

ENVIRONMENTAL REVIEW TRIBUNAL

IN THE MATTER OF sections 34.1, 100 and 101 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 as amended;

-and-

IN THE MATTER OF Part XIII of the *Environmental Protection Act*, R.S.O. 1990, c. E.19 as amended;

-and-

IN THE MATTER OF sections 38 to 48 of the *Environmental Bill of Rights*, S.O. 1993, c. 28;

-and-

IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Belinda Koblik, Director, Ministry of the Environment and Climate Change, under section 34.1 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended, to issue Permit to Take Water No. 7115-9VVLJW, dated October 29, 2015, to CRH Canada Group Inc., for the taking of groundwater from the Source Pond at the Paris Pit located at Lot 27, Concession 2, Geographic Township of Dumfries, County of Brant;

-and-

IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Fariha Pannu, Director, Ministry of the Environment and Climate Change, under section 20.3 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended, to issue Environmental Compliance Approval No. 1400-9VNPVY, dated October 29, 2015, to CRH Canada Group Inc., for the establishment, use and operation of sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation at the Dufferin Aggregates - Paris Pit, at Lot 26, 27, 1, 2 & 3, Concession 3, 2, WGR, South Dumfries, County of Brant.

FINAL ARGUMENT

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I. INTRODUCTION

1. This is the final argument of the Concerned Citizens of Brant (“CCOB” or the “Appellants”) in respect of appeals they brought before the Environmental Review Tribunal (“ERT” or “Tribunal”) for orders revoking certain, and substituting revised, conditions contained in October 29, 2015 decisions of:

- (a) Belinda Koblik, Director (“Director” or “Director Koblik”), Ministry of the Environment and Climate Change (“MOECC”), under s. 34.1 of the *Ontario Water Resources Act* (“OWRA”), in issuing Permit to Take Water (“PTTW”) No. 7115-9VVLJW to CRH Canada Group Inc. (“CRH” or the “Permit Holder”), formerly known as Dufferin Aggregates, A Division of Holcim (Canada), Inc. (“Dufferin”) for the taking of groundwater from the Source Pond at the Paris Pit, located at Part Lot 27, Concession 2, Geographic Township of Dumfries, County of Brant; and
- (b) Fariha Pannu, Director (“Director” or “Director Pannu”), MOECC under Part II.1, *Environmental Protection Act* (“EPA”), in issuing Environmental Compliance Approval (“ECA”) No. 1400-9VNPVY to CRH Canada Group Inc. (“CRH” or the “Approval Holder”), formerly known as Dufferin Aggregates, A Division of Holcim (Canada), Inc. (“Dufferin”), for the establishment, use and operation of sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation at the Dufferin Aggregates – Paris Pit, at Lot 26, 27, 1, 2 & 3, Concession 3, 2 WGR, South Dumfries, County of Brant.¹

2. The grounds for the appeals and the issues for the case are contained in the CCOB Notice of Appeal (dated April 14, 2016) and the CCOB Issues List (dated October 17, 2016). Both of these documents are appended to this final argument as Appendix A and B, respectively.

II. BACKGROUND

3. The history of the site, including its licensing over 40 years ago for aggregate production, its continued use for agriculture, particularly the growing of corn and the use of pesticides on the site up to the present before aggregate production finally began in 2014, and the details of the water taking and sewage works are summarized in Appendix C to this final argument (Appendix C to CCOB Final Argument – Leave Decision, paras 8-13).

¹ Hereinafter, any reference to Dufferin in this final argument should still be taken to be a reference to, or concern the actions of, CRH, the Permit Holder, the Approval Holder, or the Instrument Holder (where both the PTTW and ECA are referred to), as the case may be.

4. Following the issuance of the PTTW and the ECA (the “instruments” when referred to together), CCOB filed leave to appeal materials in respect of both instruments on November 13, 2015. The concerns of CCOB set out in its leave applications are summarized in the Leave Decision and included such matters as: (1) water quality/water quantity interference with neighbouring municipal and domestic wells; (2) impact on on-site and off-site environmental features; (3) accumulation of pesticides in the on-site sediment/settling pond authorized by the instruments and off-site impacts to groundwater, surface water, and drinking water sources from leaching of pesticides from the pond; (4) location of sewage works abutting the Paris Wellhead Protection Areas (“WHPAs”) in a highly vulnerable aquifer; (5) the fate of 24,000 tonnes per year of potentially pesticide-contaminated fines to be washed from the aggregate, settled in the settling pond, and stored on site for later use in site rehabilitation (See Appendix C to CCOB Final Argument – Leave Decision, paras 2-3).

5. The primary pesticide of concern identified by CCOB, and discussed throughout the decision, was the herbicide atrazine (See Appendix C to CCOB Final Argument – Leave Decision, paras 18, 59, 127).

6. On March 31, 2016, a Leave Panel of the Tribunal, in a 52-page decision with reasons, granted CCOB leave to appeal certain conditions of both the PTTW and the ECA set out in paragraph 119 of the leave decision:

- Condition 3.3 of the PTTW, which does not specify whether the water taking permitted for dust suppression is *in addition to* the maximum amounts set out in condition 3.4a;
- Condition 3.4b of the PTTW, which does not clarify *how often* Dufferin may revert to the maximum rate of water taking in Condition 3.2 “for one month following removal of sediment from the settling pond”
- Condition 3.6 of the PTTW, which states that “[w]ithin 60 days following two full years of operation, the Permit Holder shall submit to the Director a report evaluating water taking needs and making recommendations regarding future water needs and potential changes to the permitted rates and volumes”. This means that the permitted water taking for almost eight years of the PTTW is unknown and will not be known for over two years.
- The lack of clear and specific objectives for the monitoring requirements in the PTTW.
- Condition 4.7 of the PTTW (Trigger Mechanism and Contingency Plan) and Condition 5 of the ECA (Contingency and Pollution Prevention Plan). These Plans are not available and will only be subjected to scrutiny by the MOECC and the Proponent, after the instruments have been granted.
- The ECA Contingency and Pollution Prevention Plan, which does not contain a trigger mechanism.
- Condition 4.8 of the ECA, which does not specify future uses of sediment for on-site rehabilitation (See Appendix C to CCOB Final Argument – Leave Decision, para 119).

7. In connection with the last condition listed, Condition 4.8 of the ECA, the Leave Decision found that: “It would be more appropriate, for example, to include in the ECA a condition that if the sediment is found to contain unacceptable levels of pesticides, it shall not be used for on-site rehabilitation. This would provide more assurance that cumulative effects of the ECA will not include the possibility of allowing concentrated levels of pesticides, if any are found, to pose a risk to surface and groundwater in the area” (See Appendix C to CCOB Final Argument – Leave Decision, para 79).

8. In its findings the Leave Panel stated that: (1) there are significant information gaps in relation to both instruments; (2) these information gaps are caused by the inadequacy of specific conditions in both instruments; and (3) if the instruments cause negative effects on water quantity or quality of the aquifer in a highly vulnerable wellhead protection area and, as a result, the drinking water supply of the County, the City, and others, “it is clear” that the decision to issue both instruments appears to be one that could result in significant harm to the environment (Appendix C to CCOB Final Argument – Leave Decision, paras 125, 131).

9. Following the issuance of the leave decision the Directors brought a motion before the Tribunal for reconsideration of the leave decision, which motion was dismissed in a 59-page decision with reasons on June 8, 2016 (See Appendix D to CCOB Final Argument – Decision on Reconsideration Motion).

10. On the basis of the fifteen (15) days of evidence heard by, and 67 exhibits filed before, the Tribunal, which is seized with the authority to decide this case on the merits, CCOB submits that the PTTW and ECA conditions that are the subject of the appeals should be revoked and amended consistent with the proposed CCOB conditions contained in Exhibit 21 (as modified where noted in this final argument).

11. Part III of the CCOB final argument addresses the expert evidence heard by the Tribunal in the broad areas of toxicology, hydrogeology, and engineering, as well as the lay evidence of local residents who appeared as participants before the Tribunal. Parts IV and V address legal and jurisdictional questions, respectively. Parts VI and VII provide brief final conclusions and the orders requested by CCOB.

III. EVIDENCE

A. Toxicological Aspects of Atrazine

1. Evidence of the Appellants

12. Dr. Poh-Gek Forkert, a professor emerita with the Department of Biomedical and Molecular Sciences at Queen’s University, was called as an expert witness by CCOB. Dr. Forkert holds a Ph.D in Anatomy from the University of Manitoba and has done post-doctoral training at the University of Texas. Dr. Forkert is a scientist with over 30 years of experience in research, publishing and consulting in the field of chemical toxicology. Her research specialty is in the area of mechanisms that cause chemical toxicities. She

has also undertaken research on the carcinogenic effects of chemicals. From 1982 to 2004, she was Professor in the Department of Anatomy & Cell Biology, Queen's University, Kingston, Ontario. She was also cross-appointed to the Department of Pharmacology & Toxicology as well as the Department of Medicine. Dr. Forkert has received research funds from the Canadian Institutes of Health Research, the National Cancer Institute of Canada, the U.S. National Institutes of Health and the U.S. Environmental Protection Agency (U.S. EPA) (Testimony of Dr. Forkert, December 12, 2016; Exhibit 2 Witness Statement of Poh-Gek Forkert, Tab 2).

13. Dr. Forkert has published over 80 papers and chapters in established peer-reviewed journals and books. She has also served on review panels including those established by Health Canada and the U.S. EPA, Canadian Institutes of Health Research, and the Canadian National Cancer Institute, and has worked with Environment Canada in assessing contaminants in drinking water. Dr. Forkert has been involved in review and writing for the Integrated Risk Information System, the U.S. EPA's database of human health effects that may result from exposure to various chemicals found in the environment. She represented the Washington D.C organization, "Physicians for Children's Environmental Health," in public reviews. She has peer-reviewed research grant proposals for the National Institute of Canada, Canadian Institutes of Health, NATO Scientific Affairs Division (Belgium), Health Canada and other agencies. In addition, she has peer-reviewed scientific papers for a variety of journals in the field of pharmacology, toxicology and chemical and drug metabolism (Testimony of Dr. Forkert, December 12, 2016; Exhibit 2 Witness Statement of Poh-Gek Forkert, Tab 2).

14. Although Dr. Forkert has not previously worked with atrazine, she explained that there are general principles inherent in the discipline of toxicology and that as a toxicologist she was able to apply these principles to the assessment of chemicals, including atrazine. Dr. Forkert was qualified as an expert to provide opinion evidence in the area of toxicology. (Testimony of Dr. Forkert, December 12, 2016).

15. Dr. Forkert testified that it was her understanding that the Paris Pit site has been used for agricultural purposes, mainly corn production, until 2014. During this period atrazine and other herbicides were in regular use and atrazine contamination has been detected in groundwater samples at the site. Atrazine is an herbicide that was developed for the control of broadleaf and grass weeds, primarily in the production of corn, soybeans, and other crops. Atrazine may be formulated with other herbicides including cyanazine, glyphosate and others. When herbicides other than atrazine are identified, they are considered additive in the sense that their toxic effects are cumulative. These compounds have similar potencies and mode of action, and so they are regarded as a group. (Testimony of Dr. Forkert, December 12, 2016).

16. Dr. Forkert explained that atrazine degrades into metabolites that include deethylatrazine (DEA) deisopropylatrazine (DIA) and diaminochloroatrazine (DACT), while the hydroxyl-atrazine metabolites include hydroxyatrazine (HA), deethylhydroxyatrazine (DEHA), deisopropylhydroxyatrazine (DIHA) and ammeline. The chlorinated metabolites are regarded as being of equal potency to atrazine with

respect to toxicity and the effects are, thus, considered as additive in risk assessments. (Testimony of Dr. Forkert, December 12, 2016).

a. Regulatory Guidelines on Atrazine

17. Dr. Forkert testified that in 1998, the European Union (EU) set a limit of 0.1ug/L for the residue of any pesticides, which includes herbicides in drinking water and groundwater. In 2003, the EU banned the use of atrazine, as it was virtually impossible to keep water contaminated by atrazine below the regulatory limit due to its widespread use. According to Dr. Forkert, the EU took a precautionary approach and adopted a position that its citizens should not be drinking pesticide contaminated water and instituted the ban, which is consistent with the assumption that there is no safe level of pesticide consumption. In contrast, jurisdictions such as Canada take the position that there is a safe level of exposure. (Testimony of Dr. Forkert, December 12, 2016).

18. Dr. Forkert testified that in 1991 the United States Environmental Protection Agency (U.S. EPA) had set a drinking water guideline of 3 ug/L. Last year the U.S. EPA released a comprehensive ecological report on atrazine. The report titled “Refined Ecological Risk Assessment of Atrazine” concluded that EPA levels of concern for chronic risk are exceeded by as much as 22, 198 and 62 times for birds, mammals and fish, respectively. The report also determined that “average atrazine concentrations in water at or above 5 ug/L for several weeks are predicted to lead to reproductive effects in fish, while a 60-day average of 3.4 ug/L has a high probability of impacting aquatic plant community primary productivity, structure and function”. The US EPA is currently undertaking a health risk assessment on atrazine but has not to date released a draft report (Testimony of Dr. Forkert, December 12, 2016, Exhibit 2, Tab 4, Abstract).

19. Dr. Forkert stated that Health Canada’s water quality guidelines sets the maximum acceptable concentration (MAC) at 5 ug/L, a level which is fifty times higher than the EU standard for pesticides. (Testimony of Dr. Forkert, December 12, 2016).

20. Dr. Forkert testified that in 2011, Health Canada reviewed its guideline for atrazine and retained the MAC of 5 ug/L. The value was calculated from an acceptable daily intake (ADI) of 0.0005 mg/kg/bw per day based on a no observable adverse effect level (NOAEL) of 0.5 mg/kg/bw per day and an uncertainty factor of 1000. In 2015, Health Canada’s Pest Management Regulatory Agency (PMRA) undertook a special review of atrazine that was triggered by the EU’s ban on atrazine. The PMRA conducted a risk assessment of atrazine in drinking water and identified an ADI of 0.006mg/kg/ bw per day for chronic dietary exposure. Dr. Forkert noted in cross-examination that the ADI calculated by PMRA as part of its special review was more than ten times greater than Health Canada’s ADI of 0.0005 mg/kg/day. (Testimony of Dr. Forkert on December 12 and 13, 2016; Witness Statement of Poh-Gek Forkert, Volume 1, Tab 6, Classification and Assessment and Tab 7, p. 4).

21. On cross-examination Dr. Forkert was directed to the reviews of atrazine undertaken by PMRA in 2004 and 2007. The 2004 review had concluded that that all uses of atrazine and its end products do not entail an unacceptable risk to human health

provided proposed mitigation measures were implemented. The proposed mitigation measures required wearing of “chemical-resistant gloves, and coveralls over a long-sleeved shirt and long pants” during application. On re-examination, Dr. Forkert explained that the proposed mitigation measures would not provide any protection for nearby residents, children or wildlife (Testimony of Dr. Forkert, December 12, 2016, Exhibit 7 Witness Statement of Mark Chappel Volume 1, Tab C, p.47 and Tab V).

22. Dr. Forkert noted that guidelines established by regulatory agencies including Health Canada and PMRA are not set specifically for infants. However, the World Health Organization (WHO) has identified default parameters for children and infants. The WHO’s guideline suggests that the value be based on an default intake of 1.0 litre, and a body weight of 10kg for children and recommends for bottle-fed infants, the most vulnerable group, an intake of 0.75 litre for a body weight of 5 kg. These default parameters for children and infants require a much more stringent guideline value (Testimony of Dr. Forkert, December 12, 2016).

b. Endocrine Disruptor

23. Dr. Forkert testified that with the exception of the EU, regulatory guidelines are based on the premise that there is a threshold level below which exposure is deemed safe. However, in the case of a chemical such as atrazine, which is considered an endocrine disruptor, there is a lack of a traditional dose-response. Rather, it exhibits a non-monotonic dose response that presents a challenge when defining the threshold at which adverse effects are manifested (Testimony of Dr. Forkert, December 12, 2016).

24. Dr. Forkert testified that atrazine has been identified as an endocrine disruptor. A study by Sara Wirbisky and Jennifer Freeman (Wirbisky study) states that “[e]ndocrine disrupting chemicals are exogenous agents that alter endogenous hormone signalling pathways”. According to the Wirbisky study, epidemiological studies have focused on the association between endocrine disrupting chemicals and various adverse health states, diseases and disorders including reproductive dysfunction. The study states that although progress is being made, further work is needed to understand the mechanisms behind the adverse health outcomes associated with EDC exposure (Testimony of Dr. Forkert, December 12, 2016, Exhibit 11, p.415).

25. Dr. Forkert was cross-examined about whether atrazine is an endocrine disruptor and asked if she could point to any documents indicating that it was a non-threshold toxicant. Dr. Forkert responded by referring to the U.S. EPA Endocrine Disruptor Screening Program, which concluded that based on weight-of-evidence analysis, atrazine suppresses the release of gonadotrophin-releasing hormones (GnRH) from the hypothalamus and decreases prolactin from the pituitary, which may result in downstream effects on estrogen and androgen-signalling pathways in mammals. (Testimony of Dr. Forkert, December 13, 2016; Exhibit 2, Witness Statement of Poh-Gek Forkert, Tab 33).

26. Dr. Forkert also referenced the Wirbisky study, which examined atrazine exposure and reproductive dysfunction through the hypothalamus-pituitary-gonadal (HPG) axis. According to the Wirbisky study a “further complication of our understanding of how [endocrine disrupting chemicals] disrupt the hormonal homeostasis is their lack of a traditional dose-response, often exhibiting a non-monotonic dose curve which provides a challenge in defining threshold levels.” Dr. Forkert testified that some regulatory agencies have the view that atrazine has a traditional dose response but this needs to be re-evaluated, as adverse effects could be more severe at lower levels than at higher levels. On cross-examination, Dr. Forkert said that there are doubts about whether threshold levels can be set for chemicals such as atrazine (Testimony of Dr. Forkert, December 12, 2012; Exhibit 11, p. 416).

c. Transport and Distribution of Atrazine and Exposure Pathways

27. Dr. Forkert’s evidence was that atrazine could be transported to streams by agricultural runoff. It could also be transported to the atmosphere through volatilization or attached to soil and dust particles. In the atmosphere, atrazine can be dispersed by air currents and wind, and re-deposited on land surfaces, lakes and streams by rainfall, snow and dry deposition, often at considerable distances from their source area (Testimony of Dr. Forkert, December 12, 2016; Exhibit 2, Witness Statement of Poh-Gek Forkert, Tab 12, p. 12).

