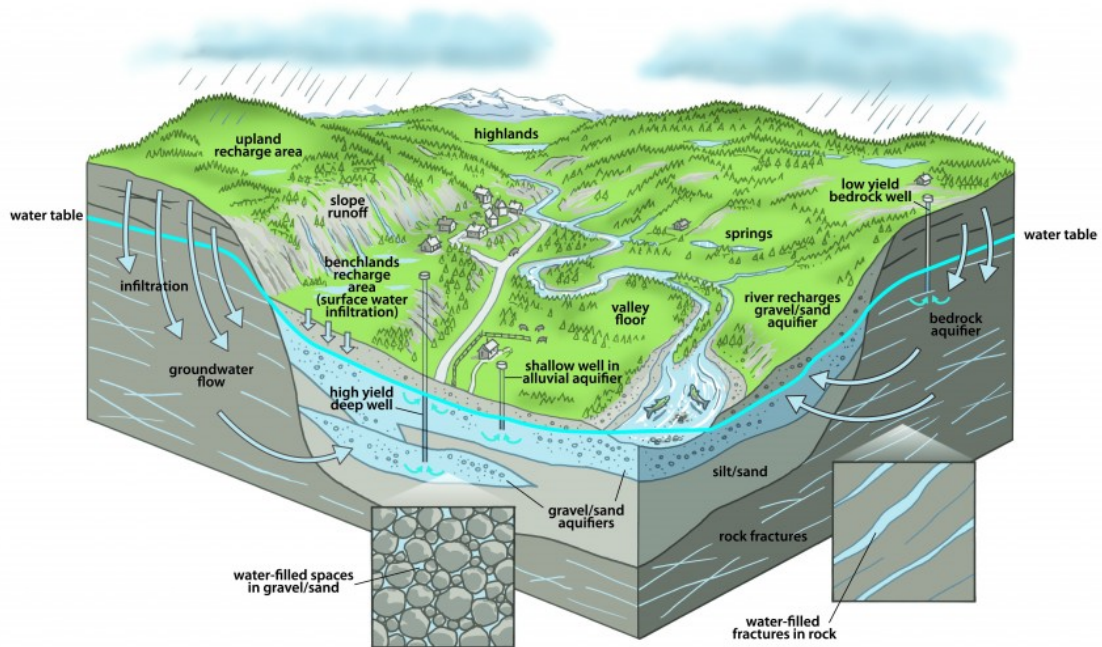


## St Marys CBM Hillsburgh Pit Expansion and Deepening

### A Summary of the Hydrogeological Assessment at the Hillsburgh Pit and Frequently Asked Questions



Prepared by Cambium Environmental Inc.

## Proposed Expansion of the Hillsburgh Pit

CBM Aggregates, a division of St. Marys Cement (Canada) Inc. owns and operates a sand and gravel pit (Hillsburgh Pit, licence #15343) with an existing licence area of 50 ha, located northwest of the settlement of Hillsburgh, on Wellington Road 24, in the Town of Erin. As you may know, St. Marys CBM has submitted applications proposing an expansion and underwater extraction. In total, the pit will encompass a licence area of 112 ha, with an above-water extraction area of 82 ha and 12 ha for below-water extraction.

