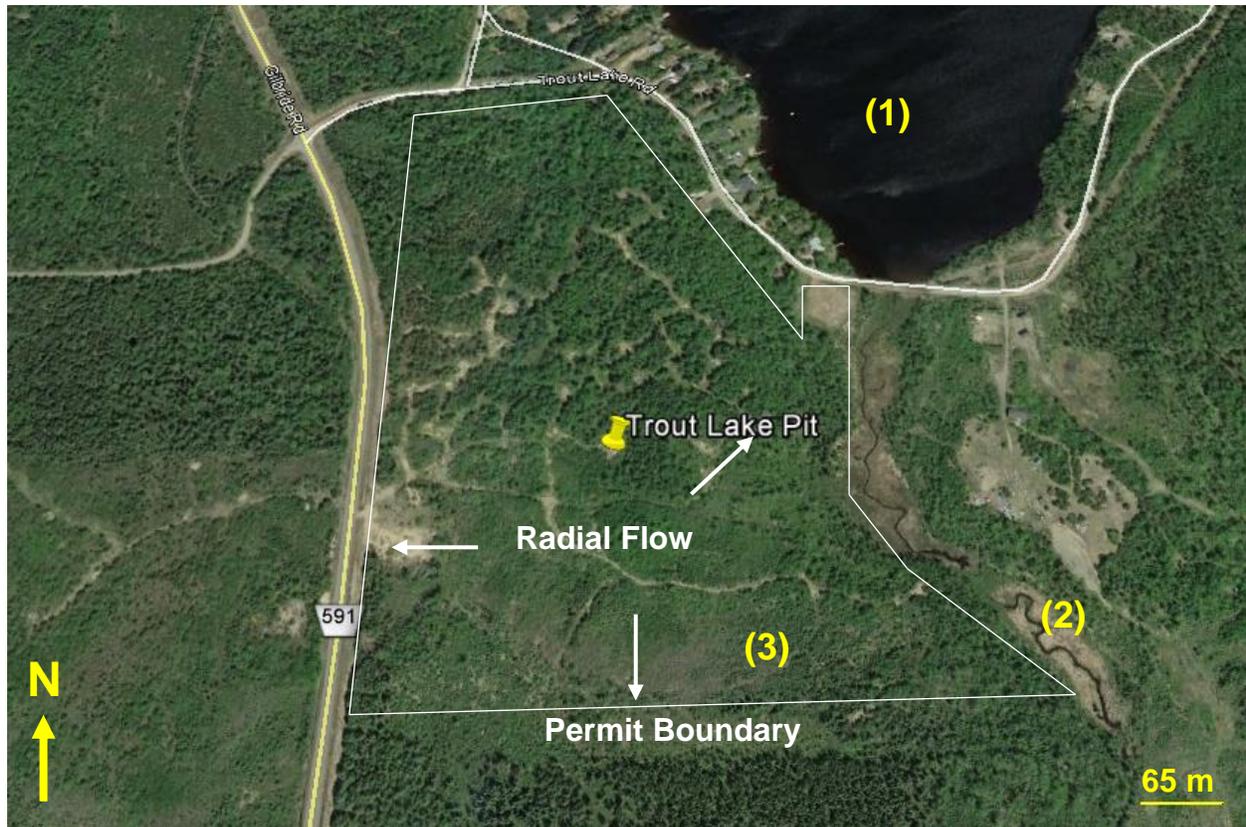


Figure 1: Trout Lake Pit - Approximate Permit Boundary and surrounding surface water features

References

Ontario Geological Survey, 1997. Quaternary geology, seamless coverage of the province of Ontario: Ontario Geological Survey, Data Set 14.

Ontario Geological Survey, Ministry of Northern Development and Mines, and Northeast Science and Information Section, Ministry of Natural Resources. 2005. Digital Northern Ontario Engineering Geology Terrain Study (NOEGTS); Ontario Geological Survey, Miscellaneous Release--Data 160.

Ontario Geological Survey. 2011. 1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release--Data 126 - Revision 1.

Closure

Information presented in this letter report is based on the best available information at the time of preparation, TBTE's field investigations, and published mapping. Conditions may become apparent during development that were not detected and could not be anticipated at the time of the site investigations. It is therefore recommended that TBTE be contacted to review the significance of any new information, and its potential impact on the recommendations provided in this letter and accompanying technical reports.

TBTE accepts no responsibility for damages suffered by any third party as a result of decisions made based on this report. Should there be any changes to project details, or should you have any questions, please contact to contact TBTE at our Thunder Bay office (807-624-5160).

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