28. Dr. Forkert noted that that the U.S Geological Survey has investigated the prevalence of herbicides including atrazine in rainfall. Atrazine is less volatile than other herbicides, indicating that it persists longer in soil, thus making it available for volatilization into the air over a longer period of time. Deposition rates throughout most of the Corn Belt ranged from 50 to more than 100 ug per square meters per year. The total mass of atrazine deposited during 1991 is estimated to be about 140,000 kg representing 0.6 percent of the annual amount of atrazine applied to cropland in the study area. The atrazine degradation product DEA was also present in rainfall samples, and was present in 58% of the samples that contained atrazine, suggesting that a significant amount of atrazine is transformed into DEA by photochemical processes. (Testimony of Dr. Forkert, December 12, 2016 Exhibit 2. Witness Statement of Poh-Gek Forkert, Tab 13, p. 2, Results).

29. Dr. Forkert testified that atrazine and its metabolites are some of the most frequently detected herbicides in surface water and groundwater in Canada. Atrazine contamination has been reported in British Columbia, Nova Scotia, Prince Edward Island, Quebec, Ontario and Saskatchewan. Monitoring data from 2005 to 2014 in Canada indicated that atrazine was detected in 11% of groundwater samples; its metabolite DEA was also detected. (Testimony of Dr. Forkert, December 12, 2016; Exhibit 2 Witness Statement of Poh-Gek Forkert Volume 1, Tab 6 p. 2, Tab 7, p. 3)

30. Dr. Forkert’s evidence was that exposure to atrazine and its metabolites can occur through three potential pathways: inhalation, dermal and ingestion. Dr. Forkert testified that ingestion of contaminated groundwater was the principal pathway of exposure. Dr.

Forkert testified that the pathways for children differ from adults. Children drink more fluids, eat more food, and breathe more air per kilogram of body weight and possess a larger skin surface relative to their body volume. Children are closer to the ground, crawl on the floor and put objects, including dirt, into their mouths. As a result, children are regarded as being more vulnerable than adults to the effects of chemical exposure. (Testimony of Dr. Forkert, December 12, 2016).

d. Health Impacts from Exposure to Atrazine

i. Reproductive Effects

31. According to Dr. Forkert, the primary health impact of atrazine is on the reproductive system. Some of the reported impacts are prostatitis (inflammation of the prostate), reduced fecundity, increased litter resorption and decreased ovarian and uterine weights. Studies were carried out in 13 Iowa communities exposed via drinking water to triazine herbicides, including atrazine. The mean level of atrazine in drinking water was 2.2 ug/L. The results showed an increased risk of low birth weight, prematurity and intrauterine growth retardation. Another study that used data from the Ontario Farm Family Health Study to examine the effects of exposure to pesticides, including atrazine and glyphosate, revealed increases in risk of early abortion (<12 weeks) from exposure to triazines or any herbicide. Increased risk was also observed for later abortions (12-19 weeks) after exposure to glyphosate or a miscellaneous class of pesticides. A separate study in Kentucky investigated the relationship between preterm births and exposure to atrazine in drinking water. The results revealed an increase in the odds of preterm birth in women residing in counties with the highest exposure to atrazine compared with women residing in counties with the lowest exposure. These data suggest a positive association between atrazine exposure and preterm birth. However, Dr. Forkert cautioned that confounding factors are inherent in epidemiologic studies given that people have different genetic backgrounds and thus metabolize chemicals differently. They also have different diets and lifestyles resulting in different exposure histories. Dr. Forkert testified, therefore, that establishing definitive causal links between atrazine exposures and human health impacts presented significant challenges. (Testimony of Dr. Forkert, December 12, 2016; Exhibit 2 Witness Statement of Poh-Gek Forkert, Tab 23, Tab 24 and Tab 25).

ii. Hepatic Effects

32. According to Dr. Forkert, studies done on rats and pigs revealed that the liver is a target of atrazine toxicity. The hepatotoxic effects include significant increases in serum levels of liver enzymes and histopathological or structural changes. (Testimony of Dr. Forkert, December 12, 2016; Exhibit 2, Witness Statement of Poh-Gek Forkert, Tab 26, Tab 27 and Tab 28).

iii. Endocrine-Disrupting Effects

33. Early studies in rodents treated with atrazine showed decreased pituitary hormone (prolactin and luteinizing hormone) levels; delayed puberty in males and females; and

decreased number of sperm and motility in adults. (Testimony of Dr. Forkert, December 12, 2016; Exhibit 3, Witness Statement of Poh-Gek Forkert, Tab 29, Tab 30, Tab 31 and Tab 32).

iv. Carcinogenic effects

34. Dr. Forkert testified that studies in Sprague-Dawley and Fischer 344 rats showed that atrazine exposure caused earlier onset and /or increased incidence of mammary tumours in Sprague-Dawley rats, but both these effects were not found in Fischer 344 rats. Atrazine also lengthened the estrus cycle (premature reproductive senescence) and increased estradiol in Sprague-Dawley rats but not in the Fischer 344 rats. Dr. Forkert noted that it is known that estradiol can promote tumour growth and that mammary tumour formation occurs in aging rats. Dr. Forkert cautioned that a key biological difference between these two strains of rats is that the Fischer 344 rats maintain a normal estrous cycle throughout a greater portion of its life compared to the Sprague Dawley rats, therefore allowing reproductive senescence to occur later in life. It has thus been postulated that the formation of mammary tumours in female Sprague-Dawley rats is related to providing a hormonal milieu conducive to tumour formation. Dr. Forkert observed that there is a controversial debate about whether or not atrazine elicits mammary tumour development in humans. (Testimony of Dr. Forkert, December 12, 2016; Exhibit 3, Witness Statement of Poh-Gek Forkert , Tab 34).

35. Dr. Forkert's evidence included a study of prostate cancer that was carried out in a cohort of pesticide applicators from Iowa and North Carolina in the Agricultural Health Study. The results showed a slightly increased risk but no clear association between atrazine exposure and cancer incidence. Another study evaluated cancer incidence in atrazine-exposed pesticide applicators in 53,943 participants in the Agricultural Health Study. The results showed no clear associations between atrazine use and non-Hodgkin's lymphoma and multiple myeloma. However, the authors of the study suggested further studies be conducted for tumour types for which there was a suggestion of a trend (lung, bladder, non-Hodgkin lymphoma and multiple myeloma.) (Testimony of Dr. Forkert, December 12, 2016; Exhibit 3 Witness Statement of Poh-Gek, Tab 36 and Tab 37).

36. Dr. Forkert's evidence was that the International Agency for Research on Cancer (IARC) had classified atrazine as not classifiable as to its carcinogenicity to humans and placed it in Group 3. However, Dr. Forkert testified that based on IARC's classification system, atrazine ought to have been placed in Group 2B. The IARC Monograph Volume 112 states: "A categorization in Group 2B means that there is convincing evidence that the agent causes cancer in experimental animals but little or no information about whether it causes cancer in humans. IARC had evaluated the cancer potential of atrazine and found "inadequate evidence of its carcinogenicity in humans and "sufficient evidence in experimental animals." Based on these criteria, Dr. Forkert testified that it was expected that atrazine would be classified as possibly carcinogenic to humans and placed in Group 2B (Testimony of Dr. Forkert, December 12, 2016; Exhibit 3, Witness Statement of Poh-Gek Forkert, Tab 41).

37. The IARC classification has been controversial and has been called a questionable classification. IARC chose the weaker and less protective classification because it concluded that there was strong evidence that the mechanism by which atrazine increased the incidence of mammary tumours in Sprague-Dawley rats was not relevant to humans. However, IARC's choice of classification has been criticized as not being based on strong evidence but rather on incomplete mechanistic data. Dr. Forkert observed that one former IARC director has warned that, if tests show that [the] hypotheses is incorrect, or if they do not account adequately for the wide range of susceptibility in humans, serious consequences to public health may follow. In view of the significant environmental and health impacts associated with atrazine, Dr. Forkert recommended the Tribunal adopt a precautionary approach to protect the public from risk of exposure to atrazine and its metabolites (Testimony of Dr. Forkert, December 12, 2016; Exhibit 2, Witness Statement of Poh-Gek Forkert, Tab 3, p. 263).

e. Conclusions

38. Dr. Forkert's evidence was that the Paris Pit Site has been used for agricultural purposes, mainly for corn production, up until 2014. During this period atrazine and other herbicides were in regular use and there are residues of atrazine on the site. Atrazine is an endocrine disruptor that may lack a traditional dose response. Endocrine disruptors pose a challenge in defining the appropriate regulatory threshold as they can cause adverse effects at or below environmentally acceptable levels. In the EU, atrazine has been banned, given that it was virtually impossible to keep atrazine from contaminating water, due to its widespread use. In Canada, the maximum allowable concentration for atrazine is 5 ug/L, which was established under the Guidelines for Canadian Drinking Water Quality. At or above this level, the U.S. EPA's recent report titled "Refined Ecological Risk Assessment for Atrazine" indicates that average atrazine concentrations for several weeks are predicted to lead to reproductive effects in fish, while at a 60-day average at a lower level of 3.4 ug/L has a high probability of impacting aquatic plant community primary productivity, structure and function. Atrazine and its metabolites are some of the most frequently detected herbicides in surface water and groundwater in Canada. Dr. Forkert testified that the primary exposure pathway of atrazine is through ingestion of contaminated groundwater used as a source of drinking water. Atrazine exposure has been associated with a number of serious environmental and health effects. The studies in experimental animals have found impacts affecting the reproductive, hepatic and hypothalamic-pituitary systems. Although atrazine is known to cause mammary tumours in the female Sprague Dawley rats, it remains unclear whether or not it is carcinogenic to humans. However, Health Canada has classified atrazine to be "possibly carcinogenic to humans." Dr. Forkert's expert opinion was that the results of the available studies when considered in totality demonstrate that a precautionary approach should be adopted, especially for vulnerable groups (e.g. children, pregnant women, individuals with pre-existing disease) to protect the public from the risks of exposure to atrazine and its metabolites.

2. Evidence of the Instrument Holder

39. Mr. Mark Chappel, the vice president and founder of Nova Tox, a consulting firm that specializes in providing risk assessment to clients in the public and private sectors, testified as an expert on behalf of CRH Group Canada Inc. (CRH). Mr. Chappel received an M.Sc in toxicology from the University of Guelph and is a Board certified Diplomate of the American Board of Toxicology. He is a Vendor of Record consultant for the MOECC's Standard Development Branch. In this role he has responsibility for providing reviews of risk assessments that are submitted to the Ministry to support Record of Site Condition filings. Mr. Chappel was qualified as an expert in the area of toxicology and atrazine. (Testimony of Mark Chappel, January 19, 2017, Exhibit 7, Witness Statement of Mark Chappel Volume 1, Tab B.)

40. Mr. Chappel has a prior working relationship with Syngenta, the Swiss multinational that manufactures atrazine. He is the co-author of two studies for Novartis Crop Protection, now known as Sygenta Crop Protection, which is a subsidiary of Syngenta. The reports that were prepared for Syngenta are listed in his curriculum vitae and titled, "An ecological risk assessment of metolachlor residues found in various surface water locations" and "Ecological risk assessment of atrazine concentrations in the Great Lakes using distributional analysis." (Testimony of Mark Chappel January 19, 2017, Exhibit 7, Witness Statement of Mark Chappel Volume 1, Tab B, pp. 27-28.)

41. Mr. Chappel also co-authored a study titled "Triazine Herbicides: Ecological Risk Assessment in Surface Waters." Atrazine is herbicide that is within the class of triazine herbicides. Mr. Chappel's study was one of a number of studies published in a book by the American Chemical Society. Mr. Larry G. Ballantine and Janis E. MacFarland, two of the editors of the book are affiliated with Syngenta. Mr. Chappel's study concludes that "in general triazines do not pose a significant risk to the aquatic environment." The titles of the other studies and articles in the book included the following: "Benefits of Triazine Herbicide", "Cost Impacts if atrazine and triazine were not available for Growers", "Pesticide Residue in Processed Foods: Not a Food Safety Concern"; and "Herbicide in Drinking Water: A Challenge for Risk Communication." (Testimony of Mark Chappel January 19, 2017, Exhibit 7, Witness Statement of Mark Chappel Volume 1, Tab B, p. 27; Exhibit 49; Exhibit 50).

42. Mr. Chappel co-authored the study on triazine herbicides with Dr. Keith Solomon, a professor at the University of Guelph, who has received significant research funding from Syngenta. Mr. Chappel has had a close working relationship with Dr. Solomon. Four of the nine publications listed in Mr. Chappel's curriculum vitae were co-authored with Dr. Solomon. In addition, Mr. Chappel made nine of the fourteen presentations listed in his curriculum vitae jointly with Dr. Solomon. (Testimony of Mark Chappel January 19, 2017; Exhibit 7, Witness Statement of Mark Chappel Volume 1, Tab B, pp. 27-28.)

43. Since 2005 Mr. Chappel has been primarily engaged in undertaking safety assessments and evaluations for companies, including Fortune 500 companies. This work

has involved providing new substance notification to Health Canada to get the introduction of a new substance into the marketplace (Testimony of Mark Chappel January 19, 2017; Exhibit 7, Witness Statement of Mark Chappel Volume 1, Tab B, pp.19-22.)

44. Mr. Chappel agreed that the precautionary principle should be considered in the environmental decision-making process. He regards Health Canada and PMRA guidance limits (e.g. ADIs) and guideline limits (e.g. MAC water quality guidelines, CDLWOC) for atrazine as based on a “conservative, precautionary risk- based approach.” Mr. Chappel, however, was unaware of the Auditor General’s 2015 report on pesticide safety that had concluded PMRA’s delay in the cancellation of the pesticides registrations was exposing Canadians to unacceptable risk (Testimony of Mark Chappel on cross examination, January 19, 2017).

45. Mr. Chappel’s evidence was that PMRA was aware of the European Union’s (EU) ban on atrazine when it undertook its Special Review of Atrazine in 2015. In undertaking its Special Review of Atrazine, PMRA had set the acute and chronic levels of atrazine at 1300.5 mg/L and 41.9 mg/L respectively. Mr. Chappel testified that PRMA uses a risk-based approach for assessing the safety of chemicals. However, he was unaware of how the PRMA had derived the acute and chronic values which were set at approximately 13,000 and 400 times higher respectively than the EU regulatory limit for atrazine. Mr. Chappel was aware that under PMRA’s Special Review for Atrazine residues of atrazine in potential groundwater drinking water sources had been estimated using modelling (Leaching Estimation and Chemistry Model (LEACHM)). At the screening level (Level 1) the highest estimated environmental concentration (ECC) in groundwater was 164 ug/L of atrazine based on its use in corn in Quebec at a rate of 1.5 kg active ingredient per hectare. Mr. Chappel confirmed that this would mean that the highest estimated environmental concentration of atrazine in Canada is approximately 30 times higher than Health Canada’s MAC of 5 ug/L established under the Guidelines for Canadian Drinking Water Quality.

46. Mr. Chappel was of the view that the only applicable human exposure pathway is if atrazine moved into groundwater, migrated past the site onto adjacent down gradient properties. If residents who relied on well water used the groundwater for potable consumption, according to Mr. Chappel, this would be a major pathway of concern. Mr. Chappel did not think that other potential pathways (i.e.: through the volatilization or dermal absorption) were of concern. (Testimony of Mark Chappel, January 19, 2017).

47. Mr. Chappel agreed under cross-examination that if a pesticide had a non-monotonic dose response it would have adverse impacts below Health Canada’s MAC of 5 ug/L. He testified that regulatory agencies have not considered the potential for pesticides to have a non-monotonic dose response when developing guideline limits (Testimony of Mark Chappel under cross-examination, January 23, 2017).

a. Endocrine Disruptor

48. Mr. Chappel's evidence was that atrazine is an endocrine disruptor in animals and it was shown to produce mammary tumours in female Sprague Dawley (SD) rats. (Testimony of Mark Chappel January 19, 2017, Exhibit 7, Witness Statement of Mark Chappel Volume 1, Tab 1, page 6, para 25.)

49. One of the early studies that had determined atrazine was an endocrine disruptor was undertaken by Professor Tyrone Hayes at the University of California, Berkley in 2002. The study titled "Hermaphroditic, demasculinized frogs after exposure to the herbicide atrazine at low ecologically relevant doses" revealed that frogs exposed to atrazine could be at risk of impaired sexual development. Mr. Chappel admitted on cross-examination that he was aware that Professor Hayes' findings were initially disputed by the broader independent scientific community. In defining the members of the independent scientific community, Mr. Chappel stated that he would also include scientists employed by Syngenta (Testimony of Mark Chappel, January 19, 2017, Exhibit 51).

50. Mr. Chappel acknowledged that it had taken almost 13 years after the Hayes study for the U.S. EPA to validate his findings. In 2015 the U.S. EPA concluded that "based on the weight-of-evidence analysis, atrazine has the potential to interact with the estrogen and androgen pathways in mammals and other wildlife". The U.S. EPA referenced three studies by Tyrone Hayes, including his 2002 study of atrazine exposure on frogs in support of its weight-of-evidence assessment of atrazine. (Testimony of Mark Chappel, January 19, 2017, Exhibit 7 Witness Statement of Mark Chappel Volume 2, Tab M.)

51. Mr. Chappel testified under cross-examination that he was unaware that, after the U.S. EPA had made a determination that atrazine was an endocrine disruptor the WHO had also classified atrazine as an endocrine disruptor. (Testimony of Mark Chappel January 19, 2017).

52. Mr. Chappel was emphatic that atrazine does not act as endocrine disruptor in humans based on the hormonal and physiological differences between humans and female SD rats. Mr. Chappel noted that the International Agency for Research on Cancer (IARC) had classified atrazine in Group 3as "not classifiable as to its carcinogenicity in humans". However, a document prepared by two scientists and filed with Mr. Chappel's witness statement elaborated on the IARC's classification scheme. The document states: "clear mechanistic data are lacking to show that atrazine does or does not alter the secretion of luteinizing hormone (LH) and prolactin in humans." The document recommends "further studies are needed to characterize the ability of atrazine to interfere with the hypothalamic-pituitary-ovarian axis in women. Clarification of this issue would help show whether atrazine is a mammary carcinogen to women" (Testimony of Mark Chappel January 19, 2017, Exhibit 7, Witness statement of Mark Chappel Volume 1, Tab 1, p. 7, para 29 and Tab, H, p. 167).

b. Possibly Carcinogenic to Humans

53. Mr. Chappel was of the view that the additional studies since the IARC classification have served to only establish an “association” between atrazine and cancer. On cross-examination Mr. Chappel was directed to the 2003 Rusiecki study which had also concluded that “further studies are warranted for tumour types in which there was a suggestion of a trend (lung, bladder, non-Hodgkin’s lymphoma and multiple myeloma).” Mr. Chappel responded that if trends are based on associations which show very low odds ratios, it may not be worthwhile or productive to undertake further investigations. (Testimony of Mark Chappel January 19, 2017; Exhibit 7, Witness Statement of Mark Chappel, Tab H, p. 167; Exhibit 2, Witness Statement of Poh-Gek Forkert Vol 2 Tab 39, p.1375, conclusions.