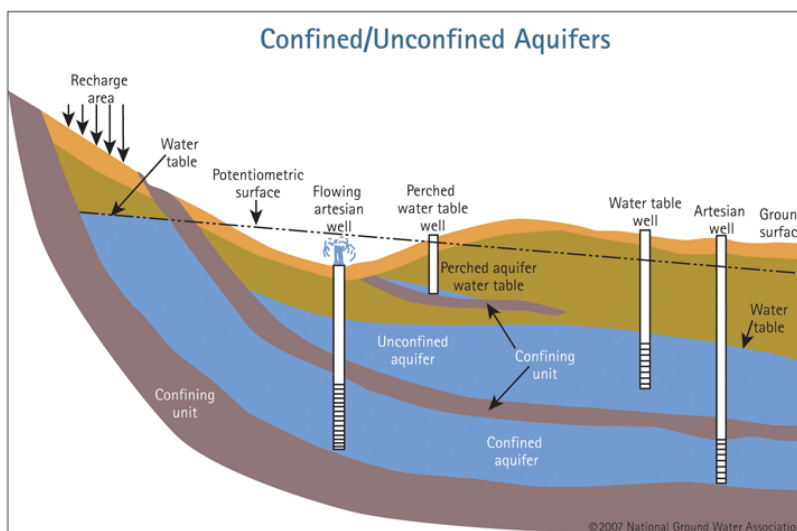
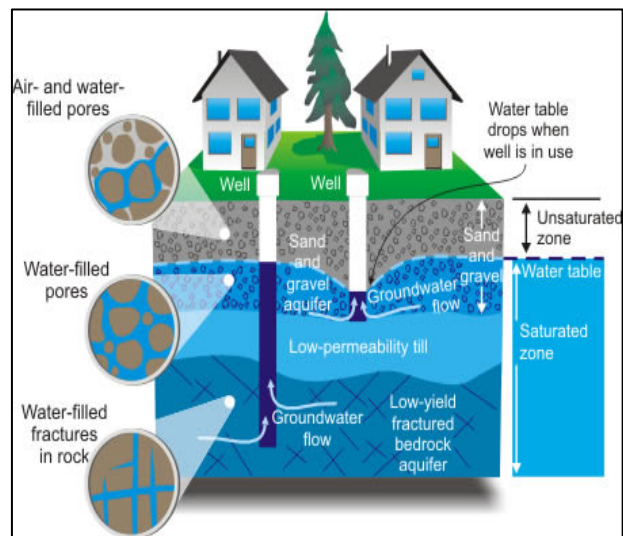
## Aggregate Materials at the Hillsburgh Pit

The geological materials encountered throughout the property included: gravelly sand, sand and sand/silt. A majority of the gravelly sand is located on the southeast end of the property and a significant portion of this is located below the water table. The aggregate deposits identified on the site have a variety of uses and are crucial as a building material for construction of infrastructure, roads and buildings. The gravelly sand has the most potential for making commercial products such as concrete. The sand materials have various possible uses including brick sand and septic sand.

## Water Resources

Groundwater moves through the pore spaces in the unconsolidated material (gravel, sand or silt) or through fractures in bedrock. An **aquifer** is a saturated geologic unit (water-bearing permeable bedrock or unconsolidated materials) that can transmit significant quantities of water under ordinary hydraulic gradients.

There are two groundwater aquifers identified at the Hillsburgh Pit, an upper unconfined aquifer in the sand and gravel deposits (also termed the water table) and a deeper confined aquifer in the underlying bedrock formation. The two aquifers are separated by a substantial thickness of glacial till which restricts groundwater movement between the two aquifers.



There are 23 MOE water well records identified within 500 m of the Licence area, all of which are deep drilled wells completed into the underlying bedrock aquifer. Since there is no direct movement of groundwater between the two aquifer systems, wells drilled into the underlying bedrock will not be influenced by any operations at the Pit.

There are two Municipal supply wells in Hillsburgh. Both wells are completed into the bedrock aquifer, are over 2 km from the Licence area and will not be influenced by the Pit operations.

One shallow well was identified during a door-to-door well survey (no MOE water well record), approximately 400 m southeast of the Site. This would be the closest well in the same aquifer as the proposed extraction operations and was used for the impact assessment in the Hydrogeological Study.

### **Will the Extraction at the Hillsburgh Pit Change Water Levels?**

Aggregate extraction **above the water table** does not negatively impact groundwater resources as extraction is restricted to 1.5 m above the water table. In the areas where extraction **below the water table** is proposed, a detailed hydrogeological investigation was undertaken to determine if the extraction operations will impact surrounding groundwater resources.

