

Meeting Minutes

Event:	Community Advisory Panel (CAP) Paris Pit CAP # 6 Groundwater
Date & Time:	Tuesday, February 26, 2013 7:00- 9:00 PM
Place:	Paris Golf Country Club, River House
Chair:	Linda Smith, Facilitator

Participants:

Robb Edwards, Neighbour
 Elizabeth Norris, Neighbour
 Shirley Simons, Councilor
 Michael H Fox, Neighbour
 Jeff Broomfield, CCOB member and neighbor
 Alex Faux, Neighbour
 Ross Moore, Neighbour
 Murray Powell, Councilor
 Gary Strauss, Neighbour
 Jake Vandenburg, Neighbour
 Fred Natolochny, Grand River Conservation Authority
 Bill Galloway, Dufferin Aggregates
 Kevin Mitchell, Dufferin Aggregates
 Richard Erdmann, Dufferin Aggregates
 Richard Murphy, Conestoga-Rovers & Associates (CRA)
 Gary Lagos, Conestoga-Rover & Associates (CRA)

Guests:

Don Crozier, OPP Liaison Team
 Jim Peters, OPP Liaison Team

Minutes: Courtney Somers, Facilitator

Regrets:

Steve Schmitt, Councillor
 Dale Lukas, Neighbour
 Marilyn Sewell, Neighbour
 Cyril Parsons, Neighbour
 Bill Telfer, Neighbour
 John McAllister, Neighbour

Minutes

Linda Smith began the meeting by introducing Richard Murphy and Gary Lagos from Conestoga-Rovers & Associates (CRA), who presented on Groundwater in Paris. Linda informed the CAP that the OPP Liaison Team is present to observe the meeting as well.

The minutes were reviewed by CAP members and Shirley Simons indicated that she would like a note added to question 37 of the Oct. 30th minutes. The note was added and the minutes were approved.

General Update

Bill Galloway provided the update on the Paris Pit operations since the last CAP meeting. The update includes:

- Ministry of Natural Resources visit to the Paris Pit
- DFA meeting with Six Nations
- Pipeline on site is owned by Imperial Oil and has not been used since the 1990's

Today's Standards

Bill Galloway explained that the Paris Pit would be operated to today's standards, provincially and federally. Bill Galloway explained that as any new rules and regulations take effect, Dufferin Aggregates is required to comply with any new standards and regulation.

Bill Galloway explained that Source Water Protection would be working with the Ministry of Natural Resources (MNR) to ensure the water in and around the Paris Pit is protected.

Question One: Has Dufferin Aggregates applied for the Permit To Take Water (PTTW)?

- Bill Galloway explained that Dufferin Aggregates will submit the PTTW by the end of the first quarter once it is finalized. CAP members will be apprised within 24 hours. Dufferin Aggregates has asked for the public comment period to be extended to 90 days.

Question Two: Will Dufferin Aggregates be hosting a job fair for the Six Nations or has there been conversation about it?

- Bill Galloway answered that right now Dufferin Aggregates is talking to Six Nations about a capacity agreement. Bill Galloway said that Dufferin Aggregates is not opposed to working with Brant County on the commitment to host job fairs for Six Nations.
- Bill Galloway explained that the discussions are on water taking and the Six Nations desire to have a peer review of the report

Question Three: When you talk of Source Water Protection, is Well Head Protection separate from that?

- Richard Murphy said the Clean Water Act holds all the rules for defining Source Water Protection (SWP) requirements, including defining the Wellhead Protection Areas and how to protect those areas. The Province, Conservation Authorities and Municipalities are in the final stage of defining the SWP requirements and should be reaching its final approval stage near the end of the year.

Question Four: Is there any separation between the aquifer and your water system; is the reference to it being a 'closed loop' system accurate?

- Kevin Mitchell said that a closed loop system is the industry name for a system that recirculates water.
- Bill Galloway said that the PTTW application will provide details on the operation of the wash pond and the closed loop (water recirculation) system within the Paris Site.

Water Cycle

Richard Murphy outlined the water cycle and provided groundwater flow information in the Paris area.

Richard Murphy said that this area of Canada will see about 900 millimetres of rain fall a year and of that, 500-600 will evaporate or transpire (i.e. evaporate or transpire) and go back into the atmosphere. The water that does not evaporate or transpire will go into the groundwater system or flow into ditches, creeks, wetlands and in the case of Paris, the Grand River. Richard Murphy said where water flows well in the subsurface, it is called an aquifer (sand and gravel) and where it does not flow well is called an aquitard (clay).