54. Mr. Chappel’s evidence was that all major regulatory agencies, such as the U.S. EPA, Health Canada and PMRA do not consider atrazine to be carcinogenic to humans. On cross-examination Mr. Chappel was directed to Health Canada’s Guideline for Canadian Drinking Water Quality which classified atrazine in Group III as “possibly carcinogenic to humans”. In addition, Health Canada’s calculation of the acceptable daily intake (ADI) for atrazine had applied a 1000 uncertainty factor of which a factor of 10 was included because “atrazine might act as a non-genotoxic carcinogen or as a promoter in rats through interference with hormonal regulation”. Despite Health Canada’s classification of atrazine as being “possibly carcinogenic to humans” Mr. Chappel did not regard his comment that all major regulatory agencies had not classified atrazine to be carcinogenic to humans to be an incorrect statement. Instead he speculated that if Health Canada re-evaluated atrazine like PMRA had in 2015 and had come up with a higher drinking water chronic value of concern, Health Canada may, in fact, classify atrazine as non-carcinogenic and place it in Group 4, as probably not carcinogenic to humans (Testimony of Mark Chappel, January 19, 2017; Exhibit 1 Witness Statement of Mark Chappel Volume 1, Tab 1, Witness Statement of Mark Chappel, p. 7, para 31 and Tab I, Guidelines for Canadian Drinking Water, p 179).

c. Impacts of Atrazine Exposure on Children and Vulnerable Populations

55. Mr. Chappel in his witness statement stated that it was not scientifically valid to adopt any further precautionary approaches for the purpose of protecting vulnerable groups (children etc.) when assessing atrazine. On cross examination he stated that vulnerable groups also included pregnant woman and infants. In support of his position Mr. Chappel relied on a single study in which the lead author was Charles B. Breckenridge, an employee with the Department of Toxicology and Health Sciences at Syngenta Crop Corporation (Testimony of Mark Chappel, January 23, 2017, Exhibit 7 Witness Statement of Mark Chappel Volume 1, p.15, para 79 and Tab X p.1057).

56. Mr. Chappel was asked in cross-examination about why his position regarding atrazine differed from the position outlined in a resource book he had co-authored for the WHO titled ‘Hazardous Chemicals in Human and Environmental Health’. The resource book states that the “infant and young child have different structural and functional characteristics from those of the older child and adult. These represent stages in normal

growth and development, and may affect their vulnerability when exposed to chemicals. Generally speaking, chemicals, both organic and inorganic, are absorbed more readily by infants than adults.” The WHO resource book concluded that “[a]ll these characteristics point to the special need to protect these sensitive segments of the population from health risks due to exposure to chemicals”. Mr. Chappel responded that statements in the resource book were generalities that cannot be applied in every situation and to every chemical (Testimony of Mark Chappel, January 23, 2017, Exhibit 7, Witness Statement of Mark Chappel Volume 1, page 15, para 79; Exhibit 54).

57. Under cross-examination, Mr. Chappel testified that causal links between atrazine and adverse pregnancy outcomes were not warranted. In support of his position Mr. Chappel relied on an article by Michael Goodman. On cross-examination it was pointed out to Mr. Chappel that he had expressed reluctance to place weight on the Wirbisky study because it had been a review of the epidemiologic literature on atrazine exposure and reproductive dysfunction. However, Mr. Chappel expressed that he had full confidence in the Goodman study which, like the Wirbisky study, was based on a review of epidemiologic studies. The authors of the Wirbisky study had declared that they did not have a conflict of interest. The Wirbisky study was funded by the National Institutes of Health and the National Institutes of Environmental Health Sciences which Mr. Chappel agreed were credible organizations. In contrast, the authors of the Goodman study declared a conflict of interest due to Syngenta Crop Protection providing an unrestricted grant for the project. (Testimony of Mark Chappel January 23, 2017, Exhibit 7 Witness Statement of Mark Chappel Volume 2, Tab 4; Exhibit 54, p. 440).

d. Conclusions

58. It is submitted that Mr. Chappel, who has a prior working relationship with Syngenta, did not provide impartial testimony about the toxicological impacts of atrazine. He was highly selective in the reports that he relied on in support of his expert opinion. Although he had been previously involved in writing a resource book for the WHO, which cautioned the need for special protection to sensitive segments of the population from health risk due to exposure to chemicals, he took a different position when it came to atrazine exposure on children and other vulnerable groups. In his testimony to the tribunal he relied on a single study by Charles Breckenbridge, an employee of Syngenta Crop Protection, who had served as the lead author, in support of his position that further precautionary approaches for protecting vulnerable groups was not required when assessing atrazine exposure. Similarly, he expressed reluctance to placing weight on the Wirbisky study on grounds that it was just a review of epidemiologic studies but had full confidence in relying on a Syngenta funded study, which was also a review of epidemiologic studies to support his proposition that causal links between atrazine exposure and adverse pregnancy outcomes were unwarranted. Mr. Chappel regards Health Canada’s and PMRA’s guidance limits (e.g. ADIs) and guideline limits (e.g. MAC water quality guidelines, CDLWOC) for atrazine as based on a “conservative, precautionary risk- based approach.” However, he had no explanation as to how PMRA, in undertaking its Special Review of Atrazine, had derived acute and chronic levels of concern which were approximately 13,000 and 400 times higher respectively than the EU

regulatory limit for atrazine. Furthermore, Mr. Chappel maintained that all major regulatory agencies had not classified atrazine to be carcinogenic to humans. When directed to Health Canada's Guidelines for Canadian Drinking Water Quality which clearly considers atrazine to be possibly carcinogenic to humans, Mr. Chappel refused to acknowledge that his previous statement may have been incorrect. Instead he speculated that if Health Canada re-evaluated atrazine like PMRA had in 2015 it might classify atrazine as probably non- carcinogenic to humans. When Mr. Chappel's testimony is considered in totality, it is submitted that he did not provide opinion evidence that was fair, objective and non-partisan which would assist this tribunal in the determination of the matters at issue. Rather, Mr. Chappel served as an advocate for his client and sought to minimize the adverse environmental and human health impacts from atrazine.

B. Atrazine in Soil and Groundwater and the Impact of Aggregate Washing

1. Introduction

59. A key issue in the case is whether, and if so the extent to which, the herbicide atrazine exists in the soils and groundwater at the site. This issue, in turn, is linked to the question of whether the herbicide, if present, could contaminate area groundwater and surface water resources, including drinking water, as a result of the aggregate washing process operations authorized by the instruments. In the view of CCOB the evidence, properly understood, strongly suggests that atrazine remains in the topsoil and overburden, but its presence has not been properly investigated by Dufferin in those media. The evidence overwhelmingly confirmed the presence of atrazine in groundwater at every monitoring well it was tested for at the site, further underscoring its questionable absence in soils. The evidence is also strongly suggestive that the aggregate washing process has the potential to result in atrazine being: (1) discharged from the bottom of the settling pond into the groundwater environment; and (2) more highly concentrated in sediments and reaching the groundwater environment when spread with those sediments one meter above the water table as part of stockpiling, progressive, and final rehabilitation of the site. The areas focused on in this part of the argument include: (1) past atrazine use at the site; (2) sampling for atrazine in soils; (3) sampling for atrazine in groundwater; and (4) aggregate washing process.

2. Overall Conclusions of the Witnesses

a. Evidence of the Appellants

60. Dr. Ken Howard was qualified by the Tribunal to give opinion evidence in the area of hydrogeology (Qualified by the Tribunal, January 9, 2017). He has practiced as a hydrogeologist for approximately 40 years. Dr. Howard has an M.Sc. in hydrogeology and a Ph.D. in hydrogeochemistry (chemistry of groundwater) from the University of Birmingham, England. He also has a B.Sc. in physics and geology (combined honours) from the University of Exeter, England. He is a Professor of Hydrogeology at the University of Toronto, Department of Physical and Environmental Sciences where he has taught since 1981 and has been the Director of the Groundwater Research Group there for

many years. He is certified as a professional hydrogeologist by the American Institute of Hydrology since 1987. He is chartered as a geologist by the British Geological Society since 1990, and he has been registered as a Professional Geoscientist by the Association of Professional Geoscientists of Ontario since 2004. He has been a member of the International Association of Hydrogeologists since 2000 and was President of that organization for a four-year term that ended in September 2016. He teaches a wide variety of undergraduate and graduate courses in areas such as hydrogeology and contaminant transport and gives field courses at both levels. He is involved in research in all areas of hydrogeology, particularly in methods of groundwater and aquifer protection and works in this field both domestically and internationally. He is widely published in the area of hydrogeology with over a hundred published journal papers, the editor of six books, and he often speaks at international conferences on hydrogeological subjects. His special interests of relevance to his testimony before the Tribunal include aquifer recharge assessment, hydrogeochemical analysis of aquifer systems, contaminant migration, and means of protecting aquifers. In 2011 he received the Presidents' Award from the International Association of Hydrogeologists for international contributions to the development and application of groundwater science and a few months ago received a Geoscience Canada Fellowship in recognition of his contributions to the geoscience profession in Canada. He has previously been qualified to give opinion evidence before the courts, administrative tribunals (Ontario Municipal Board), including with respect to aggregate operations and PTTWs, and the Walkerton Commission of Inquiry where he was Commissioner O'Connor's leadoff witness for the inquiry on the subjects of contaminant hydrogeology, how contaminants are stored and transported in the shallow subsurface, and well protection methods (Testimony of January 9, 2017; Exhibit 13A, pages 1-36).

61. The focus of Dr. Howard's evidence before the Tribunal was the 2014 report prepared for Dufferin by Conestoga-Rovers & Associates ("CRA") on pesticides and herbicides (Exhibit 16). It was the testimony of Dr. Howard in examination in chief that with respect to this report he focused on two matters: (1) the adequacy of the sampling that was conducted to investigate for the presence of herbicides and pesticides on the site; and (2) the calculations on the potential release of atrazine during the aggregate washing process. In both cases, he identified significant problems with the work performed by CRA. As a result, his overall opinion was that "there remains a credible threat to public or private water supply from past use of pesticides at the Paris Pit Site" (Testimony of January 9, 2017; Exhibit 13, Tab 2, page 4).

b. Evidence of the Directors

62. Mr. Vincent Bulman was qualified by the Tribunal to give opinion evidence as a hydrogeologist with emphasis on PTTWs and ECAs (Qualified by the Tribunal, January 16, 2017). He has a B.Sc. in geology from Laval and two masters' degrees from Queen's University and the University of Guelph in mineral technology and soil science, respectively. He has been registered as a Professional Geoscientist by the Association of Professional Geoscientists of Ontario since 2006. Mr. Bulman has been a regional hydrogeologist with the MOECC for about 8 years and has been the senior hydrogeologist at MOECC's central region since October 2016. He does not have a

master's degree in hydrogeology, is not a groundwater modeller, and has not published in the field of hydrogeology. He is not certified as a qualified person by the Province of Ontario in respect of either environmental site assessments or risk assessments. For what appears to be almost 10 years in his professional career he worked as a geologist, not a hydrogeologist. For at least 3 further years since the start of his professional career he worked as neither a geologist nor a hydrogeologist. It is not clear from the record whether he has ever previously been qualified to give opinion evidence before a court or an administrative tribunal on the subject of hydrogeology. He has reviewed 157 PTTW applications with MOECC (20 relating to aggregate operations) and has not recommended rejection of any of them, though he has recommended modifications to at least one. He has also reviewed 5 ECA applications pertaining to sewage works (10 ECA applications overall) (Testimony of January 16, 2017; Exhibit 38A).

63. Mr. Bulman's evidence during examination in chief was that the sampling of the overburden for pesticides was appropriate. There was no need to conduct calculations for atrazine because it was not detected in the solid matrix samples collected. His overall opinion was that it was unlikely that pesticide concentrations would accumulate in settling pond fines and wash water and, therefore, both the PTTW and the ECA were protective of the natural environment and other users (Testimony of January 16, 2017; Exhibit 38, paras 133, 143-145; Exhibit 41, Tab 15, pages 42-45).

c. Evidence of the Instrument Holder

64. Mr. Richard Murphy was qualified by the Tribunal to give opinion evidence in the areas of engineering and hydrogeology (Qualified by the Tribunal, January 27, 2017). Mr. Murphy has an M.Sc. in civil engineering water resources, and a B.Sc. in systems design engineering from the University of Waterloo. He is a member of the Professional Engineers of Ontario. He is a senior consultant and has been a principal at GHD (formerly CRA) since 2002. He specializes in hydrogeology, has groundwater modelling experience, and has conducted studies investigating and characterizing contaminated sites. He has been involved in hydrogeology and water resources assessments relating to more than a dozen pits and quarries. He has some experience in water supply and WHPA studies and waste management sites. He has previously been qualified to provide expert evidence in a number of hearings and trials. Mr. Murphy is not certified as a qualified person by the Province of Ontario in respect of either environmental site assessments or risk assessments as defined in O. Reg. 153/04. He is "connected" to the Ontario Stone, Sand and Gravel Association ("OSSGA"), which, among other things, is the trade association and lobby group for the aggregate industry. His firm, GHD, is an associate member of the OSSGA. His role with the OSSGA is to participate and provide technical information to them, but he is not involved in any leadership capacity with the association (Testimony of January 27, 2017; Exhibit 60, pages 1, 15-17).

65. Mr. Thomas Guoth was qualified by the Tribunal to give opinion evidence in the areas of geology, hydrogeology, and environmental engineering (Qualified by the Tribunal, January 24, 2017). Mr. Guoth has a B.Sc. in geological engineering from the University of Toronto, and an M.Eng. in civil engineering (water resources, hydrogeology specialization) from what is now Dalhousie University. He has been at

CRA (now GHD) since 1992 and has been a principle and vice-president there since 2005. He is also the principal in charge of the field methods procedures and training program at GHD. He is certified by the Province of Ontario as a qualified person for environmental site assessments as defined in O. Reg. 153/04 and has been involved in the design of many such assessments. He has had experience doing hydrogeological studies for a number of aggregate operations. He has acted as a project manager for the MOECC excess soil management review. Of the 25 PTTWs he has been involved in, six of them involved aggregate operations, primarily quarries. Of the ECA projects he has been involved in none related to pits and quarries. He has experience with soil and groundwater sampling in the Brant County area as one of the lead hydrogeologists investigating a trichloroethylene release. He has previously been qualified to give opinion evidence before the Superior Court, OMB, and the ERT. Mr. Guoth is not certified as a qualified person by the Province of Ontario in respect of risk assessments as defined in O. Reg. 153/04. He has never been a regulator for the MOECC. One of the projects for which he was the coordinator and hydrogeologist and gave evidence at the OMB hearing with respect to for the proponent James Dick (Rockfort Quarry), was not approved by the OMB. Mr. Guoth is not an author of the following documents in this case: (1) Exhibit 41, Tab 7 (PTTW application report prepared by CRA); (2) Exhibit 41, Tab 13 (ECA application report prepared by CRA); (3) Exhibit 16 (Pesticides and Herbicides report prepared by CRA); and (4) Exhibit 23 (the Well Water Survey prepared by CRA). He was not present for, or part of, any of the development of the test pits and boreholes or for the examination of topsoil and overburden in any of the test pits or boreholes in connection with Exhibit 16. He simply reviewed the documentation he was provided (e.g. Exhibit 16) (Testimony of January 24, 2017; Exhibit 17, Tab B).

66. It was the evidence of Mr. Murphy that: (1) “the soil testing results do not indicate a potential for aggregate washing to result in higher concentrations in the sediment (settling pond fines) that could pose a risk to water quality”; (2) “the groundwater testing program at the Site”, which detected atrazine and atrazine metabolites in only two out of ten groundwater samples analyzed (at the same monitoring well) at the site-specific detection limit of 0.1 µg/L, led him to conclude “no water quality impacts are indicated or anticipated”; and (3) “there is no credible threat to public or private water supply quality from past use of pesticides at the Paris Pit Site” (Exhibit 16, pages 9-10, 14).

67. It was Mr. Guoth’s evidence that the protocol and methodology of the investigations undertaken by GHD in Exhibit 16 are suitable for determining the presence of atrazine and are accepted by the MOECC. The results of the investigation have indicated that there is no evidence of atrazine in the fine grained portion of the sand and gravel deposits underlying the site and that based on these results atrazine is not a contaminant of concern at the site. It was his overall opinion that “the PTTW and ECA, as issued, are protective of the environment, including human health, and are precautionary in nature” (Exhibit 17, Tab 1, paras 2.1, 2.4).

3. Past Atrazine Use at the Site

68. There is consensus in the evidence that the herbicide atrazine has been used at the Paris Pit site for many years. The evidence in chief of Dr. Howard was that the site is a very large site with a long history of pesticide application including the use of atrazine until very recently (Testimony of January 9, 2017). The Stantec report notes: “The Paris Pit lands have been primarily in agricultural use since 1974...” (Exhibit 41, Tab 10, page 1). Exhibit 16 states that “Land use in the Paris Pit Site and surrounding area is largely agricultural, with a significant amount of land devoted to crops like corn, soybeans, and hay or grains” (Exhibit 16, page 1). The evidence of Mr. Kevin Mitchell, CRH director of property, planning and approvals, was that: “The property on which the Paris Pit sits was previously used for agriculture. When it was used for agricultural purposes, atrazine was used on the property” (Exhibit 55, page 3). The written evidence from, and oral testimony of, Mr. Bulman during cross-examination is that due to the fact that atrazine has been detected in groundwater samples collected from monitoring wells by CRA for Dufferin on the Paris Pit site south of Watts Pond Road these detections reflect the use of this herbicide on agricultural fields in the area, including the Paris Pit Site (Testimony of January 17, 2017; Exhibit 41, Tab 6, page 5). Mr. Bulman’s other written statement that atrazine is only “alleged to have been used on the site” (Exhibit 41, Tab 15, page 43) is one he resiled from in cross-examination agreeing that on the basis of the admissions contained in the Stantec report and the written evidence of Mr. Mitchell, noted above, atrazine was used on the site since at least 1974 (Testimony of January 17, 2017). The written evidence of Nora Fueten, a participant in the hearing, is to the effect that neighbouring fields, where corn has been grown for many years, also use atrazine for weed control (Testimony of January 11, 2017; Exhibit 32).

69. The long history of atrazine use on the site and in neighbouring fields is consistent with the herbicide’s long history of use across the province, particularly for corn production. In cross-examination, Mr. Bulman, despite stating in his written evidence that between 1998 and 2003 use of atrazine declined by more than 20 per cent in Ontario and that this should result in lower concentrations in groundwater and surface water and, therefore, it is unlikely that pesticides will be concentrated in the wash water at the Paris Pit site (Exhibit 41, Tab 15, pages 18, 27), did not dispute:

- that in 2008 atrazine use on corn was still the second highest of any herbicide in Ontario at over 448,000 kg that year (Testimony of January 17, 2017; Exhibit 13, Tab 18, 6th page in; Exhibit 46, page 7);
- the following statement from a 2008 Ontario pesticide use survey from the Ontario Ministry of Agriculture and Rural Affairs (“OMAFRA”), a credible agency according to Mr. Bulman, from which the above figure of 448,000 kg came: “In field corn, the use of atrazine declined by approximately 10 per cent compared to 2003. However, atrazine is still an important weed management tool in field corn production as indicated by the amount that was applied to this crop (448,071 kg)” (Testimony of January 17, 2017; Exhibit 46, page 3); and

- that atrazine, while declining in use, was one of the top 2 herbicides used in Ontario on field corn during the period 1983 to 2008 (Testimony of January 17, 2017; Exhibit 46, page 29).

