

FIGURE No. 10: NATURAL HERITAGE BUFFER ZONES AND EXTRACTION CONSTRAINT ZONES
(As taken from Figure 10 in the Aquatic Wildlife Services Report)

HYDROGEOLOGICAL RECOMMENDATIONS (by GSS Engineering Consultants Ltd.)

The following is recommended with regard to development of the Kinghurst Gravel Pit in the Township of Chatsworth:

- 1) The gravel pit development should proceed in Area A initially. Based on the monitoring data for development of Area A, the extent of development into Areas B and C will be determined.
- 2) The monitoring program is to be initiated and carried out as outlined in Section 6.1.
- 3) We are estimating, based on the testing results and analysis from groundwater pumping and monitoring, that there will be no effect on exposed groundwater lowering at a distance of 40 m from the excavation boundary or resultant edge of the groundwater table. It is proposed that due to variability in the hydraulic conductivity in the sand and gravel that actual groundwater levels be monitored at the edge of the proposed extraction Area A to better define the lateral extent of the effect on the groundwater table from actual excavation into the groundwater. By monitoring groundwater before and after excavation into the groundwater table, the actual lateral extent of effect on the groundwater table can be determined. TW1-15, TW2-15 and TW3-15 as shown on Figure 9 should show the effect at 10 m, 30 m and 60 m. The full extent of the lateral effect of lowering of the groundwater table will not be known until the excavation into the water table is expanded enough to lower the groundwater in the excavated Area A to the maximum extent of 1 m during summer and a maximum of 2 m in the spring of the year. During the initial stages of development into the water table by sand and gravel excavation, there will be little or no effect on natural groundwater levels. As the sand and gravel excavation continues, then the full extent of groundwater lowering of 1 m in the summer and 2 m in the winter and the lateral effect will not be known until excavation into the water table has joined the northerly groundwater contour with the southerly contour (see plan 13-010-01 and 13-010-02). Monitoring of groundwater at this time will determine the actual lateral extent of effect of groundwater lowering.
- 4) The frequency of ground water level monitoring is once per month as outlined in the attached section 6 of the report entitled "Hydrogeologic Investigation Kinghurst Aggregates Ltd." dated September, 2014 and Figure no. 9.

GROUNDWATER AND SURFACE WATER MONITORING

A groundwater and surface water monitoring program has been prepared and the location of monitoring sites is shown on Figure 9 (of the GSS Report). Monitoring of groundwater and surface water levels is to be carried out once per month at the following sites:

Old Test Wells

TW89-3 TW89-4 TW89-5 TW89-10

Monitoring Wells Installed in 2013

TW1-13 TW2-13 TW3-13 TW4-13
TW5-13 TW6-13 TW7-13 TW8-13 TW9-13

Surface Water Monitoring Stations

SW1 SW2 SW3 SW4 SW5 SW6 SW7

New Test Wells for Monitoring After Gravel Pit Licence Issued

TW1-15 TW2-15 TW3-15 TW4-15 TW5-15

The groundwater and surface water monitoring program at existing and future locations (as outlined above) will confirm that groundwater and with existing seasonal or surface water ponds, rivers or lakes are not significantly affected. There is a relatively minor lowering of the groundwater table in the seasonal low summer period and during the seasonal high during the month of April. This however, is expected to have no significant effect on surrounding surface or groundwater resources. The monitoring program will outline more definitely the groundwater lowering near the gravel pit, which may vary somewhat from area to area.

The monitoring of groundwater levels at the old test wells, test wells installed in 2013 and the surface water monitoring station SW1 to SW7 are to be implemented one (1) month after the gravel pit licence has been issued. The new test wells TW1-15 to TW5-15 are to be installed into the permanent water table within one (1) year after the gravel pit licence has been issued.

Monitoring shall be carried out for a two (2) year period from after the installation of the new test wells. Annual reports on groundwater and surface water conditions are to be prepared and submitted to the Ontario Ministry of Natural Resources. The monitoring program is to be reviewed after the two (2) years of monitoring.

Based on the groundwater monitoring information, more of the proposed gravel pit area could be extracted in Area C to the west and Area B to the south. The extent of development of Areas of B and C would depend on the monitoring results of groundwater and surface water.