Paris Area: Geology & Water

Richard Murphy outlined Slide 5 and gave an overview of where the operation will be located on the map. The map shows:

- Orange areas: sand and gravel area and deposited by glacial water dropping sand and gravel particles.
- Green areas: silt and clay in the material, pore spaces are very small and make it difficult for water to flow through it.

Richard Murphy explained that the Orange area represents sand and gravel and does not see very much run off during a heavy rain storm. A much larger proportion of water runs off the ground surface in the Green area and this area is more likely to see surface water.

Richard Murphy outlined that the area of the Paris Pit is a source for large groundwater supplies (like in the Gilbert and Telfer Wellfield). This is where aggregate is extracted.

Hydrogeologic Investigations/ Monitoring wells

Following licensing (1974) Dufferin Aggregates has undertaken additional investigations and conducted monitoring activities for many years at the Paris Pit. Dufferin Aggregates monitors the drilled wells, many of which have been in place since 1988, which provide excellent baseline data on seasonal and annual flows. Richard Murphy said more subsurface investigations occurred in 1990 and 2012. At present Dufferin Aggregates has 12 monitoring wells installed in 8 different locations at different depths and monitoring continues.

Richard Murphy explained that the black dots on the map (Slide 7) are where subsurface investigations have taken place and/or a monitoring well has been installed.

Richard Murphy explained that the County of Brant has also installed some monitoring wells on the Paris Pit site.

Richard Murphy showed a sample borehole log, which is a standard document used to capture the information related to a specific monitoring well.

- Information collected includes:
 - Description of materials below ground
 - Depth of saturation indicated below the ground surface (i.e. groundwater level at the time of drilling)
 - Monitoring well details: installed a well at a specific depth that is open to the aquifer in order to measure where the groundwater level at that depth.
 - Confirmation of bedrock elevation (where drilling extends that far down)

Richard Murphy explained how CRA puts together the site characteristics. This is done using a cross section (Slide 10). Richard Murphy showed a cross section provided by the County and completed by Lotowater.

The cross section shows the elevation from the East River Road to the Grand River and indicates where the bedrock is located and what is above the bedrock (sand, gravel and till units), water level information from monitoring wells as well as surface water features. Richard Murphy explained that where the surface water is far above the ground water it is likely that there is “tight” material (clay) keeping them separated, resulting in limited infiltration.

Richard Murphy outlined that water quality and quantity information is collected from the wells. Gary Lagos provided a demonstration on how a Water Level Meter works. When it touches water it will beep and the depth measurement to that point will be recorded. The elevation in the well will match the water level in the aquifer around the well. Water Tubing is used to take water samples and is dedicated to one well.

Richard Murphy explained that water data collection at the Paris Pit has been taking place since 1988. The graph on Slide 12 shows the elevation of water in relation to sea level (horizontal lines across graph represent individual wells within the site) and the patterns of precipitation since January 1988. Richard Murphy outlined the blue line indicates the highest groundwater elevation which coincides with the north (upgradient) end of the Site while the lower orange line indicated the lowest groundwater elevation, coinciding with the south (downgradient) end of the Site.

The graph shows that the groundwater level is generally remaining the same over several years but fluctuating due to climatic activities. It typically varies by about 2 metres a year while the change in surface water level in the on-site ponds is somewhat less. Richard Murphy explained that the water levels at the Paris Pit fluctuate depending on the season and climate. In the spring there is generally a high water level while it could be much lower water level in hot dry summers.

The graph provides a foundation of baseline data in order to monitor what is happening at the wells once operations begin. If the water levels change, the information will be used to identify if the water levels have fluctuated due the operations.

Question Five: Are those the same ponds? (Slide 13)

- Richard Murphy said that the pictures were of the same on site pond at different times of the year.

Richard Murphy outlined a cross section A-A (Slide 14) indicating where sand and gravel is located along with the locations of the Gilbert Wellfield and where it is taking water from within the aquifer. Richard Murphy explained that there is groundwater and surface water coexisting (touching on the cross-section). The Telfer Wellfield is drawing water from the bedrock and the deeper overburden zone of the aquifer.

Paris Water Table

Richard Murphy outlined Slide 15 -- the blue lines are called 'equipotential lines' or a line of constant elevation for the water table. It is like looking at a topographic map where the contour lines indicate ground elevation. The graph shows how much force is pushing the water through the ground, flow direction and what may be affecting the water flow.