70. What information is lacking, Mr. Bulman testified during cross-examination, has to do with the actual quantities of atrazine used at the site (Testimony of Mr. Bulman, January 17, 2017).

4. Sampling for Atrazine in Soils

a. Test Pit Sampling of the Topsoil

v. Importance of Sampling Topsoil

(A) Evidence of the Appellants

71. In Dr. Howard's examination in chief he noted that there's strong speculation that a significant amount of the atrazine remains stored in the topsoil zone. It will not be washed but as with the fine grain sediments will be re-used on site and that material will also be sitting a meter or so above the water table. In the evaluation, we must understand how the site will behave or get sufficient information to appreciate how the site will behave once the operations are complete. Dr. Howard was particularly concerned that we have no reliable measurements of the topsoil where, quite reasonably, 80% of the pesticides that have been applied may still remain (Testimony of January 9, 2017). In his written material Dr. Howard also stated that: "...a proportion of the atrazine will be bound in the topsoil but there can be no expectation that it will remain there when the soil, completely disturbed, is 'spread back' following aggregate extraction, within a very short distance of the fluctuating water table" (Exhibit 13, Tab 4, page 3).

72. Dr. Howard also testified during examination in chief that MOECC guidance clearly recognizes that topsoil is a unit that can be enriched in potential contaminants because it is high in organic content and, therefore, special consideration should be given to the topsoil (Testimony of January 9, 2017; Exhibit 17, Tab C, page 21).

73. Dr. Howard also raised concerns in examination in chief regarding the evidence of Mr. Bulman, who observes in his witness statement that the topsoil is not intended to be washed, just the overburden, and the topsoil is simply intended to be removed and stockpiled on site for reuse in site rehabilitation. In Dr. Howard's view, Mr. Bulman does raise an important point. The topsoil will not be washed but nevertheless Dr. Howard suspects it may be a major store for pesticides on site and the fact it will remain on site, makes it an appropriate zone to be sampled in terms of future impacts on the site. Dr. Howard repeated that in light of the MOE guidance on sampling, there is an obligation to sample the topsoil (Testimony of January 9, 2017; Exhibit 38, para 133).

74. In cross-examination, Dr. Howard's concerns were further underscored in that it is possible a significant amount of atrazine may be in the topsoil and it will need to be

managed in conjunction with sediments that have been washed that also may contain atrazine (Testimony of January 10, 2017).

(B) Evidence of the Directors

75. In addition to the above written evidence of Mr. Bulman in his witness statement, he also reiterated the same point during examination in chief that the topsoil won't be washed in the wash plant but will be relaid back onto the floor of the extraction area as part of the site rehabilitation process (Testimony of January 16, 2017). However, in cross-examination, Mr. Bulman admitted that because the rehabilitation process is progressive and not just something that takes place at the end of the 30-year site life, any atrazine in the topsoil would have the opportunity to reach the water table in the next few years if it was desorbed (Testimony of January 17, 2017).

(C) Evidence of the Instrument Holder

76. Besides the evidence of Mr. Bulman, noted above, Mr. Murphy's evidence is that the topsoil will not be included in the materials that are washed and, therefore, has no relevance to the PTTW and the ECA (Exhibit 60, page 6, para 3.2). However, Mr. Murphy's evidence itself admits that the topsoil has the highest potential for pesticide presence (Exhibit 60, Tab 1, para 3.1). It was also Mr. Murphy's evidence during examination in chief that CRA knows that atrazine adsorbs into the silt and clay material and to the organic carbon. CRA expected it to be associated with the fine grain fraction of the soil samples. As a result, most of the atrazine that may be present would be associated with the topsoil because it has a higher silt and clay content and higher organic carbon content. CRA did take 3 topsoil samples. It did not do a lot of sampling but CRA had collected 3 in the upper one foot from the test pit and CRA had non-detects indicating a low mass of pesticides in the topsoil. But the topsoil isn't what is being washed (Testimony of January 27, 2017). The evidence of Mr. Guoth is also to the same effect as Mr. Murphy's in that he says if present, atrazine would be adsorbed by the organic matter present in the topsoil and, therefore, the concentration would be the highest (Exhibit 17, Tab 1, para 3.8).

(D) Conclusions

77. Overall, any suggestion that it will be possible to keep separate or disentangle atrazine in topsoil from atrazine in washed sediment once both are spread on the site one meter above the water table is wishful thinking at best and at worst constitutes turning a blind eye to a serious environmental problem. The washed sediment will constitute sewage, as the evidence of Mr. Adenowo, discussed below, notes. Once the topsoil is placed on top of or comingled with that sediment it will constitute sewage as well. Suggesting at that stage that we should treat the two as irrelevant to each other, the ECA, and the EPA is bad law and worse policy. Finally, Mr. Murphy has never been an MOECC regulator, as he admitted during cross-examination (Testimony of January 27, 2017), so his views on what is and is not relevant to the PTTW and the ECA are not necessarily relevant themselves. It is a legal question, or a question of mixed fact and law

which, in the submission of CCOB, has been answered wrongly by the Directors and the Instrument Holder.

vi. Number of Samples and Sampling Locations

(A) Evidence of the Appellants

78. It was Dr. Howard's evidence that in the case of atrazine, we have a huge site, 260 hectares (equivalent to 2.6 km by 1 km) but only nine composite samples from just three test pits. In his opinion, if you don't make the effort to look for atrazine properly, you can't expect to find it (Exhibit 13, Tab 3, page 1). In examination in chief he reiterated that a "very limited number of soil samples were taken" (Testimony of January 9, 2017).

79. In cross-examination Dr. Howard underscored this concern, noting that the objective should have been to evaluate the risk associated with the site and that if one were doing that one would be looking at more than three test pits (Testimony of January 10, 2017).

(B) Evidence of the Instrument Holder

80. Mr. Murphy states in his written evidence that the first sampling event involving three test pits was designed to assess for the potential presence of pesticide residues (Exhibit 60, Tab 1, para 3.4). However, his written evidence also states that topsoil will not be included in the materials that are washed and this is why the majority of the samples focused on the underlying overburden, which is the material that would potentially be washed for aggregate production (Exhibit 60, Tab 1, para 3.2). In his examination in chief, Mr. Murphy admitted that CRA did not do a lot of topsoil sampling because it was the overburden that was to be washed that interested them (Testimony of January 27, 2017). In cross-examination, Mr. Murphy confirmed that no test pit sampling was performed in Phases 2-3, 5-8. One test pit was sampled in Phase 4 and the other two were in Phase 1 (Testimony of January 30, 2017).

81. It was the written evidence and testimony during examination in chief of Mr. Guoth that the investigations were initially focused in the area where the extraction would commence (Phase 1). That's where he would have started because that's where the work is going to start and you want to know what the risks are in that area. If the results indicate there may be a concern, you would expand your sampling program. He also testified that there were 9 investigation locations and that there are no hard and fast rules in terms of how many boreholes and test pits and samples you collect per hectare. In this case, according to Mr. Guoth, it works out to be 1 sample for every 4.4 hectares, which is not unusual in his opinion and consistent with general industry practice (Testimony of January 24, 2017; Exhibit 17, Tab 1, para 3.4). In cross-examination, he confirmed that there is no reporting by CRA about atrazine in any topsoil in any areas of the site other than Phase 1 (Test Pits 1 and 2) and Phase 4 (Test Pit 3) (Testimony of January 24, 2017).

(C) *Conclusions*

82. Dr. Howard's evidence is that more test pit sampling in the topsoil should have been performed to evaluate the risk the topsoil posed at the site if atrazine residues were present. The evidence of Mr. Murphy is that Dufferin's focus was on the overburden, not the topsoil, since it is the former and not the latter that is to be washed and that is why the majority of samples focused on the overburden and not the topsoil. With respect to Mr. Guoth's calculation of 1 sample for every 4.4 hectares, it is not quite clear what he means. He refers to 9 investigation locations. He appears to mean that in Phase 1 there were 7 boreholes drilled (in the overburden)² and two test pits excavated (in the topsoil). If that represents 1 sample for every 4.4 hectares, the geographic size of Phase 1 is 39.6 hectares (9 x 4.4). But since we are talking about test pits here (and there are only 2 in Phase 1) that represents 1 test pit for every 19.8 hectares.

83. The better view appears to be that Mr. Guoth's calculation seems to be based on combining the boreholes and test pits in Phase 1 to suggest the degree of coverage that he says is consistent with the industry standard (1 sample for every 4.4 hectares). In the submission of CCOB, Mr. Guoth's calculation does not undermine the validity of Dr. Howard's concern about the inadequate number of samples Dufferin took in investigating topsoil for atrazine in the test pit sampling program.

vii. Placement of the Sampling Locations

(A) *Evidence of the Appellants*

84. It was the evidence of Dr. Howard during examination in chief that test pits are essentially excavations that may go down a few meters. They are a very valuable means of observing directly the shallow geology. You can observe the thickness of the top soil, how it varies, recognize preferential flow zones, and identify zones which have finer grain material. They offer a lot of valuable information. In the case of the Paris Pit, and referring to Exhibit 15, Dr. Howard noted that only three test pits were constructed and all were constructed at the edges of the site. Test Pit 1 on the edge of the field, Test Pit 2 fairly close but on the edge of the field, and Test Pit 3 on the opposite side closer to the Telfer well, along the edge of the field. It was Dr. Howard's evidence that typically the edges of fields are no-spray zones and so they may not be representative of the site because they may have received less atrazine than normal (Testimony of January 9, 2017; Exhibit 15).

85. During cross-examination of Dr. Howard his concerns expressed in examination in chief were underscored in that it was his view that the objective of the test pit sampling should have been to evaluate the risk associated with the site and that if he was doing that he would be looking at more than 3 test pits and looking to place them more centrally in the site not close to the Gilbert and Telfer wellfields as was done by CRA (which also happened to be at the edge of fields) (Testimony of January 10, 2017).

² The evidence, however, is that only 5 of the 7 boreholes were sampled for atrazine.

(B) Evidence of the Directors

86. In examination in chief, Mr. Bulman testified that it was his understanding that CRA determined where to put the test pits on the basis that they just picked 3 areas that wouldn't interfere too badly with the crops planted by the contract farmer on the site (Testimony of January 16, 2017).

(C) Evidence of the Instrument Holder

87. In examination in chief, Mr. Murphy testified that the first event (Exhibit 16, page 7) was the 3 test pit locations and the 3 monitoring well samples. He was responsible for determining locations for these. Using Figure 3.1 Exhibit 16, he noted the locations were Test Pit 1 is in the west near BH88-5, chosen to be near the Gilbert wellfield and an existing monitoring well to get soil data in proximity to the monitoring well. Test Pit 2 was in the immediate area of the source pond and settling pond and adjacent to MW1-12 and near the groundwater upwelling area for the existing pond. Test Pit 3 was on the other side to look upgradient of the Telfer wellfield and near BH88-4 (Testimony of January 27, 2017).

88. In cross-examination, Mr. Murphy confirmed that the placement of the test pits was within the extraction limits near the edges of the fields but still appropriate in his view (January 30, 2017).

89. In examination in chief, Mr. Guoth stated that the test pits were located out in the fields, not by the edges of the fields, and close to sensitive receptors such as the Gilbert and Telfer wellfields and the onsite ponds (Testimony of January 24, 2017).

(D) Conclusions

90. Dr. Howard contends that the test pits were all constructed at the edges of fields that typically are no-spray zones and so they may not be representative of the site because they may have received less atrazine than normal. Mr. Bulman testified that CRA picked 3 areas for the test pits that wouldn't interfere too badly with the crops planted by the contract farmer on the site. Mr. Murphy confirmed that the placement of the test pits was within the extraction limits near the edges of the fields. Mr. Guoth stated that the test pits were not located by the edges of the fields. The sum of this testimony is that Dr. Howard's, Mr. Bulman's, and Mr. Murphy's testimony are all suggestive that the test pits may not have been placed in the optimal positions to capture the maximum amount of concentrations of atrazine in topsoil that might have been sprayed on the fields for the reasons suggested by Dr. Howard. Mr. Guoth's testimony is not consistent with that of the other three witnesses.

viii. Methods

(A) *Was Topsoil Sampled At All?*

91. It was the evidence of Dr. Howard during examination in chief that the test pit logs in Appendix A of Exhibit 16 are very worrisome. He questioned very much whether any topsoil was sampled at all. He noted that the description in the Test Pit 1 stratigraphic log for topsoil was “silty sand with gravel reddish-brown”. In Dr. Howard’s opinion this is not what he would expect when he thinks of topsoil which is organically rich. Test Pit 2 says the same thing and there is an identical description for topsoil in the Test Pit 3 log. It was Dr. Howard’s testimony that it is unusual to see such identical units. He also testified that if one looks at the other units in the test pit logs, you’ll find the same thing. He testified that if one really wants to know what organic soil should be described as one should look at the next pages of Appendix A of Exhibit 16 where the borehole logs appear. These give an example of how topsoil is described (e.g. BH2-13: “silt, clay, fine sand, roots, dark red brown, plastic”). Dr. Howard also testified that it is only in the test pits that topsoil was analyzed, but it is not clear that topsoil was present. He was not sure why that is, maybe it was washed away or had been previously removed or had been cleaned off. But it’s clearly not topsoil and these are the only sites where topsoil was apparently sampled. Dr. Howard also testified in examination in chief that the topsoil wasn’t sampled in any of the seven boreholes drilled for Phase 1 either (Testimony of January 9, 2017).

92. In cross-examination of Mr. Murphy, he agreed that the distances between the test pits were as much as 1600 m apart, and that the descriptions for topsoil in the test pit logs were identical to each other. He did not regard it as a coincidence but acknowledged that CRA produced a perhaps more simplified description than it might have if it did a detailed investigation of the overburden characteristics at the site. He disagreed with Dr. Howard’s conclusion that no topsoil was sampled at all in the test pits saying it was not factually correct that topsoil was not collected noting that CRA collected samples from the upper foot zone that was confirmed within the investigation to be in the topsoil horizon (Testimony of January 30, 2017).

93. In examination in chief, Mr. Guoth testified that with respect to the test pit excavation process the area was cleared with an excavator and the top few centimeters were removed prior to the excavation because there is a lot of organic matter in the sense of corn stalks. In cross-examination Mr. Guoth testified that he did not know how many centimeters were removed, but he indicated just the top few centimeters to get rid of the root mass and the corn stalks that were on the field. However, he went on to admit that it is possible that the test pit excavators removed all the topsoil during the process of excavating the test pits (January 24, 2017).

94. Finally, if topsoil was not sampled in the test pits, it was not sampled in the boreholes, as Mr. Guoth’s description of the borehole investigations makes clear: “Boreholes (a) An upper soil sample representative of the upper 1.5 m of the overburden. Based on the stratigraphic logs in Appendix A of the Herbicide and Pesticide Report, this

sample interval was immediately below the topsoil horizon and was within the sand and gravel deposits” (emphasis added) (Exhibit 17, Tab 1, page 5, para 3.4).

(B) *Failure to Sample, Analyze, and Report on the Top Five Centimeters of Topsoil*

95. In examination in chief, Dr. Howard noted that Exhibit 17, Tab C, page 21 at the bottom of the page (MOECC Guidelines on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario), contains a description of sampling methods for soils that says: “For sites where surface soil is expected to remain on site, the 0 – 5 (zero to five) cm depth should be sampled separately from materials at greater depth, since this is the soil that will contribute most to exposure of future site users to any potential contamination...” According to Dr. Howard, the document says the top 5 cm should be sampled separately from materials at greater depth and quite clearly recognizes that the topsoil is a unit that can be enriched in potential contaminants because it is high in organic content and, therefore, special consideration should be given to the topsoil. He also interpreted the term “future site users” in that paragraph as being about contaminant pathways, where people will be using the field at a future time, walking on the site. He went on to indicate that pathways could be through the groundwater as well. In other words, there can be users in an indirect sense. From his perspective, if there was topsoil on the site, it was not sampled for properly (January 9, 2017).

96. In cross-examination, Dr. Howard’s concerns respecting the issues raised in the MOECC guidelines were underscored in that he testified there are many more pathways than walking across the site. There’s a pathway that goes from the topsoil which will be on site and re-laid in some fashion, and the pathways from that soil to the water table and then to a receptor. There will be several pathways of significance on this site, and the subsurface pathway is important. The above quoted paragraph deals with a range of pathways which could include turning it into parkland. It’s not specific about the pathways we’re dealing with (Testimony of January 10, 2017).

97. It was Mr. Bulman’s testimony during cross-examination that CRA did not separately sample, analyze, and report on the top 5 cm of the topsoil, based on his reading of Exhibit 16, page 4 (Testimony of January 17, 2017). It was his evidence during examination in chief that he did not share Dr. Howard’s concern that the very top layer of topsoil had not been sampled because it’s going to end up back on top of the rehabilitation area (Testimony of January 16, 2017).

98. In cross-examination, Mr. Guoth confirmed that there was no analysis or reporting respecting the top 5 cm of the topsoil in Exhibit 16. His testimony during examination in chief with respect to Dr. Howard’s concern regarding Exhibit 17, Tab C, page 21, 3rd paragraph, was that this paragraph is in reference to when one is doing a site assessment and trying to understand if any contaminants are present. What this paragraph says is if you think, or know, you may have contaminants within 0-5 cm of the surface you should collect the sample from that zone if that soil is to remain on site. They’re trying to understand the risks associated. However, in Mr. Guoth’s view this does not apply to the Paris Pit because that material is going to be removed (Testimony of January 24, 2017).

99. In cross-examination, Mr. Murphy testified that it was his understanding, as explained by Mr. Guoth, that the very shallow portion of the top soil was scraped off before a sample was collected, the reason being that's where we have root masses, plant material, and that needs to be removed because CRA cannot submit it to the lab. The very upper ground surface was removed to clear that material off but the sample was collected from the remaining top soil zone within a foot of ground surface. He added that we know it was a limited number of centimeters that were scraped off, it was described as a few centimeters and a field surface isn't a precise level, so it could be a little more or less than that but not approaching the removal of the top foot or half a foot. However, he acknowledged that removal of the first 5 cm could happen where the ground is higher in some places (Testimony of January 30, 2017).

(C) Composite Sampling

100. The written evidence of Dr. Howard was that the test pit sampling involved the taking of 3 "composite" samples from each pit, by mixing samples collected over several horizons to obtain samples considered to be representative of upper, intermediate, and lower intervals. According to Dr. Howard none of the analyses for the 9 test pit samples can be regarded as adequate indicators of the presence (or absence) of atrazine, especially given the sampling method employed (Exhibit 13, Tab 2, page 2).

