

Summary of Concerns re Proposed Hallman Pit in Wilmot Township

1) Introduction

- Wilf Ruland (P. Geo.), 30+ years experience as a hydrogeologist
- have done Peer Reviews of many aggregate applications around the province

2) General Hydrogeology Concerns about Gravel Pits

- impacts on quantity of available groundwater (due to pumping for washing operations)
- impacts on groundwater quality (due to contaminants associated with aggregate/washing operations and/or fuel and oil spills/leaks)

3) Regional Hydrogeology

- the proposed pit would be situated on the Waterloo Moraine, one of Canada's greatest groundwater resources
- Waterloo Moraine is an impressive "aquifer" and can exceed 100 meters in thickness, contains massive layers of permeable sand and gravel
- groundwater quality on the Waterloo Moraine is variable, with local contamination issues due to nitrate from agriculture and from various contaminant point sources (eg. fuel spills and leaks, contaminated industrial sites, landfills etc.)
- protection of aquifer provided in some areas by low-permeability "aquitard" layers, but these are not consistently present and are absent in some areas

4) Local Hydrogeology in Area of Proposed Hallman Pit

- Waterloo Moraine is about 60-100 meters thick in this area
- Wilmot Centre Well Field (highly productive Regional water supply wells) less than 1 km from north end of proposed pit
- proponent drilled 5 shallow wells on-site, average depth is 16.5 meters and deepest well is about 23 meters - all that was found when drilling wells was sand and gravel
- no aquitard layers encountered in proponent's 5 wells, so it is unknown if there is any protection for the deeper aquifer units on-site
- aquitard layers are often missing in area around the Wilmot Centre Well Field

5) Nitrate Contamination in Area of Proposed Hallman Pit

- site was formerly intensively farmed, and there is heavy nitrate contamination in the new shallow on-site wells (some will be coming from upgradient sources, and some will be due to on-site farming practices)
- nitrate levels in some on-site wells are unsafe to drink (above the Ontario Drinking Water Quality Standard of 10 mg/L), and in other wells are just below the ODWQS
- there is an on-site pond/wetland feature which acts to replenish groundwater flow system (much of the centre of the property slopes steeply toward the pond)
- pond water quality was tested once, water quality was good (no nitrate)

6) Hallman Pit Proposal

- above the water table pit (maximum depth should be > 1.5 meters above water table)
- up to 750,000 tonnes of aggregate production per year
- aggregate washing is planned

7) Key Issues for this Application

- a) assessing potential for Regional aquifer contamination due to aggregate washing activities or fuel/oil spills
- b) protection of Wilmot Centre Well Field
- c) assessing potential impacts on neighbours' wells
- d) having monitoring program protective of aquifer, and neighbours' and Regional wells

8) Potential Impacts of Aggregate Washing Activities

- hydrogeological evaluation mentions that aggregate washing will occur, but does not describe or assess potential impacts of aggregate washing (siltation of aquifer)
- clients of mine have suffered major siltation impacts on their wells for 11 years, resulting in repeated massive costs for filtration units and replacement of equipment

9) Potential Impacts on Wilmot Centre Well Field

- very little work done to evaluate potential threat to Wilmot Centre Well Field (WCWF)
- more wells are needed to properly assess potential impacts, and wells need to go much deeper
- no geological cross-sections showing WCWF and site
- no records of historical WCWF pumping rates provided
- no discussion of planned step-wise increases in pumping of WCWF, and the likelihood that the expanding drawdown cone from the WCWF will draw more water from proposed site
- map of groundwater flow directions prepared for Hallman Pit property only, no effort made to prepare broader map showing flow directions between site and WCWF

10) Potential Impacts on Neighbours' Wells

- keys to impact prevention/mitigation are establishing baseline water quality in neighbours' wells, committing to a Well Water Protection Program, and developing a solid and precautionary site monitoring program
- none of these key impact prevention/mitigation measures are in place at present

11) Proposed Site Monitoring Program

- proponent only proposes to monitor the clean on-site pond and adjacent 6 meter deep well
- proposal is bizarre, and utterly inadequate to assess potential impacts of aggregate operation

12) Overall Main Shortcomings of Proposal

- many reassuring claims made which are not backed up by data or analyses in the report
- most significant potential groundwater impacts (silt contamination of groundwater from aggregate washing) not mentioned or dealt with in report
- inadequate information and analysis of potential threat to Wilmot Centre Well Field
- potential impacts on neighbouring wells not satisfactorily addressed
- proposed monitoring program is utterly inadequate

13) Recommendation

I recommend that the Township either turn down the application for the proposed Hallman Pit aggregate operation, or table the application until such time as groundwater quality impact assessments have been properly completed and passed professional Peer Review.