The lines bending are in the Telfer Wellfield and near the Gilbert Creek. Groundwater is discharging in this area and therefore the ground water levels are lower. Groundwater coming through the site is coming in a southeasterly direction and the site is located at lower groundwater elevation in relation to the Gilbert Creek.

Detailed Site Investigations

Richard Murphy explained that there were investigation areas installed in 1974 and that Dufferin Aggregates went back in 1988 and 1990 to drill more boreholes in the area to do further monitoring. Dufferin Aggregates also drilled more holes and installed more monitoring wells in the pit this past summer (2012) to gather more information in the Phase 1 area.

Phasing

Richard Murphy said that the phasing map (Slide 18) outlines where the initial areas are for extraction and where the operation will be located. CRA assisted Dufferin Aggregates with identifying where the safest areas are to conduct operational activities and to commence aggregate extraction.

Richard Murphy explained that below water extraction is only approved for limited areas and not until the final phase, in about 25 years. Dufferin Aggregates has committed that this below water extraction would only proceed if it could be done safely and that monitoring data collected during the initial phases would be available to evaluate this.

Source Water Protection

Richard Murphy explained where Dufferin Aggregates is allowed to extract (within the dotted line representing the extraction limit). The pink line indicates where the water comes from to supply the Telfer and Gilbert Wellfields under current water supply conditions. Richard Murphy explained that the Gilbert Wellfield is the primary water supply for Paris North supply and the Gilbert water collection does not come from the Paris Pit, rather from the area to the northwest of the wellfield (upgradient). The Telfer Wellfield is a backup water supply source and has limited use. The Telfer wells do gather some water from a portion of the Paris Pit lands.

The other areas indicate where the Wellhead Protection Area's (WHPA) are located and Richard Murphy outlined that under the Clean Water Act it will dictate how a municipality is to manage these areas. The WHPA's are defined based on a projection of greatly increased water use by Paris (more than about 2½ times the current use).

Question Five: Is WHPA A within the extraction area?

- Richard Murphy explained that there is a small area to be extracted in WHPA A, however there is no requirement by Dufferin Aggregates to stay outside of the boundary of the WHPA A. Extraction is not expected to affect WHPA A. Dufferin Aggregates has committed to continue discussions with the County regarding the Telfer area to ensure its protection. Dufferin Aggregates would not extract in the vicinity of the Telfer Wellfield for about 20 years, and in no circumstance would they be extracting below the water table in that area.

Question Six: Is there any chance of turning the Telfer well into a GUDI well?

- Kevin Mitchell said Dufferin Aggregates is talking to the County of Brant about all aspects of the protection of the Telfer well.
- There will only be above water extraction in this area.

Question Seven: How do you figure out which direction the water is flowing?

- Richard Murphy answered that it is done using monitoring wells and the measured groundwater elevations as shown on the groundwater contour map (slide 15).

Question Eight: If there is water taking, can Dufferin Aggregates influence the water flows?

- Kevin Mitchell answered that this is something that is evaluated in the PTTW.
- Richard Murphy explained that the amount of water coming from the Gilbert Well and Gilbert Creek is substantial and is significantly more than what Dufferin Aggregates will be pumping.

Jeff Broomfield said that he spoke to the author of the report with the ground water contours and the author cannot definitively say which way the water flows and the rate of flow.

Richard Murphy said that the map (Slide 16) is from Lotowater and is based on data used to determine water flow direction and rate.

Question Nine: Why does the line bend in a Gilbert Wellfield? If it bends is that a negative affect on the Creek?

- Richard Murphy explained that when the lines are tight the grade is increased it may be because there is more recharge in the area and hence more water pushing into the system, or tighter material that is harder for water to move through, or other reasons. The result is the water table is losing elevation more quickly.
- We also look for if is changing over time outside of the seasonal changes, as that indicates the possibility for some change in conditions such as from a change in water taking from groundwater.

Richard Murphy explained that Dufferin Aggregates have ensured key activities such as fuel storage and maintenance areas are completely outside of the WHPA's. These precautions go beyond the SWP requirements.

Question Ten: With the WHPA lines, what would cause them to change?

- Richard Murphy answered that population increases could result in more water consumption and consequently pumping but the lines are already conservatively larger than the forecast future demand by 20%.
- Richard Murphy explained that changes in forecasts of future pumping demands would change the WHPA lines.