101. In examination in chief, Dr. Howard testified that when this "apparent" topsoil was sampled, 3 samples were taken in the top 30 cm, mixed to provide a composite sample, and it was the composite sample that was sent to the laboratory for analysis. Three samples were taken at each of the other two depths or intervals (intermediate and lower intervals) (Testimony of January 9, 2017; Exhibit 16, page 4).

102. Dr. Howard's evidence in chief continued on this point by indicating that if there was topsoil on the site, we haven't sampled it properly. For the remainder of the test pit exercise, samples were taken to represent depths of the top 30 cm, the other two depth zones were from 0.3-1 m, and from 3-3.7 m. Essentially, in each of those cases, the procedure was very similar to the top zone. Three samples were taken from each of those zones, but they were mixed together to generate one composite sample. CRA ended up with 1 sample representing the top, 1 sample for the zone below that, and 1 sample for the next zone. It was Dr. Howard's testimony that when you mix samples together from different horizons, you run the risk of mixing zones which are potentially very rich in pesticides with zones which have very little silt and clay content and are barren of any pesticide or atrazine. When you composite sample in that way, you're essentially diluting the sample and you run the risk of having a sample where you cannot detect the presence of pesticide because of the limits of the methodology for analysis and yet there may be zones where significant levels of atrazine are present. Dr. Howard also defined the term "zone" as being anything from a small layer, a centimeter, which may be silt rich or organic rich, but can also be a zone over 10 cm or 20 cm, which may have a little more silt, have a higher clay content, and a layer above it, which may be very sandy (Testimony of January 9, 2017).

103. In examination in chief Dr. Howard also referred to the MOECC guidelines (Exhibit 17, page 61, bottom bullets) that state in part: “Sampling programs designed to assess the nature and extent of contaminants in sediments (from point or non-point sources) should be directed towards sampling areas of fine sediment accumulation. Fine sediments often accumulate higher levels of contaminants than coarse sediments, since fine organic matter will preferentially bind many persistent organic compounds...” In referring to this passage Dr. Howard testified that fine sediments accumulate high levels of contaminants. Dr. Howard indicated that this passage specifically obliges you to focus on fine sediment. But in the composite sampling in the test pits, none of this was actually done. What Dr. Howard believes CRA should have been done was to identify those zones where it knew it was dealing with fine grain material and finer grain and sampled those. Instead, CRA ended up taking 3 samples, mixing them and diluting them, which explains some of the data results encountered in Exhibit 16 (Testimony of January 9, 2017).

104. In answer to a question from the Tribunal, Dr. Howard testified that Exhibit 17, page 16 refers specifically to sediments but the same general principle applies to topsoil (January 9, 2017).

105. In cross-examination, Dr. Howard’s concerns were further underscored. He testified that the samples were composites and that you run the risk of mixing samples from different zones or levels. It’s inevitable you will end up with a mixed sample. A composite sample is a mix (Testimony of January 10, 2017).

106. In cross-examination Dr. Howard also testified that there’s only one reason to carry out composite sampling and that is to save money. You don’t have as many samples and you save costs. It’s not a preferred method but you use it to save money. He also testified that you would get much more information from a specific layer of interest if you collected three samples and obtained three different measurements (Testimony of January 10, 2017).

107. Referring to Exhibit 16, page 4 in cross-examination, Mr. Bulman agreed that the test pit samples in the topsoil, but not the borehole samples in the overburden, were composite samples. (Testimony of January 17-18, 2017). He also agreed in cross-examination that composite samples are used to sample an area and get the average concentration of the samples within the area. He identified it as a limitation because it doesn’t give you the variability of the concentrations within the area that make up that average (Testimony of January 17, 2017).

108. According to Exhibit 16, CRA collected composite soil samples from three main intervals in each test pit and Mr. Murphy confirmed that the method of sampling CRA employed in the test pits was composite sampling, a widely accepted industry practice. He also testified in cross-examination that composite sampling is the description CRA used, but CRA did not collect separate samples and mix them together. He agreed with the interpretation of Mr. Guoth [who wasn’t there] about what CRA did (Testimony of Mr. Murphy, January 30, 2017; Exhibit 16, page 4).

109. It was Mr. Guoth's testimony during examination in chief that the samples taken were over a specific interval. In reality, it is a composite sample over that interval. CRA didn't mix different intervals, or mix discrete samples together in the same interval. However, it is very clear from Mr. Guoth's answers in examination in chief, cross-examination, and re-examination that his evidence was with respect to the borehole sampling CRA performed in the overburden because he refers to drilling activities, not the test pit sampling CRA performed in the topsoil, where an excavator and bucket were used (Testimony of January 24, 2017).

(D) Conclusions

110. In conclusion on the issue of test pit sampling methods, there are at least three concerns with the methods employed on behalf of Dufferin respecting the topsoil test pit sampling event of December 2012. First, there is the question of whether the topsoil was sampled at all. This concern includes: (1) the identical descriptions for topsoil in the three test pit logs despite their being approximately 1600 m apart; (2) the atypical description in the test pits for the topsoil observed in comparison to what Dr. Howard says is a more accurate description for topsoil in connection with the boreholes (where topsoil was not sampled); and (3) the possibility, admitted by Mr. Guoth, that the test pit excavators removed all the topsoil during the process of excavating the test pits.

111. Second, there is the failure of Dufferin to sample, analyze, and report upon the presence, if any, of atrazine in the top 5 cm of the topsoil: (1) Dr. Howard did not see any such sampling, analysis, or reporting and says his interpretation of MOECC guidance suggests it should have been done because of concern for the groundwater pathway; (2) Mr. Bulman and Mr. Guoth both confirm it was not done but say it is not necessary because the topsoil will be removed and used for rehabilitation, which is not an answer to the question of whether atrazine is still present in the soils on site; and (3) Mr. Murphy acknowledges that a few centimeters of topsoil were scraped off and that it is possible the top 5 cm of topsoil could have been scraped off where the ground is higher.

112. Third, there is the question of composite sampling of topsoil for the test pit event. Dr. Howard and Mr. Bulman both say that composite sampling was used in the test pit sampling for topsoil. Exhibit 16 says that composite sampling was used. Dr. Howard says that it should not have been used because of the potential to dilute results for atrazine. Mr. Bulman describes it as a limitation because it doesn't give you the variability of the concentrations within the area that make up that average. Mr. Murphy and Mr. Guoth say that they used the term but meant and did something else (interval sampling). Mr. Guoth's evidence on this appears to be with respect to the boreholes not the test pits.

113. Overall, on each of these methodological issues CCOB submits that Dr. Howard's evidence should be preferred. The final methodological issue is the question of the adequacy of detection limits used for atrazine in topsoil. This issue is addressed below in conjunction with soil detection limits in the overburden.

b. Soil Detection Limits

i. Evidence of the Appellants

114. It was Dr. Howard's evidence that in addition to the numerical, locational, and methodological sampling problems already noted above, the sensitivity of the analytical techniques, or soil detection limits, are also of concern to him at this site in respect of both test pit sampling, discussed above, and borehole sampling, discussed below (Exhibit 13, Tab 2, page 2).

115. In his examination in chief, Dr. Howard testified that he could not agree with CRA's bullet points that appear at page 9 of Exhibit 16 regarding the adequacy of the soil testing program. A very limited number of soil samples were taken and they had inadequate detection limits to draw the sort of conclusions that were made. Detection limits are the limits reported by the labs and represent the ability of their machines and their extraction methods to reach those levels. There are ways to improve detection limits by how you collect your sample in the field. We can think of these limits as being machine detection limits. There are ways we can improve our understanding of very low levels by how we collect information in the field. We can get values below the machine detection limits (Testimony of January 9, 2017).

116. In his examination in chief, Dr. Howard also reviewed the sensitivity of the analytical techniques employed by CRA. He noted that when you're working close to the detection limit, you have to look at it in the context of whether that is significant from an environmental impact point of view. We can have a series of samples which are giving levels below a detection limit and yet all that is telling us is we have less than, for example, 10. It's not telling us anything else. There are a lot of questions about how one deals with "it's not zero, but we know it's less than 10, what is a good value to take?" There is a lot of statistical work looking at analyses close to the detection limit, how to come up with the best number. However, when you're looking at samples just below the limit, you need to be cautious about what you think is an appropriate value. If it says less than 10, perhaps there's 9, perhaps there's 8, perhaps there's none at all. To be super safe, it is probably reasonable to say it's close to the limit. One of Dr. Howard's calculations involves this assumption. Another approach, used by CRA, which is in Exhibit 16, page 13, footnote 3, is to calculate the average by assuming one-half the detection limit for non-detect samples. That is often a very reasonable limit to deal with it. It's not zero. We can use the detection limit of halfway which is reasonably conservative when you don't know. CRA used that for one of their calculations. For some of the other calculations, they didn't. So there is some inconsistency in what CRA did. But Dr. Howard indicated that he had wrestled with the question for 30 years of what do you do when you have values less than the detection limit. His conclusion was that one has to approach it by erring on the side of caution (Testimony of January 9, 2017).

117. It was also Dr. Howard's testimony during examination in chief that if we had measurements at low enough detection limits, we would have much more reliable estimates of the concentrations we're dealing with. We would have either a real value or

a value halfway between 0 and a much smaller detection limit. Right now, based on the few number of samples we have at the Paris Pit site and the detection limits, there remains a risk that we have significant quantities of pesticides including atrazine in these materials at levels which could transfer to the water in significant quantities that would exceed the drinking-water quality standards. However, we can't measure them because our detection limits have not been stringent enough. Having detection limits that are insufficient, means we have, or may have, pesticides at levels on the site that remain a concern. Even though atrazine wasn't detected, given the detection limit of 0.01 mg/kg used by CRA for the overburden, there could still be a considerable amount of atrazine which could be transferred to water (Testimony of January 9, 2017).

118. In examination in chief, Dr. Howard also noted that the detection limits used were inappropriate and not rigorous enough. He says they're based on the lowest achievable detection limits available using standard methods. Perhaps they were the best limits CRA could attain. Dr. Howard testified that he knows that around the time CRA was doing its work, the United States Geological Survey was measuring atrazine at $2\mu\text{g/L}$, which is five times more rigorous than the lowest detection limit used by CRA. That doesn't mean to say that that was available to Mr. Murphy at that time. Dr. Howard's point is that we do have a way of getting around detection limits when we're dealing with samples where we know that the contaminant is likely to be in a part of that sample. The pesticides, if present, are going to be on the fine grained material that occurs naturally. For example, if we had a detection limit of $10\mu\text{g/L}$, which is the lowest limit used for atrazine used by CRA in the boreholes, if we were to take a large sample and remove the fines from it by washing it out and collecting the fines, we would expect those fines to be around 4%.³ We would then have a bagful of material which now is 25 times more concentrated in pesticide than the original large sample. That sample could be sent to the lab. The lab measures that at a detection limit of $10\mu\text{g/L}$. Let's say they find $50\mu\text{g/kg}$ on that sample. Now we can correct back. We have a small sample of 50, divide it by 25, and now we have a concentration for the whole material we started off with at $2\mu\text{g}$ and one we can rely on. That value of 2 is below the detection limit of 10. If we had done the analysis on the whole, it would have been non-detect. But this method allows us to get around the detection limit. According to Dr. Howard, this is the process that should have been used for the test pits. If it had been done we would have had values that we could rely on. But CRA missed that opportunity. The detection limits used were inadequate. Quite possibly, they were the best the lab could do, but insufficient for our purposes. In the face of an inadequate detection limit, the question becomes how do you get around that limitation. In Dr. Howard's view, the way to do so is by taking large samples and removing the fines for analysis (Testimony of January 9, 2017).

119. In cross-examination, Dr. Howard testified that he has no reason to doubt what CRA says about the soil detection limit labs can achieve in Ontario but knows that much lower soil detection limits can be achieved by the United States Geological Survey than the soil detection limits used by CRA. At the Paris Pit site the soil detection limits started at 0.05 mg/kg for the test pits, but were reduced to 0.02mg/kg, and the soil detection limit

³ The figure 4% comes from Exhibit 41, Tab 13, page 15 (the ECA application supporting material) and is also referred to in Exhibit 20 (report of David Malcolm).

for the boreholes was reduced to 0.01mg/kg. The detection limits for soil are not appropriate in this case (Testimony of January 10, 2017).

120. In cross-examination, Dr. Howard also testified that he is concerned about any atrazine that is in the site currently, whether it is tightly bound, partly bound and every grade in between, is important if its there and we haven't had the detection levels to measure it adequately, in terms of the soil analysis. The detection limits used for soil are not appropriate (Testimony of January 10, 2017).

121. In re-examination, Dr. Howard testified that he has a 2012 publication from the United States Geological Survey that indicates that it can achieve a soil detection limit of just under 2µg/kg for atrazine (Testimony of January 10, 2017).

ii. Evidence of the Directors

122. In examination in chief, Mr. Bulman testified that CRA found no detections of atrazine in soil (Testimony of January 16, 2017; Exhibit 41, Tab 15, page 24).

123. In cross-examination, Mr. Bulman agreed that non-detect does not mean zero; just that it wasn't detected. It could be zero but it depends on the detection limit. He also agreed that you would want to investigate if it's not zero as far as you need to go to determine if it is present because you would be worried about health effects when looking at soil and groundwater. He also agreed that it's important to look for atrazine at the right detection level (Testimony of January 17, 2017).

iii. Evidence of the Instrument Holder

124. In examination in chief, Mr. Guoth testified that in this case, from what he had read, the lab lowered the soil detection limit to 0.02mg/kg and the lab didn't get down to 0.01mg/kg which is what it said it could get to but it got down to 0.02mg/kg for the test pits. For the boreholes, the samples were cleaner and the lab got down to 0.01mg/kg. The bottom line, that's the lowest they can get for that particular lab. That detection limit is right in the middle of what accredited labs in Ontario can achieve of 0.1 – 0.01mg/kg (Testimony of January 24, 2017).

126. It was also Mr. Guoth's evidence in chief that CRA collected 24 samples plus 2 duplicate samples for quality assurance/quality control purposes and all of the samples were below the method detection limit in the soils (Testimony of January 24, 2017).

127. In cross-examination, Mr. Guoth:

- testified that one lab near the Peterborough area said it might be able to achieve a method detection limit of 0.005mg/kg;
- agreed that non-detect means that a substance wasn't detected at a certain detection limit; and

- agreed that atrazine was not detected at the detection limit CRA used at the time. It was also his testimony that if atrazine had been detected in soil, then it may end up being a contaminant of concern (Testimony of January 24, 2017).

128. It was the evidence of Mr. Murphy in examination in chief that there isn't likely to be contamination from the proposed undertaking. First, we don't have detections of atrazine in the soil. This is a site where the outwash deposits will be washed. We've tested that material for atrazine and we have not found any (Testimony of January 27, 2017; Exhibit 16, page 14). His written evidence is also to the effect that all the samples of overburden material were absent detectable atrazine, demonstrating that if any atrazine is present, it exists at only extremely low levels (Exhibit 60, Tab 1, para 3.6).

129. It was also Mr. Murphy's evidence during examination in chief that in April 2013, the detection limit was raised for atrazine in soils, and CRA agreed to see if it could achieve lower limits for atrazine in the soil samples. CRA went back to ALS and asked if the lab could give CRA lower quantification or detection limits for atrazine in soils. The lab undertook to go back to the raw analysis of the samples and after looking at them more closely, said it could distinguish a detection of atrazine below their standard Reporting Detection Limit ("RDL") of 0.05mg/kg and then said it could lower it to 0.02mg/kg. Mr. Murphy noted that the detection limits were lowered to 0.02mg/kg for atrazine and atrazine desethyl. During the borehole program, when CRA was submitting samples it asked if that was as low as the lab could go and the lab reported lower detection limits to 0.01mg/kg but for atrazine desethyl it was 0.02mg/kg. So CRA worked with the lab to achieve lower detection limits and there was no atrazine or atrazine diethyl detected in any of the soil samples (Testimony of January 27, 2017; Exhibit 60, Tab 1, para 3.5).

130. In examination in chief, Mr. Murphy also testified that with respect to Exhibit 59 regarding detection limits, Mr. Murphy had the CRA chemist contact the lab (ALS) because Exhibit 59 showed much lower detection limits than ALS had achieved for our work in Exhibit 16. The informed CRA that in 2014 it developed a new analytical method to analyze for some pesticides and they commenced offering this method in January 2015 and that's the method identified on page 3 of 5 of exhibit 59 where it lists options 2/2 for soil of 0.0002µg/g based on a new method developed by the lab after we had filed Exhibit 16 (July 2014). The identified that it had developed a method but it was not an accredited method by the accreditation body that the lab uses to verify its work. The importance of accreditation is that it is an external check on a lab's function to make sure its methods are good and it is producing reliable results for people contracting its service. In CRA's business it exclusively uses accredited methods for labs so CRA knows it has additional quality control. If CRA does not have that there are lots more questions asked about the results. Cost was not a factor in selecting lab methods for the work done and reported on in Exhibit 16. Dufferin instructed CRA to decide what work needed to be done and to undertake that work (Testimony of January 27, 2017).

131. It was also Mr. Murphy's testimony during examination in chief that because CRA didn't measure any atrazine concentration in the soil it does not know if it is near the detection limit (Testimony of January 27, 2017).

132. Mr. Murphy's evidence in examination in chief was also to the effect that for atrazine, there are no detections in soils so there is no basis for assuming there is a level just below the detection limit, we just don't know what level we have. When it is above the detection limit, we know we have a presence (Testimony of January 30, 2017).

133. In examination in chief, Mr. Murphy noted that Condition 4.7 of the ECA specifies the requirements on detection limits (Testimony of January 30, 2017). The ECA states that for pesticides, the analytical detection limits shall be equal to or lower than those listed in what is now Exhibit 16 and that in the event of any analytical issues (e.g. matrix interference), reasonably achievable laboratory detection limits will apply (Notice of Appeal, Tab 4, ECA Condition 4.7).

134. In cross-examination, Mr. Murphy confirmed that the detection limits CRA used for atrazine in soils of 0.05mg/kg (initial detection limit for the test pits), 0.02mg/kg (subsequent detection limit for the test pits), and 0.01mg/kg (detection limit for the boreholes), correspond to 50µg/kg, 20µg/kg, and 10µg/kg, respectively. According to Mr. Murphy, those are the best detection limits we could achieve in 2013 when this work was being done using standard analytical methods that are accredited and inspected by MOECC. It is not his evidence that the Tribunal is locked into what was achievable in 2013. He expects that over time detection limits will change and different methodologies may become available and as we saw there is a new method that the ALS lab is using that has lower detection limits though not currently accredited or accepted by MOECC (Testimony of January 30, 2017).