Below water extraction can potential effect groundwater through three difference mechanisms:

1. Leveling or flattening of the pond surface to the same elevation where the water table is exposed. The leveling will result in the changes to groundwater elevations around the pond edge; however these will be limited to near the pond and will remain on the Pit property.
2. Remove of solid particles below the water thereby creating a void which groundwater fills in, creating a onetime groundwater withdrawal from the water table as water is put into storage within the pit pond.
3. Evaporation from the pond surface, where the water table is exposed resulting in a loss of groundwater to the atmosphere.



A groundwater model was used to determine the effects of mechanisms #2 and #3 on the shallow aquifer. The model assumed the maximum aggregate extraction during hot (maximum evaporation), dry (no rain) weather. The resulting drawdown in the water table after 5 days was 4.6 cm at the Pit property boundary and 2.1 cm at the closest well in the same aquifer (400 m). Considering that the water table fluctuates by approximately 50 cm, neither drawdown was deemed to significantly impact groundwater resources nor pose a risk to water supply in surrounding wells.

### **Will the Pit Activities allow anything Hazardous to affect the Quality of Water in my Well?**



Other than perhaps some materials used in the routine maintenance of the machinery, there will be no chemicals used in the extraction operations. The loader or any other machinery will be parked in a designated area on the site away from the pit floor and refueling will occur in this designated area, within a fuel containment facility, located away from the below-water extraction area and constructed in

accordance with MOE approved standards. As a result, there will be no refueling or storage of chemicals on the pit floor. If these are handled with normal, reasonable precaution (according to the regulations) then the risk of groundwater contamination in the aquifer is very low.

In the unlikely event that there is a fuel or chemical spill, CBM has internal guidelines for spill prevention and response, and it is expected that all employees at the site learn and follow these procedures. These guidelines outline preventative measures to follow in the day to day operations of the site, as well as a spill kit and emergency procedures to follow in the unlikely event of a fuel or chemical spill.

### **Is my well protected? What happens if the Hillsburgh Pit interferes or impacts my well?**

The use of groundwater in Ontario is regulated under the **Ontario Water Resources Act (OWRA)**. The removal of groundwater which negatively affects the quantity of groundwater in another well is called well interference. Section 34 (4) of that act addresses where the taking of water may interfere with another persons' interest in water;

*Despite any general or special Act or any regulation or order made thereunder, where the taking of water for any purpose, other than the taking of water by any person except a municipality or company public utility for use for ordinary household purposes or for the watering of livestock or poultry and other than the taking of water by any person for firefighting, interferes, in the opinion of a Director, with any public or private interest in any water, the Director may, by notice served on or sent by registered mail to the person who is taking or is responsible for the taking of water that so interferes, prohibit the person from so taking water without a permit issued by the Director. R.S.O. 1990, c. O.40, s. 34 (4).*



Water taking resulting in well interference or the disruption of water supply in residential or public wells is illegal under the OWRA and it is the responsibility of the water taker which caused the interference to restore water supply to the affected parties.

An impact to the water quality of groundwater is defined by *the deterioration of the quality of groundwater resulting from the release of contaminants*. Under the OWRA, it is the responsibility of the owner of the contaminant or the person having control of the contaminant to pay for all costs associated with the contaminant discharge including the investigation, the clean-up of the environment, and the restoration of affected water supplies, and to do all that is practicable to minimize damage caused by the contaminant discharge, and to facilitate clean-up.

In summary, the quantity and quality of groundwater in surrounding residential water wells is protected by the **Ontario Water Resources Act** from any impacts or interference caused by extraction operations at the Hillsburgh Pit. St. Marys CBM is financially responsible for any impacts or interference they are responsible for in surrounding residential water wells.

#### **If I have a complaint while the pit is operating, who can I contact?**

St. Marys CBM Hillsburgh Pit, Pit Manager: (519) 855-6590

Ministry of Natural Resources, Aurora District, Aggregate Inspection Officer: Brent Armstrong at 905-713-7388

Ministry of the Environment Spills, Odour or Noise Pollution 1-866-663-8477 or Public Information Centre 1-800-565-7923