Question Eleven: Will the extraction affect the WHPA areas and flow?

- Richard Murphy answered no, the operations will not affect the overall groundwater flow conditions.

Extraction Above Water Table

Richard Murphy outlined the cross section of the area between the Gilbert and Telfer Wellfield's. He explained that there is ground and surface water interaction in the area and the pond water level changes based on where the water table is located.

Richard Murphy explained that Dufferin Aggregates would be beginning extraction on the West side and not interrupting the water table as extraction is above the water table.

Question Twelve: Don't the WHPA lines indicate the length of time it takes the water to flow? If you are removing material, won't it affect the water movement to the aquifer?

- Richard Murphy explained that it would only affect the vertical water movement, which results in a negligible overall effect. The water moves downward very quickly (matter of hours to days) and part of this pathway will be removed. However, the horizontal path of groundwater will remain intact and this movement is much slower (matter of months and years).
- The extraction area is identified as an area with a high amount of sand and gravel. The extraction does not change the classification for SWP as this area is already classified with the most protective designation (high vulnerability).

Gilbert Creek

Richard Murphy explained that the Gilbert Creek Wellfield and Gilbert Creek are in close proximity of each other and are both operating in harmony.

Richard Murphy explained that groundwater flows to the south and is not down gradient of the Paris Pit operations therefore Dufferin Aggregates cannot have a temperature impact on the Gilbert Creek. Richard Murphy outlined that extensive monitoring is in place to look at groundwater discharges to make sure the groundwater is not being impacted by the operations. Dufferin Aggregates is collaborating with the County and sharing information gathered from the site.

Water Quality

Richard Murphy explained that the County has a program in place to ensure that agricultural operations have best management practices in place to limit nitrate contributions to the groundwater. Dufferin Aggregates also has a program in place for their lands. Richard Murphy explained that the pond on site has no nitrates.

Question Thirteen: Can you share the information on the levels of nitrates you have found?

- Yes. Kevin Mitchell indicated that the data is available on the Holcim Canada website and on the CCOB website.

Water Quality and Quantity

Richard Murphy explained that water quality and quantity monitoring on the site is continuing and will continue once the operations begin. Richard Murphy explained that the map shows where monitoring wells are located and where quality data is coming from. The data are available to all agencies and to the public.

Next Steps

Linda Smith reviewed the next steps for the Paris Pit:

Dufferin Aggregates will submit the Permit To Take Water (PTTW) application. Dufferin Aggregates has requested the MOE have an extended comment period of 90 days to allow members of the public more time to review the application. Dufferin Aggregates has also agreed to notify CAP members within 24 hours of the EBR posting, which allows the public to comment on the application.

The next CAP meeting will be scheduled around the PTTW application, before the comment period ends, to give members of the CAP the opportunity to ask questions.

Questions

Question Fourteen: What is the Cornerstone Standards Council?

- Bill Galloway explained that the aggregate industry is managed by many different government organizations and that the industry, with the help of Dufferin Aggregates,



has created the Cornerstone Standards Council to manage aggregates in Ontario and community concerns.

- The Council was formed through a merger of Socially and Environmentally Responsible Aggregate (SERA) and the Aggregate Forum of Ontario (AFO)
- Board of Directors – Ivey Foundation, Schad Foundation, CEO of Green Building Council. More board members have been added since the Council formation on July 24, 2012
- National mandate to explore certification for social and environmentally responsible practices and initially focused on develop certification for responsible aggregate siting, operation and rehabilitation in Ontario. www.cornerstonestandards.ca

Question Fifteen: Do you have any other reference lines on the topographical slide (groundwater contours), its from 2005, do you have anything more recent? Is there changes in 2006 and so on?

- We do have water level data for the area and we can bring some of the different conditions in for discussion.
- Richard Murphy explained that the groundwater contours are from July (generally dry conditions), if these are compared to wet conditions, you will see fluctuations.

Question Sixteen: Is all this data available online or at MOE?

- Dufferin Aggregates is making all their data available.
- Some of the County's data is available through the MOE's reporting system and the County has shared more of their data with Dufferin Aggregates.
- Reporting within the operations will be made available to public.

Question Seventeen: Does the County get all the information from your wells?

- Yes, the County gets all Dufferin's investigation and monitoring data. The County directly monitors Dufferin Aggregates wells and Dufferin shares other information that they have.

Adjourn.