136. In cross-examination, and with reference to a 2015 study from Germany where the study author reported detecting atrazine in soils in concentrations ranging between 0.2 µg/kg to 0.01µg/kg for topsoil and subsoil, respectively, Mr. Murphy agreed that 0.2 µg/kg is equal to, the equivalent of, or the same as, 0.0002mg/kg and that that would be a detection 2 orders of magnitude lower than the detection limit CRA used at the Paris Pit site in Exhibit 16. He also agreed that 0.01µg/kg is equal to, the equivalent of, or the same as, 0.00001mg/kg and that that would be a detection, 3 orders of magnitude lower than the detection limit CRA used at the Paris Pit site in Exhibit 16 (Testimony of January 30, 2017; Exhibit 13, Tab 14, page 92, 2nd full sentence on page).

137. In cross-examination, Mr. Murphy also agreed that the value of just under 2µg/kg that Dr. Howard testified the United States Geological Survey reported that it was achieving for atrazine in soils is equal to, the equivalent of, or the same as, 0.002mg/kg and that that would be a detection limit at least one order of magnitude lower than the soil detection limit CRA used in reporting on atrazine in the test pits and boreholes in Exhibit

16 (Testimony of January 30, 2017).⁴

138. Mr. Murphy also agreed during cross-examination that it is possible that atrazine could still be in the soil zone but at concentrations less than the detection limits CRA has relied on (Testimony of January 30, 2017).

iv. Conclusions

139. Overall, a significant part of Dufferin's case hinges on the view that atrazine was not detected in the on-site soils. That conclusion in turn is dependent on the detection limits Dufferin employed and on the view that their lab could achieve no better. The evidence from Dr. Howard is that the soil detection limits were not low enough to truly test whether atrazine remains in the soils at this site and he suggested a mathematical/quantitative way around this limitation that was not taken by Dufferin. If atrazine had been detected in the soils at least two things would change in this case: (1) Dufferin would have been compelled to perform the calculations for atrazine that they did for glyphosate and that Dr. Howard performed on what the concentrations of atrazine might be in the aggregate washwater (reviewed more fully below); and (2) atrazine in soils makes it a possible contaminant of concern at this site.

140. CCOB submits that using the right soil detection limit for atrazine is a key issue in this appeal. Mr. Bulman agreed that non-detect does not mean zero; just that it wasn't detected. It could be zero but it depends on the detection limit. He also agreed that you would want to investigate if it's not zero as far as you need to go to determine if it is present because you would be worried about health effects when looking at soil and groundwater. He also agreed that it's important to look for atrazine at the right detection level. But the evidence shows that CRA made no further efforts to seek lower soil detection limits since the last efforts were made in 2013. The evidence also shows, however, that in the United States since 2012 and Germany since 2015 soil detection limits orders of magnitude lower than the ones in Exhibit 16 have been available.

c. Borehole Sampling of the Overburden

i. Alleged Lack of Fine Grain Content Within Discrete Horizons: Missed Opportunities to Sample for Atrazine

141. Dr. Howard's written evidence was that if one were serious about finding atrazine in soils you would be sampling areas where you knew there had been a significant use of the pesticide. You would be sampling the finer grained horizons where you might expect to find higher levels of clay, silt, and organic matter (where atrazine is most likely to have accumulated). It was Dr. Howard's evidence that ultimately these atrazine-rich, finer grained sediments are the ones that remain on-site after the aggregate has been washed and sent to market, that will dictate (through a partitioning process) how much atrazine

⁴ In re-examination, Dr. Howard testified that the United States Geological Survey publication is from 2012 where the agency reported achieving this level of detection for atrazine in soils.

will be transferred to groundwater. In all likelihood the fines remaining on-site will have concentrations of atrazine that are several orders of magnitude higher than the concentrations measured for composite samples (Exhibit 13, Tab 3, page 1).

142. According to Dr. Howard during his examination in chief, the fine grain sediments (along with the topsoil) will be re-used on site and that material will also be sitting a meter or so above the water table. That fine grain material (in clays, silts, organic material) is where we expect the pesticides to exist. They pre-exist on site and this is very likely where, if the pesticide is not in the topsoil, the pesticide will be. What we're referring to at this stage is fines that already exist on site. Dr. Howard's preference would have been to focus on the fine grain horizons and also the topsoil. The pesticides, if present, are going to be on the fine grained material that occurs naturally (Testimony of January 9, 2017).

143. It was also Dr. Howard's testimony during examination in chief that when we look at the borehole logs, quite a number of them describe layers that could contrast higher levels of silt and silt material, fine sands, etc. There was sufficient stratification, they may not be discrete ones but there were some horizons that should have been picked out and focused upon (Testimony of January 9, 2017).

144. In cross-examination, Dr. Howard also testified that in the boreholes, there are descriptions of layers with increased amount of silt, and the logs described units which have higher clay and silt content. There is layering there and Dr. Howard believes there should have been greater focus on those fines. It's not an easy thing to do when there isn't a lot of variability, which is why the simpler process is to remove the fines as he described through the washing process. Then we'd have the fines and could analyze them. You can look very closely at the geology, identify the zones and select the samples, or take a larger sample and remove the fines (Testimony of January 10, 2017).

145. It was Mr. Guoth's testimony during re-examination that the primary concern in connection with the borehole program was to determine the presence of fine grain deposits within the sand and gravel for the atrazine to adsorb to. If those had been observed during the drilling activities they would have been sampled separately and that sample would have represented the highest atrazine content. According to Mr. Guoth, CRA did not observe any fine grain content (Testimony of January 24, 2017).

146. However, Mr. Murphy admitted during cross-examination that with respect to BH4-13 (page 1 of 1, Exhibit 16 - Appendix A) at about 2.74 to 3.20m BGS where there is the following stratigraphic description "brown, 10-15% fines..." CRA did not composite sample for atrazine. He noted that CRA did composite sample higher up in the same unit at 0.9 to 1.8 m BGS (Testimony of January 30, 2017), but that interval does not have 10-15% fines that the 2.74 to 3.20 zone does. It is also worth noting that BH4-13 at 5.0 m BGS identifies another roughly 40-50 cm interval as "SILTY SAND, with clay, wet, low plasticity", but the stratigraphic log does not indicate that CRA composite sampled this area either.

147. Since there were only 5 boreholes drilled where atrazine was sampled for the

BH4-13 example suggests missed opportunities to sample for atrazine in material that is fine grain content.

ii. Discrete Horizon Mis-Descriptions and Other Stratigraphic Log Errors

148. In describing the establishment of, and reporting upon, the borehole program for Phase 1, CRA advised in Exhibit 16 that subsurface conditions were logged and classified according to the Unified Soil Classification System at each location and recorded on standard field forms by the field geologist (Exhibit 16, page 5).

149. In cross-examination, Mr. Guoth testified that there was an error in a CRA technician's description in the stratigraphic log MW1-12 found in Exhibit 16, Appendix, page 1 of 3, when, in describing "silt" the technician described it in the log as "some silt". Mr. Guoth testified that he was not quite sure why the technician used the word "some". According to Mr. Guoth, CRA uses the unified soil classification system when preparing such logs, and "some" is not a terminology that CRA uses. What CRA uses if it's less than 5% it's "trace", and that's based on visual observations, 5-15% of whatever component it is, the term "with" would be used. If it's more than 15% then CRA would use the term "silty sand". Mr. Guoth testified that the technician was in error because the log says "some". What the technician meant by some, Mr. Guoth was not sure. "Some" is not a term CRA typically uses. Mr. Guoth added that it's a term CRA doesn't use actually (Testimony of January 24, 2017).

150. In cross-examination on the same issue, Mr. Murphy stated that use of the word "some" is not CRA's standard terminology. It would be non-standard for CRA's nomenclature. It is his understanding that it would also not be consistent with the unified soil classification system. His evidence was that we should be careful if we're making interpretations from the borehole descriptions when the term "some silt" is used. It's an error in the context of CRA standard procedure. It does not clearly conform with that standard of procedure and the unified soil classification system. It's only an error in this context (Testimony of January 30, 2017).

151. When advised during cross-examination that besides MW1-12, the word "some" appears in the stratigraphic logs for MW2-12, BH3-13, (where the phrase "some fines" appears), BH2-13, TP1, TP2, TP3, (where the phrase "some silt" appears), Mr. Murphy testified that he would not place high reliance on those descriptions. He would look to the quantitative information available on fines descriptions (Testimony of January 30, 2017).

152. In the submission of CCOB, there is no other information in Exhibit 16 to clarify the errors in, or supplement the content of, the logs for the monitoring wells, boreholes, and test pits. What we do have is a statement in Exhibit 16, page 5 advising the reader (MOECC, Brant County, members of the public, etc.) that subsurface conditions were logged and classified according to the Unified Soil Classification System at each location and recorded on standard field forms by the field geologist. There is no statement in Exhibit 16 stating that the reader should "not place high reliance on these descriptions". Furthermore, it raises questions about what else in Exhibit 16 the reader should be careful

about relying on.

153. In cross-examination, Mr. Murphy agreed that Exhibit 16, Table 4.1, for BH1-13, page 2 of 4 containing analytical results for soil for this borehole, notes that the first interval that was sampled was at a depth of 0.5-0.6 m. When shown the stratigraphic log for BH1-13 (page 1 of 2) behind Appendix A, Mr. Murphy also agreed that the left hand side of the page showed the same the depth in meters below ground surface starting at 0.5 m and ending at 0.6 m, with the 0.5m showing the distinction between the top soil and sand and silt. He also agreed that the right hand side of the same page under sample interval started at 0.5 m but ended at approximately 2.5 m. Mr. Murphy agreed that the log on its own is not clear but would not agree that one of the two sides of the page was incorrect (Testimony of January 30, 2017).

154. In the further submission of CCOB, if one compares all of the Table 4.1 soil analytical results descriptions of the depths examined borehole by borehole with each of the corresponding stratigraphic logs for those same boreholes, the left hand side of the page of the stratigraphic log containing the depths in m BGS matches Table 4.1. Similarly, if one looks on the right hand side of the page for each stratigraphic log, all of the sample intervals match the left hand side of the page except BH1-13 as described above. What the right hand side of this page shows is that the composite sample interval (1) was two meters long not a half meter long; and (2) that the composite sample crossed more than one unit or layer and, therefore, could have mixed or merged material from two different layers contrary to MOECC guidelines contained in Exhibit 17, Tab C, page 22, paragraph 2.

iii. Composite Sampling

(A) *Evidence of the Appellants*

155. In his written evidence, Dr. Howard stated that samples collected from the borehole cores are said in Exhibit 16, page 5 to be “representative of the finer fraction”, but again the samples are composites (i.e. mixed) with no obvious signs of scientific rigour in the sampling protocol and no clear indication of the extent to which samples from potentially discrete atrazine-rich horizons have been diluted by samples collected from more barren horizons (Exhibit 13, Tab 2, page 2).

156. In cross-examination, Dr. Howard testified that with respect to BH1-13 (Exhibit 16, Appendix A), the big “C” represents the composite sample taken over the particular zone the “C” is identified in. There would have been 3 samples collected for each of the “Cs” marked on BH1-13. The samples were taken at different depths in that zone. Nine samples, 3 for each “C” (Testimony of January 10, 2017).

157. In cross-examination, Dr. Howard disagreed that the point of composite sampling is to get a better representation of what’s in a specific layer of interest. In his professional opinion you would get much more information if you collected three samples and got three different measurements. In reference to Exhibit 17, Tab C, page 22, paragraph 2,

Dr. Howard testified that you're far better off having three samples, knowing what they are, looking at the variability, and having more detailed information. Therefore, he does not think that composite sampling adds anything and does not think it is a better representative sample (Testimony of January 10, 2017).

(B) Evidence of the Directors

158. In cross-examination, Mr. Bulman testified that depending on the number of samples collected and the concentration of the parameter of interest in one subsample, there is a chance that composite sampling could increase the chances that you'll get a non detect when there is a value that is detectable. However, despite the statement at Exhibit 16, section 3.5.1, page 5 that says: "Each soil sample was collected as a composite sample..." he does not believe that CRA compositely sampled the boreholes. He says the description means they sampled an interval. (Testimony of January 17, 2017). He drew the same conclusion during cross-examination regarding Mr. Guoth's witness statement which says "GHD collected composite samples at 1.5m intervals and the interval was within the same geologic deposit" (Exhibit 17, Tab1, page 6, para 3.3). Mr. Bulman described this as interval sampling between one depth and another (Testimony of January 18, 2017).

159. In re-examination, Mr. Bulman described interval sampling in a borehole as sampling between one depth and another, and as long as it's homogenous, and no striking differences in that interval, it's a sample (Testimony of January 18, 2017).

(C) Evidence of the Instrument Holder

160. It was the written evidence of Mr. Guoth that soil samples were thoroughly mixed to ensure equal representation from soils at various depths, which created a composite sample which was representative of the sampled interval (Exhibit 17, Tab 1, page 6, para 3.3).

161. In examination in chief, Mr. Guoth testified that the samples were over a specific interval from one borehole. In reality, it is a composite sample over that interval. CRA didn't mix different intervals. Some people call it a sample, some call it a composite sample, but it is a sample collected over that interval (Testimony of January 24, 2017).

162. In cross-examination, Mr. Guoth agreed that using the composite sampling technique CRA used, it could be possible to lose the highest concentration over that interval (Testimony of January 24, 2017).

163. In re-examination, Mr. Guoth testified that there were no discrete samples mixed together in the interval. He also testified that the possibility of losing the highest concentration in an interval did not affect his conclusions about the appropriateness of the sampling technique because the primary concern here was the presence of fine grain deposits within the sand and gravel for the atrazine to adsorb to. If those had been observed during drilling activities, those would have been sampled separately and that

sample would have represented the highest atrazine content. CRA didn't observe any fine grain content (Testimony of January 24, 2017).

164. In cross-examination, Mr. Murphy agreed with Mr. Guoth that CRA did not collect separate samples and mix them together in an interval. However, he agreed that with respect to the stratigraphic log for BH2-13 (Exhibit 16, Appendix A, page 2 of 2), the sample interval at 10.1-11.1m does pick up the lower part of the descriptor of sand and gravel ("clay, silty sand from 9.98 to 10.06 BGS and damp from 10.06 to 10.36 bgs and cobble encountered at 10.64 m bgs"), as well as the component of the till ("TILL – sand and gravel, trace fines, very dense but breaks apart in hands, grey"), which is also a sand and gravel material. Those two zones were merged, and included in that one composite sample. They were similar in nature but one is a denser layer, possibly cemented but there are two different descriptions in the composite sample. He agreed that the MOECC guideline (Exhibit 17, Tab C, page 22, 1st full para) advises not to mix materials. He testified that these are described differently but they are both sand and gravel materials so he would expect they have similar properties. He testified further that CRA haven't mixed a clay and a gravel or a silt and sand but one is certainly denser than the other. In his view, that's an interpretation question whether that constitutes sampling separate but he doesn't think that constitutes violating the intent of the guideline (January 30, 2017).

165. In the submission of CCOB, composite sampling was defined, described, and applied by CRA in an opaque, fungible, and inconsistent manner to the point where even MOECC guidance relied upon by CRA was jettisoned when the witnesses were pressed too closely about what they did. The "composite" sample on page 2 of 2 of BH2-13 crosses or straddles both units or layers and, therefore, is not consistent with, or not compliant with, the MOECC guidance at page 22 of Tab C of Exhibit 17 that reads: "The composite sampling produces separate samples for analysis for each distinct layer and area; it does not merge samples from different layers or areas". The better view about what CRA did, the consequences of what they did, and what they should have done, in sampling for atrazine in the boreholes is the evidence of Dr. Howard.

iv. Number of Samples

166. In the written evidence of Dr. Howard he indicated that in total just 15 composite samples were collected from the borehole cores for atrazine analysis. Recognizing the site has an area of 260 hectares, the "handful" of samples collected and analyzed during the CRA study (now Exhibit 16) hardly constitutes "extensive horizontal and vertical soil testing" as suggested in Exhibit 16, page 9 (Exhibit 13, Tab 2, page 2).

167. In examination in chief, Dr. Howard described this situation as providing very few data values (Testimony of January 9, 2017).

168. Mr. Bulman's written evidence shows that only five boreholes were drilled that were sampled for atrazine, with a total of 15 samples (Exhibit 41, Tab 15, Table 3, page 24).

169. In cross-examination, Mr. Bulman testified that if he had a 50 m x 50 m gas station where he was looking for contaminants on the property but did not know where the contaminants were, and if he had the funds that were available to Dufferin, he would probably put in 5 or 6 boreholes (Testimony of January 17, 2017).

170. In examination in chief, Mr. Guoth testified that there were 9 investigation locations in Phase 1 and there are no hard and fast rules in terms of how many boreholes and test pits and samples you collect per hectare. In this case, according to Mr. Guoth, it works out to be 1 sample for every 4.4 hectares, which is not unusual in his opinion and consistent with general industry practice (Testimony of January 24, 2017; Exhibit 17, Tab 1, para 3.4).

171. With respect to Mr. Guoth's calculation of 1 sample for every 4.4 hectares, it is not quite clear what he means. He refers to 9 investigation locations. He appears to mean that in Phase 1 there were 7 boreholes drilled (in the overburden) and two test pits excavated (in the topsoil). If that represents 1 sample for every 4.4 hectares, the geographic size of Phase 1 is 39.6 hectares (9 x 4.4). But since we are talking about boreholes here (and there are only 5 in Phase 1 that sampled for atrazine) that represents 1 borehole for every 7.96 hectares (or 79,600 sq m) in terms of sampling for atrazine. This is not anywhere near as intensive or comprehensive as Mr. Bulman would recommend for a 50 m by 50 m (2,500 sq m) gas station.

172. In cross-examination, Mr. Murphy confirmed that CRA did not perform borehole sampling in the overburden for pesticide residues on the Paris Pit site north of Watts Pond Road (i.e. in areas designated as Phases 5, 6, 7), or in areas designated as Phases 2, 3, and 8 (Testimony of January 30, 2017). There was no borehole soil sampling for pesticide residues in Phase 4 either.

v. Conclusions

173. Overall, on the issue of borehole sampling of the overburden CCOB submits that the evidence of Dr. Howard should be preferred for each and every issue raised with respect to: (1) the missed opportunities to sample for atrazine because of alleged lack of fine grain content; (2) mis-descriptions and other stratigraphic log errors in Exhibit 16; (3) composite sampling; and (4) number of samples. Without repeating the above submissions CCOB urges the Tribunal to again consider our concluding submissions found under paragraphs 147, 152, 154, 165, 171-172.

d. Effect of Degradation and Attenuation

i. Degradation

(A) Evidence of the Appellants

174. The evidence in chief of Dr. Howard was that there really is no consensus on how long atrazine persists in soil. There has been some suggestion on half-lives from weeks to months. There have been a number of studies in Europe that Dr. Howard included in his witness statement, where atrazine has persisted for well over 20 years. So there is no global understanding of how long atrazine may persist in the environment, but there are examples where it has persisted for decades. What the scientific literature says about the implications of this longevity or persistence of atrazine in soils is that if we apply the precautionary principle, we have to be aware that atrazine may also persist at this particular site for the same length of time (Testimony of January 9, 2017; Exhibit 13, Tabs 12-14).