Noise Feasibility Study Recommendations (by HGC Engineering):

1. Processing Area in Area A

8m high stockpiles shall be located adjacent to the crushing plant and wash plant in the direction of the residences to the north and east (R1, R3, R4)

2. Processing Area in Area B

8m high stockpiles shall be located adjacent to the crushing plant and wash plant in the direction of the residences to the north and east (R1, R3, R4)

3. Processing Area in Area C

10m high stockpiles shall be located adjacent to the crushing plant and wash plant in the direction of the residences to the north and east (R1, R3, R4)

4. The following Table 1 presents the reference sound levels used for the acoustic modelling for operations at this site. If other types of equipment are proposed for operation in the gravel pit, that equipment shall be confirmed through measurement to produce sound levels consistent with the sound levels in Table 1.

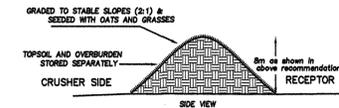
Any proposed changes to the aspects of the extraction, processing and shipping operations shall be reviewed by a qualified acoustical engineer for compliance with the relevant noise criteria.

TABLE 1: Reference Sound Power Levels of Processing Equipment

Equipment	Reference Average 'A Weighted' Sound Power Level
crushing plant, wash plant and associated loaders (combined)	118dBA (79dBA, SPL at 50m)
excavator	108dBA (65dBA, SPL at 50m)
loader	106dBA (63dBA, SPL at 50m)

There are no special designs required for the 8m gravel noise attenuation stockpiles. It is recommended however that should topsoil stripping be used for the 8m attenuation berm, that a minimum 2:1 side slope be utilized and be seeded to prevent erosion.

TYPICAL NOISE BERM SECTION nts



Taylor Pit: NATURAL ENVIRONMENT MITIGATION RECOMMENDATIONS (by Aquatic Wildlife Services)

The following mitigation measures shall be represented on the Operational Plan to address the identified potential negative environmental impacts from the proposed aggregate extraction operation. These measures are recommended to maintain the ecological functioning role and natural heritage features that have been identified within this study area and are in keeping with Provincial and Municipal policies and guidelines.

1. The full/final extraction limit lands shall not exceed that as delineated on the NETR Figure No. 10.

- Delineated NETR Buffer Zone lands are to be permitted to return to a natural vegetated state, through natural seeding and succession.
- No associated pit operations or site alterations shall occur within the delineated NETR Buffer Zones

2. Within the delineated three 'Constraint Zones' shown on the NETR Figure No. 10, extraction shall not be undertaken until such time that further data collection and assessment review by qualified persons in hydrogeology and biology/ecology for both Hydrogeological and Hydrology input has been completed. Said review shall demonstrate no negative impact to the identified sensitive wetland features or the ecological function of amphibian breeding habitat to those features along the western perimeter of the Licence Boundary and approved by the Ministry of Natural Resources, prior to any extraction activity associated with the pit operations commencing within these three Constraint Zones. Similarly, extraction operations shall not expand beyond the April 2014 GSS Engineering recommended 'Area A' without demonstration of no negative impact to the surrounding natural environment or the NETR identified ecological functions.

3. An 'Adaptive Management Plan' in conjunction or incorporating the GSS recommended monitoring plan, shall be prepared in consultation with the Ministry of Natural Resources to monitor and assess sensitive environmental features for but no limited to: hydrogeological and hydrology influences/input, vegetation communities, ecological functions and habitat functionality in relation to the Taylor Pit.

Note: Prior to any extraction activity beyond the current Phase Area 'A', the NETR requirement for an Adaptive Management Plan shall be completed in consultation and to the approval of MNR.

ARCHAEOLOGICAL RECOMMENDATIONS (by Stantec):

1. It is an offence under Sections 48 and 69 of the Ontario Heritage Act for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the Ontario Heritage Act.
2. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the Ontario Heritage Act.
3. The Cemeteries Act, R.S.O. 1990 c. C.4 and the Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ontario Ministry of Consumer Services.
4. Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

KINGHURST AGGREGATES LTD.

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TAYLOR PIT

PART LOTS 22 & 23, CONCESSION 5
TOWNSHIP OF CHATSWORTH (formerly Sullivan Twp)
COUNTY OF GREY

CONSULTANT RECOMMENDATIONS

DRAWING 3 OF 4

No.	AMENDMENT	DATE