175. It was also the evidence of Dr. Howard in examination in chief that degradation is the process whereby a chemical actually breaks down and chemically changes from its original state to one of its metabolites, or one of its breakdown products. In turn those chemicals break down and we hope they break down to something simple and safe. It's a process where we talk about the half life of the material, or contaminant of concern. It's where the chemical disappears. Dr. Howard indicated studies in Germany on the rate of degradation for atrazine suggest it can be very, very slow, 20 years, but in some cases, can advance quite quickly. For the Paris Pit site, nobody knows. To err on the side of caution, we tend to suggest it doesn't happen, or happens at a slow rate (Testimony of January 9, 2017).

176. In his evidence in chief, Dr. Howard agreed with Mr. Murphy (Exhibit 60, Tab 1, para 3.11) that over time we would hope or expect that there will be a diminishment of pesticide concentration due to natural degradation. However, we have no idea what the degradation rates will be. The numbers we see at other sites and areas have a huge range and whatever has happened, or will happen at this site, will depend on site characteristics which can only be ascertained by monitoring (Testimony of January 9, 2017).

177. In cross-examination, Dr. Howard testified that there was no consensus on the persistence of atrazine. The processes from the reading Dr. Howard has done suggest this and that there are different rates of atrazine depending on where it is and on the particular site conditions. It's a complex process and very difficult to choose one particular process. It depends on location, site conditions, and climate. But it also depends on, for a particular site, how the atrazine is bound or not bound, maybe in solution, what it's bound to, whether it's organic carbon. Dr. Howard testified that it would seem from his reading that there are different rates of degradation depending on how the atrazine is present in the material (January 9, 2017).

178. In cross-examination, Dr. Howard repeated that there are some lab and Ontario field studies that have said that the half life of atrazine in soil is weeks or months (Exhibit 8, Tab V, page 1002, paragraphs 2 and 4), and other studies, all done in Germany (Exhibit 13, Tabs 12-14) where it has persisted for 20 years. Tab 14, the Vonberg master's thesis study, is a broader field study. It notes at page 121, and Dr. Howard agrees, that the highest concentrations found at the sites sampled were 0.51µg/L and 0.44µg/L. Dr. Howard testified that these are very low numbers but in Germany they are concerned especially because of the EU standards, which are much more rigorous [0.1µg/L]. It was Dr. Howard's testimony that in Tab 14, the site that was studied was a site that did not receive a large amount of atrazine so the study author was surprised to find it at all (Testimony of January 9, 2017).

179. It was also Dr. Howard's testimony in cross-examination that as a scientist he was not sure that any of the studies, whether studies done in field conditions in Ontario or Germany, are irrelevant. The procedure scientists' use is that unless they have field data from the site in question that can confirm degradation is taking place, we don't rely on it because there is so much variability, everything from whether bacteria are present, nutrients available, temperature, sometimes light, so many factors at play that the degradation rate could be over a huge range. We don't rely on it unless we can observe it in the field. But plucking a value out of Exhibit 8, Tab V is not any different than plucking a value from Germany. The practice is you err on the side of caution unless you have reliable field data (Testimony of January 9, 2017).

180. It was further Dr. Howard's evidence in cross-examination that the German studies relate to the biodegradation process for atrazine. They illustrate that the mass of material that we expect to have on site, a significant amount of it will still be there and has not been degraded because these studies show a persistence far beyond what other studies have shown in other parts of the world (January 10, 2017).

181. In cross-examination Dr. Howard also testified that the Jablonowski studies (Exhibit 13, Tabs 12 and 13) use C-14 labelling of carbon for the purpose of tracing organic chemicals. It is used as a measure of how much atrazine is present in the soils (January 10, 2017).

(B) Evidence of the Instrument Holder

182. The written evidence of Mr. Murphy is that, according to the Kansas Geological Survey, atrazine degradation has a half-life of two weeks. He also stated that any atrazine levels present in the overburden material that is to be washed will diminish over time to even lower levels due to the ongoing degradation process (Exhibit 16, page 13).

183. In examination in chief, it was the testimony of Mr. Murphy that we know atrazine degrades over time. The Pest Management Regulatory Agency ("PMRA") reports a half life of 56-125 days in Ontario field conditions which seems to be the most applicable indicator. It also states that the majority of atrazine that is applied dissipates from the soil or root zone meaning it's not moving down. Only a trace amount moves

down below the shallow zone. We know the aggregate deposit is excavated and washed and the wash water will go into the settling pond. Atrazine is degraded more when more moisture is present. Washing the aggregate adds water to it and keeps it wet which promotes bacteria (Testimony of January 27, 2017).

184. It was also the testimony of Mr. Murphy in examination in chief that there won't be appreciable concentrations of atrazine in the wash water or sediment but there will be monitoring there to assess that. If there are concentrations of atrazine present in the settling pond and fines and they move down to the groundwater flow system, that isn't the concentration that is going to be present at any point of reception. It will move down, infiltrate into the groundwater table and flow system, it will be diluted in the groundwater flow and will disperse, and continue to degrade as it moves down (Testimony of January 27, 2017).

185. It was also Mr. Murphy's evidence in chief that the new groundwater detections of atrazine desethyl [reviewed below at Part III.B.5.c], which is the primary breakdown product of atrazine, are a significant piece of information because the presence of the metabolite confirms there is a process of atrazine degradation that is occurring. We know atrazine is degrading in the environment because we have atrazine desethyl concentrations in groundwater so we know atrazine is actively degrading (Testimony of January 27, 2017).

186. In examination in chief, Mr. Murphy also testified that any literature and study has found atrazine degrades and we know its degrading here because we see the degradation products, atrazine desethyl, having a higher concentration than the parent product. When we look to half lives, which is how we describe the degradation process, we look at the PMRA study, which is based on Ontario field conditions, and it concludes the half lives are 56-125 days. Translating that to the question of what does the concentration of atrazine in the fines mean in the washing process Mr. Murphy concluded that it turns out to be 1-2.25 years for degradation to occur. So he expects a 99.99% reduction in the concentration of atrazine in the outwash (Testimony of January 30, 2017).

187. It was also Mr. Murphy's testimony in chief that atrazine would continue to degrade through the groundwater flow system so there'd be further reduction in concentration (January 30, 2017).

188. Mr. Murphy's evidence in chief was also to the effect that any risk associated with whatever presence of atrazine will have diminished over time because of degradation. So he would not presume there would be a risk in putting the sediment material back on the land a number of years later as part of the rehabilitation process (January 30, 2017).

189. In cross-examination, Mr. Murphy confirmed that he does not have any data showing how fast atrazine is degrading at this site. The only information he has is looking at the groundwater concentrations for the overburden materials. There are no measured

atrazine levels in soils so he can't compare how much atrazine is degrading. He has no site specific data regarding the degradation of atrazine in soil. He also agreed that it is possible that atrazine could still be in the soil zone but at concentrations less than the detection limits he has relied on. He also confirmed that he provided no data in Exhibit 16, or any place else, of the total quantity of atrazine applied on the site in the last 40 years or that might now be on the site and he has not calculated a theoretical mass balance using non-detect values. He agreed that the presence of metabolites does not tell us the speed with which atrazine is degrading at this site, it just demonstrates the process is occurring. He testified that we see higher concentrations of the degradation product so there's a "notable" amount of degradation occurring. Asked to explain his use of the word "notable" since we don't know where we started from, Mr. Murphy testified that we know we started with atrazine in the ground and the degradation product has reached groundwater. He agreed there are some studies that indicate after a long time at very low concentrations that degradation rates may be slower but the information he has particularly from PMRA that based on conditions applicable to Ontario fields, the degradation rate is in the order of weeks and months for the half life. He says the German studies that show atrazine residual concentrations 22 years after application were conducted in different soils. He confirmed that he does not have a definitive degradation rate demonstrated for this site. The most relevant information is from PMRA but degradation is just one aspect of the evaluation (Testimony of January 30, 2017).

190. In cross-examination, Mr. Murphy also testified that one assumption as to why no atrazine was found in the soils of any of the test pits, even though each monitoring well next to each of those test pits had a positive detection for atrazine, is that the atrazine has degraded away. He believes degradation of atrazine is occurring within the environment above the water table. Obviously, there is atrazine and metabolites have gotten into the groundwater. We know somewhere it's migrating down from the application at the surface down to groundwater so there is a presence somewhere at some level between ground surface and the water table of atrazine and its metabolites or both. It's in the soil somewhere in the overburden. It may be at the Paris Pit site, but not at the detection levels that CRA tested to (Testimony of January 30, 2017).

ii. Attenuation

(A) *Evidence of the Appellants*

191. In his examination in chief, Dr. Howard testified that if monitoring has not detected atrazine in the wells it is possible that it is chemically retarded and is still on its way to the wells. That could be because it is partly bound to the soils and it could one day be measured. This is a concern and why we need a full and proper study of this site (Testimony of January 9, 2017).

192. In examination in chief, Dr. Howard also described attenuation in terms of a retardation factor. By this he meant the advancement of a chemical is slower than the advancement of the water flow. It doesn't spread as rapidly, as far, as the water does.

With a retardation factor of 4, the contaminant will spread in a certain period of time, $\frac{1}{4}$ of the distance that the ground water has spread (Testimony of January 9, 2017).

193. In his examination in chief, Dr. Howard further described the retardation factor as giving us a measure of how quickly the contaminants that are dissolved in the water move (velocity) compared to the velocity of the water. We already know groundwater moves very slowly, typically meters per day horizontally, and much more slowly vertically. If we have a significant retardation factor as we get with hydrophobic chemicals, it means the water may be moving a few meters per day, but the chemical is moving cm/day because it is retarded to the velocity of the water. So in terms of understanding the fate of the pesticides we have on site, how quickly they're likely to move in solution, whether we can expect them to have gotten into the system in the first place and moved through the site, whether they even reached the groundwater, knowing these critical pieces of information depend on getting values of for K_d [partition coefficient discussed below] and R [retardation factor]. They have been introduced but glossed over in Exhibit 16 (Testimony of January 9, 2016).

194. In cross-examination, Dr. Howard testified that if we have a large store of atrazine sitting in the topsoil, and that topsoil is sitting over the aquifer that is delivering water to the Telfer well, a particular retardation factor could mean that water is moving from the topsoil zone to the water zone. It may be we're waiting for a period of 25 years or more before it gets to the soil zone from the water zone to the well. In a general sense, it also applies in a vertical sense. That's why the concern remains that the atrazine that's been applied is still above the water table and could move slowly as a function of that retardation factor. If the retardation factor is 10, then it could be a very good reason why the atrazine has still not reached the aquifer (Testimony of January 10, 2017).

195. In cross-examination, Dr. Howard also testified that the fact that atrazine has not been detected in the Gilbert and Telfer wells gives him great concern because whenever you're dealing with a non-point source or a source that has been around for 20-40 years and a source that is chemically retarded and you don't find something or measure it in your monitoring well, one of the things it can mean is that its on its way and hasn't arrived yet. He gave the example in the UK and throughout Europe in the post-war period in the 1950s, where large areas of grassland were plowed up and it has an organic soil. It ended up converting the nitrogen to nitrate. That was in the 1950s. They were monitoring most of the water supply in England. Throughout the 1950s and 1960s, it wasn't until the mid 1970s when someone said the nitrate is going up in our boreholes. For 20 years they hadn't seen anything. We found out it was happening in many wells. There were dozens, hundreds in fact, wells affected. Nitrate went up and got up to the drinking water quality standard. What had been released in the surface had moved down through the aquifer 1m/year for 20 years or so and then in 1975 the water table at a depth of 25-30 m, impacted the aquifer and there was panic. It was called the nitrate bomb. It was seen in the UK and Europe. We have a similar bomb in Ontario right now which is road salt. For 50 years we've been applying road salt and it's doing the same thing. What we're measuring in our aquifers is nowhere near what it will be in 10 years time, 20 years time, for the next 200 years because of slow movement through unsaturated zones. We have to

be careful when monitoring our groundwater samples to recognize that in some cases we're getting low levels because the stuff that's on its way hasn't arrived yet and the only way to deal with that is to sample the unsaturated zone like in Europe. The zone above the water table, take out samples, look to see what's on its way. But if we simply rely on observation wells, there may be some surprise. We don't know what will happen (Testimony of January 10, 2017).

(B) Evidence of the Instrument Holder

196. In his written evidence, Mr. Murphy states that "even the trace concentrations of atrazine related compounds...at the Site are expected to decline in the future due to attenuation processes (if they haven't already)..." In his witness statement, Mr. Murphy makes a similar statement that: "...any atrazine levels present in the overburden material that is to be washed will diminish over time to even lower levels due to the natural ongoing attenuation...processes" (Exhibit 16, page 15, 5th bullet; Exhibit 60, Tab 1, para 3.11).

197. In examination in chief, Mr. Murphy testified that the PMRA identified that most of the atrazine applied dissipates from the topsoil layer and only trace amounts move below the topsoil. We've heard evidence about the retardation factor, and about how fast a chemical moves relative to groundwater. Usually greater than 1, so a value of 1 means it moves at the same rate as groundwater, 2 means it moves at half the rate. If we look at standard equations, we look at topsoil conditions where we might expect to see 1-10% organic carbon, even as much as 25% but that's high for our site, we would calculate a retardation factor from 10-100. We would expect it to move 10-100 times slower than the groundwater. PMRA found it is not easy for atrazine to get through the topsoil layer. That's an assumed organic carbon content as CRA didn't actually measure organic carbon in the topsoil because Dufferin isn't going to wash the topsoil. CRA did collect organic carbon data in the sand and gravel and found the value to be .1% which is the detection limit, we had values below and above that. When we go through the retardation factor of .1% we get a factor of about 2 meaning atrazine moves very slowly through the topsoil horizon and as it gets to the outwash sands and gravels it will move more quickly, about half the speed of the groundwater (Testimony of January 30, 2017).

198. In examination in chief, Mr. Murphy also testified that with respect to the migration of any pesticides on site, if any, he would expect the atrazine to get held up in the topsoil, and the majority of any atrazine would be in the topsoil because of the organic carbon content. When we have water moving down, it moves down through the topsoil layer and any atrazine would move down more slowly. One of the things we look at is what kind of response do we get in groundwater levels from climatic events. We can see we get response to major infiltration events and that this occurs within a matter of days to weeks to get down to the water table. This tells us that if there's an atrazine presence, it has the ability to move down quite quickly to the groundwater table once it's out of the topsoil zone because the retardation factor is about 2. When we look at the historical presence of atrazine in groundwater, studies done in Ontario, like the 1986 Ministry of the Environment study, found atrazine present in 50% of municipal and farm

wells. More recent studies in the 1990s showed the concentration dropped but still around 7-10% in wells. What we know is atrazine in southern Ontario has made its way to groundwater 30+ years ago which makes sense. We know it moves down and doesn't move much slower than water does. So when we look at the Paris Pit site relative to others its hard to imagine a more rapid movement than at Paris because of the low organic carbon content and low fines content. This would be a very rapid environment for infiltration of water and a rapid environment for migration of atrazine to the water table. So it's inconceivable that atrazine hasn't already moved all the way down to the water table. That's consistent with the previously reported detection of atrazine and now we've identified it's in 4 monitoring wells with 2 of those representing flows from upgradient areas (Testimony of January 30, 2017).

199. In cross-examination, Mr. Murphy testified in response to a question whether he wanted the Tribunal to believe that any atrazine in the unsaturated zone has rapidly infiltrated through to the water table at this site, he answered no that what he was saying is that to the extent there is atrazine present it would have moved down to the water table in terms of the initial presence of that material. That it would be in the process of going there given we have an agricultural area where atrazine has been applied (Testimony of February 1, 2017).

200. In cross-examination, Mr. Murphy confirmed that while he has done calculations, he has no empirical data on the rate that water is moving down the unsaturated zone, saying that that is not a measurement he would typically make (Testimony of February 1, 2017).

201. In cross-examination, Mr. Murphy testified that with respect to Exhibit 16, Appendix A, BH2-13, page 2 of 2 showing clay at 10 m depth BGS, and almost 1 m of till starting at 10.6 m depth BGS that some tills may slow down the vertical downward velocity of water, though this till is a sand and gravel. He also testified that a clay horizon would slow down the vertical downward velocity of water in comparison to sand, but said this was not a clay horizon. However, he agreed that a horizontally continuous seam would slow the downward velocity of water but suggested that this 8 cm seam might be an isolated inclusion or a lump that groundwater would move around. Though the information available to him on this borehole was limited and determining whether a seam is a lump cannot be identified from a single borehole it was, in his view, the most likely explanation (Testimony of February 1, 2017).

202. In cross-examination, Mr. Murphy agreed that with respect to Exhibit 16, Appendix A, BH4-13, page 1 of 1 showing a 1.5 m thick seam of clay starting at 3.2 m depth BGS, that it would slow down the vertical downward velocity of water (Testimony of February 1, 2017).

203. In cross-examination, Mr. Murphy agreed that with respect to Exhibit 16, Appendix A, BH5-13, page 2 of 2 showing a 2.8 m thick seam of clay starting at 8.7 m depth BGS, that it would slow down the vertical downward velocity of water in comparison to sand and gravel (Testimony of February 1, 2017).

204. In re-examination, Mr. Murphy testified that a reason why a wellhead protection area is designated an area of high vulnerability is due to having no attenuation potential ascribed to the material above the water table, which means water goes down very quickly (Testimony of February 1, 2017).

iii. Conclusions

205. In the submission of CCOB, Dufferin's reliance on degradation of atrazine in the environment as a partial explanation for why it has not been detected in the soils and won't be a problem in the aggregate washing process, fails to err on the side of caution and founders on their: (1) lack of data on atrazine degradation rates at this site; (2) quick refusal to accept the German studies of 22 years of atrazine persistence in soils as a cautionary reminder that degradation may not be happening at this site very quickly; and (3) their easy adoption of the PMRA studies on atrazine half-lives on un-named fields in Ontario as the only answer.

206. CCOB also submits that Dufferin's reliance on an alleged low atrazine attenuation capability in the unsaturated zone soils, such that the herbicide has already all reached the groundwater regime, is equally misplaced. Even from the very few boreholes Dufferin drilled in the overburden it is apparent in the evidence that there are clays and tills in the areas to be mined that will provide a barrier to rapid vertical downward flow through the sands and gravels. In CCOB's submission, the nitrate bomb example that Dr. Howard gave during his evidence in chief is a reminder of the need to take a precautionary approach on this issue and assume that atrazine remains somewhere in the unsaturated zone and, therefore, a potential factor in the aggregate washing process.

5. Sampling for Atrazine in Groundwater

207. The initial basis for the Instrument Holder suggesting that aggregate washing operations will not result in contamination from herbicides, including atrazine, is the groundwater sampling conducted at the site, which at the time the PTTW and ECA applications were filed in early and mid-2013, respectively, showed no existing groundwater contamination from those substances. When the situation changed as early as August 2013 and one monitoring well showed a detection for atrazine above the detection limit, both the Directors and the Instrument Holder clung to a variant of the Instrument Holder's initial position. However, at the eleventh hour the situation has changed again, even though the data changing the situation has existed since December 2012 but unknown until now. This "new" information is even more significant because it implicates all the remaining groundwater monitoring wells sampled and, combined with the earlier detections, shows the presence of atrazine desethyl above the detection limits at each well. The following summary demonstrates the evolution of the evidence and puts in doubt, in the submission of CCOB, the foundation upon which the position of the Directors and the Instrument Holder rests.

a. The Initial Position of the Instrument Holder: No Atrazine Detected in Groundwater

208. In March 2013, CRA submitted the PTTW application on behalf of Dufferin to the MOECC. With respect to groundwater the document stated that: “As shown by the...groundwater data provided in Tables 6.2 and 6.3, respectively, no herbicides or pesticides, including Atrazine...were detected in any...groundwater samples. These results indicate that there is no existing groundwater contamination from pesticides or herbicides and that no contamination is expected to result from aggregate operations, including aggregate washing”. Table 6.3 identified monitoring wells BH88-5, BH88-4 (plus duplicate), and MW1-12 as all having no detections of atrazine above the detection limit used of 0.1µg/L. The dates of the sampling results were all December 12-13, 2012 (Exhibit 41, Tab 7, page 40 and Table 6.3).

209. In May 2013, Mr. Murphy wrote to Bill Bardswick, MOECC Hamilton regional director and stated: “Atrazine or its metabolites were not detected in any...water samples at detection limits of 0.1µg/L” and “Atrazine or its metabolites were not detected in any of the groundwater...samples” (Exhibit 61, Tab G, pages 1, 3). Mr. Murphy, in cross-examination, confirmed that these statements were based on the same December 2012 sampling results (Testimony of January 30, 2017).

210. In cross-examination, Mr. Murphy confirmed that also in May 2013 he told Mr. Alex Davidson, Director of Water for the County of Brant that there were no detections of atrazine in any groundwater samples, based on those same December 2012 sampling results: “Remember, there are no detections of atrazine in any groundwater or water supply samples over the many sampling events and multiple sampling locations” (Testimony of January 30, 2017; Exhibit 61, Tab H, 5th page in).

211. In June 2013, CRA submitted the ECA application on behalf of Dufferin to the MOECC (Exhibit 41, Tab 13). As part of its justification for the ECA application, CRA relied on the assessment of impacts to water quality contained in the PTTW application material (Exhibit 41, Tab 13, page 17, section 4.0), which included the assessment of no detections of atrazine in groundwater samples, noted above.

212. However, the view that no groundwater samples on the site detected atrazine changed in August 2013

b. The Finding of Atrazine in Groundwater: MW2-12

213. In August 2013, CRA obtained detections above the detection limit for atrazine and its metabolites in monitoring well MW2-12 at what Exhibit 16 calls: “trace concentrations of 0.15µg/L, 0.2 µg/L, and 0.35 µg/L, respectively, which were marginally above the detection limits and 14 times less than the drinking water criterion of 5µg/L” (Exhibit 16, page 8, 3rd full para and Table 4.2).

214. In January 2014, CRA again obtained detections above the detection limit for atrazine in monitoring well MW2-12 at what Exhibit 16 calls: “trace concentrations of

0.13µg/L, 0.14µg/L, and 0.27µg/L, respectively, which were marginally above the detection limits and 18 times less than the drinking water criterion of 5µg/L” (Exhibit 16, page 8, 4th full para and Table 4.2).

215. In cross-examination, Mr. Murphy confirmed that the third of each of those numbers (i.e. 0.35µg/L and 0.27µg/L) (e.g. 0.13µg/L + 0.14 µg/L = 0.27 µg/L) is the sum of the first two numbers in each group and not a separate detection (Testimony of January 30, 2017).

216. In cross-examination, Mr. Murphy agreed that 0.35µg/L and 0.27µg/L are only 5 times and 6.7 times lower, respectively, than the Canadian Water Quality Guidelines for the Protection of Aquatic Life in Fresh Water (1.8.µg/L), cited in his Exhibit 61, Tab H (Testimony of January 30, 2017).

217. In his written evidence, Mr. Murphy stated that the “specific locations [of the test pits which were excavated in December 2012] were selected to be near monitoring wells so that a comparison of groundwater and soil concentrations could be undertaken if any pesticides were detected” (Exhibit 60, Tab 1, para 3.4). In cross-examination, Mr. Murphy agreed that there is not a test pit next to MW2-12 where both atrazine and atrazine desethyl were detected in groundwater in August 2013 and January 2014. Mr. Murphy does not recoll the subject of putting in a test pit next to that well coming up after the positive hit there for atrazine was discovered. He does not recoll the MOECC raising it with him or him saying to MOECC that a test pit should be installed there (Testimony of February 1, 2017).

218. No longer able to state that there were no detections of atrazine in groundwater samples at the site, Exhibit 16 stated: “Only detected in 2 of 10 groundwater samples at detection limit of 0.1µg/L. If the County detection limit was used, it would be non-detect” (Exhibit 16, Figure 4.2). In cross-examination, Mr. Murphy confirmed that the County was using a detection limit at the time of 1µg/L. He also agreed that the European Union standard for atrazine (and other pesticides) in drinking water is 0.0001mg/L, which is the same as 0.1µg/L, and that the two detects at MW2-12 (0.35µg/L and 0.27µg/L) are greater than that limit (January 30, 2017; Exhibit 61, Tab H, 5th page in).

219. In cross-examination, Mr. Murphy testified that the reference to 10 groundwater samples for atrazine includes two duplicates so it could be described as 8 samples with 2 duplicates (Testimony of January 30, 2017).

220. It was the testimony of Dr. Howard, during examination in chief that among the things that could have been collected more thoroughly in Exhibit 16 is the number of groundwater samples to measure atrazine. There were just eight samples taken from four locations for atrazine. Even then 25% of the samples collected of the 8 indicated the presence of atrazine. Dr. Howard regarded this as a very limited number of groundwater samples (Testimony of January 9, 2017). If we use Mr. Murphy’s approach of counting the two duplicates we still have 20% of the samples collected indicating the presence of atrazine.

221. The limited number of groundwater samples for atrazine did not concern MOECC. Their focus was the few groundwater samples that had atrazine detections. In the written evidence of Mr. Bulman, he stated that: “It has been postulated that pesticides will be concentrated in the wash water. This is unlikely to happen for the following reasons: A. The few number of groundwater samples with pesticide detections...” (Exhibit 41, Tab 15, page 27).

222. The other focus of MOECC during this period was that: “Pesticides have not been found in drinking water samples collected from both the Gilbert and Telfer Well Fields” (Exhibit 41, Tab 15, page 27). However, in cross-examination, Mr. Bulman agreed that:

- A 1998 report by Goss, which Mr. Bulman cites at Exhibit 41, Tab 15, page 19 shows that atrazine was a major contaminant of farm wells used for drinking water in Ontario and that atrazine was detected as low as 0.05µg/L, a detection limit an order of magnitude lower for atrazine than the detection limit being used at the Paris municipal wells 20 years later of 0.1µg/L and relied on by MOECC and Dufferin for their conclusions; and
- The drinking water standard for atrazine that he relies on in Ontario of 5µg/L is 50 times higher than the one used in the European Union for all pesticides, including atrazine, of 0.1µg/L, and that the European Union has decided to be precautionary and MOECC has decided to be 50 times less precautionary, something that was not his intent, but is the result (Testimony of January 17, 2017).

223. The issue of the number of samples taken was not addressed further by CRA in its work. In cross-examination, Mr. Murphy agreed that since January 2014 Dufferin has not conducted any further sampling for atrazine or its metabolites in groundwater at monitoring wells BH88-5, BH88-4, MW1-12, or MW2-12 or any other monitoring wells at the Paris Pit site (Testimony of January 30, 2017).

224. The understanding of the Parties on the issue of the number of groundwater samples containing atrazine on the Paris Pit site remained unchanged for three years until the production of the Erratum (Exhibit 63) on the eleventh day of this hearing in January 2017.

c. The Finding of Atrazine Metabolites in the Remaining Groundwater Monitoring Wells: The Erratum

225. In examination in chief, Mr. Murphy produced Exhibit 63, an Erratum, which identified errors in data provided in Exhibit 16. Based on Exhibit 63, it was his evidence that “there were very low trace level detections of the atrazine breakdown product atrazine desethyl in groundwater at three other monitoring wells in addition to the previously reported monitoring well MW2-12. These detections are associated with sampling event no. 1 (December 2012) and no. 4 (August 2013) and highlighted with

boxes in Attachment A” to Exhibit 63 (Testimony of January 27, 2017; Exhibit 63, page 1 and Attachment A).

226. In his written evidence, Mr. Murphy stated that the lab used by CRA in the development of what is now Exhibit 16 did all of the following things that necessitated the creation of Exhibit 63: (1) committed errors or reporting errors, (2) committed irregularities, (3) acted without instruction, (4) included lab results CRA had not requested [the groundwater detections based on a revised detection limit] and had not previously received even though the lab kept these results in its database, and (5) did not give CRA notice of the detection limit revision (Exhibit 63, pages 1-2). In cross-examination, Mr. Murphy testified that the lab was the source of the problems and errors but CRA did not catch those errors before they got into Exhibit 16. It was Mr. Murphy’s further testimony in cross-examination that the Tribunal should have confidence in the lab and the results produced by the lab (Testimony of January 30, 2017; Exhibit 61, Tab G, page 2).

227. In examination in chief, it was Mr. Murphy’s testimony that based on Exhibit 63, atrazine (or its breakdown product atrazine desethyl) appears to be somewhat widespread across the groundwater flow system in this area (Testimony of January 27, 2017).

228. With the production of Exhibit 63, it was Mr. Murphy’s testimony in cross-examination that atrazine desethyl has been detected in the groundwater at all 4 monitoring wells where it was tested for at the Paris Pit site (Testimony of January 30, 2017).

229. In cross-examination, Mr. Murphy agreed that using Figure 3.1 from Exhibit 16, atrazine desethyl has been detected at:

- BH88-4 (north of the Telfer wellfield and near Test Pit 3) in Phase 4 (concentration: 0.033/0.029µg/L; sampling event no. 1 – December 2012)
- BH88-5 (on the western or southwestern border of the site near Test Pit 1) (concentration: 0.023µg/L; sampling event no. 1 – December 2012);
- MW1-12 (on the southeast border of Phase 1 the no extraction zone and near Test Pit 2) (concentration: 0.034µg/L; sampling event no. 1 – December 2012; and concentration: 0.03µg/L; sampling event no. 4 – August 2013);
- MW2-12 (north of the no extraction area and the existing pond, this being the monitoring well where detections of atrazine in August 2013 and January 2014 were previously known about) (Testimony of January 30, 2017). As noted above, in cross-examination, Mr. Murphy testified that there is no test pit next to this monitoring well (Testimony of February 1, 2017).

230. In cross-examination, Mr. Murphy also agreed that the Exhibit 63, Attachment A

summary of detection limits and concentrations in µg/L does not add up the atrazine (Column 1) and atrazine desethyl (Column 2) detections in the atrazine + N-dealkylated metabolites column (Column 3). It was his testimony that it would be correct to do so in which case, for example, the detection for BH88-4 (Sampling event no. 1 - December 2012) in the third column should read <0.053/0.049µg/L, and you could do the same thing for the other detections in Attachment A (Testimony of February 1, 2017).

231. It you did so the third column of Exhibit 63, Attachment A would look like the following for samples that recorded a detection for atrazine desethyl:

Atrazine + N-dealkylated metabolites

<0.053/0.049µg/L⁵

<0.043µg/L⁶

<0.054µg/L⁷

<0.023µg/L⁸

232. In cross-examination, it was Mr. Murphy's testimony that the highest of the new groundwater detections for atrazine desethyl (0.034µg/L) is 53 times lower than the Canadian Water Quality Guidelines for the Protection of Aquatic Life Fresh Water (1.8µg/L) cited in his Exhibit 61, Tab H (January 30, 2017). However, if you use the highest value from the new detections in groundwater using the atrazine + N-deallylated metabolites column, 0.054µg/L is only 33 times lower than 1.8µg/L.

233. In cross-examination, Mr. Murphy also agreed that with the information in the erratum (Exhibit 63), it is now accurate to say that atrazine desethyl was detected in six groundwater samples at the site, which works out to: (1) 60 per cent of the samples (6 of 10); or (2) 75 per cent of the samples (6 of 8), if you do not count the two duplicates (Testimony of January 30, 2017).

234. In the Erratum (Exhibit 63), Mr. Murphy also indicated that the MDL basis upon which the lab reported the groundwater detections identified in Exhibit 63 "is not commonly used for reporting as it is less reliable and typically requires specialized analysis by the laboratory chemist" (Exhibit 63, page 1, footnote 1).

235. Yet in a May 2013 letter to the MOECC on the subject of the atrazine analytical method and detection limits used in connection with the Paris Pit work, Mr. Murphy wrote that: "ALS Limits of Reporting are established using rigorous experimental and statistical procedures which begin with the determination of the Method Detection Limit at 99 percent confidence. The detection limits are essentially set at a level that limits the potential for false positive detections" (Exhibit 61, Tab G, page 3). A similar statement

⁵ BH88-4/Duplicate – December 2012 sampling event no. 1.

⁶ BH88-5 – December 2012 sampling event no. 1.

⁷ MW1-12 – December 2012 sampling event no. 1.

⁸ MW1-12 – August 21, 2013 sampling event no. 4.

appears in Exhibit 16, page 7. These statements were made at a time when Mr. Murphy was advising the MOECC that: “Atrazine or its metabolites were not detected in any of the groundwater...samples” (Exhibit 61, Tab G, page 3), and “The only detections of atrazine and atrazine metabolites in groundwater at the site were two results at trace levels slightly above the method detection limit of 0.1µg/L”, respectively (Exhibit 16, page 9).

236. In cross-examination, Mr. Murphy testified that with respect to footnote 1 in Exhibit 63, he is not saying that the MDL basis for reporting is unreliable only that it is less reliable when reporting down to a lower detection limit in respect of the actual precise concentration but it provides a high level of confidence as to the presence or detection of a substance. He agreed that he did not advise MOECC of that distinction in Exhibit 61, Tab G, or Exhibit 16, page 7 (Testimony of February 1, 2017).

d. Conclusions

237. Overall, CCOB submits that the evidence on sampling for atrazine in the groundwater shows that one pillar of the argument relied upon by the Directors and the Instrument Holder has collapsed. The evidence behind their position that atrazine will not be concentrated in washwater initially was “there is no existing groundwater contamination” from atrazine. When detections of atrazine were found in monitoring well MW2-12 that position no longer was tenable and the evidence behind their position became there are “few” groundwater samples with detections for atrazine. Exhibit 63 shatters that argument. Every groundwater monitoring well sampled from December 2012 to January 2014 it turns out showed detections for atrazine desethyl. However, we only learned that information in January 2017, two-thirds of the way through the hearing and many years after the fact. A remaining pillar of the case in support of the position of the Directors and the Instrument Holder is that no contamination is expected to result from aggregate washing. That evidence is reviewed below.

6. Aggregate Washing Process

a. Introduction

i. Evidence of the Appellants

238. It was the written evidence of Dr. Howard that in 2012, Dufferin announced its intention to proceed with aggregate operations, raising concerns that aggregate washing at the site would threaten groundwater quality by mobilizing the agro-chemicals that had likely accumulated beneath the site. These would include atrazine and its metabolites. To investigate these concerns, CRA was asked by MOECC to conduct a site investigation to assess the risk associated with washing sediment on site. On the basis of what is now Exhibit 16, CRA concluded “that there is no credible threat to public or private water supply quality from past use of pesticides at the Paris Pit Site”. It was further the written evidence of Dr. Howard, and his testimony during examination in chief, that he could not

endorse the findings in Exhibit 16 (Exhibit 13, Tab 2, page 1; Testimony of January 9, 2017).

239. In examination in chief, Dr. Howard testified that this is not a normal run-of-the-mill aggregate operation. First, it's a very large site and it has a long history of pesticide application including atrazine that occurred until very recently. What is particularly important is to recognize the hydrogeological conditions will change dramatically over the next 1-20 years as the site is developed. Any assessment we carry out on the site will have to think about what the conditions will be in the future. These conditions will be such that we've washed two-thirds of the aggregate, and we expect the atrazine, if it's present, and there's good reason to expect it is present, to be present on the fine-grain materials - silts, and clays. During the aggregate washing process, we will be removing sand and gravel, clean sand and gravel from the site and going off to market. What remains, which is estimated to be between 2-4% of the original material, will be the fine-grain material. The clean material goes to market, the atrazine stays behind and now that material will be re-deposited on the site, about a meter or so above the water table (Testimony of January 9, 2017).

240. In his witness statement, Dr. Howard summarized the problems with the Dufferin evidence on aggregate washing as follows:

- The processes of sorption proposed in the CRA report (now Exhibit 16) cannot be relied upon to limit dissolution of herbicides in the wash water in the absence of significantly more reliable information on the materials present and the precise nature of the sorptive (and desorptive) reactions expected;
- The issue of concern not addressed by CRA is not so much whether repeated washing of sediment using the same water will cause a steady increase in herbicide concentration, but whether conditions could be created that would encourage significant transfer of adsorbed chemicals to the water;
- Over time, the washing process will produce many metric tonnes of fine-grained waste material (silt, clay and organic material) that will remain on site and because "clean" sand and gravel have been removed, this waste material will host the organic chemicals of concern in concentrations that are likely to be orders of magnitude higher than would have been observed in the original sediment;
- Water coming into contact with this waste material (e.g. in the sediment settling pond) will, through partitioning, have the opportunity to acquire very significant concentrations of herbicide and, over time, these enriched solutions represent a very credible threat to groundwater quality in the region. None of the data provided by CRA in its investigation adequately

address this concern (Exhibit 13, Witness Statement, page 4, para 13 (ii), bullets 3-6).

241. It was also Dr. Howard's evidence in chief that over time, the washing process in generating many metric tonnes of fine grain materials which will remain on site, will result in their having concentrations in mg/kg, which are going to be many times what they were in the original sediment. Since we are left with 2-4% of what was on site, we expect a concentration factor of 25. If we have water coming into contact with the material, we can expect the water to acquire a proportion of that chemical, which we could calculate using a value known as K_d [discussed below]. In responding to comments by Mr. Murphy at Exhibit 60, Tab 1, para 3.10, Dr. Howard testified that the washing process will help equilibrium be achieved between the pesticide held fines and the water body (Testimony of January 9, 2017).

242. In his written evidence, Dr. Howard indicated that it will be these atrazine-rich, finer grained sediments that remain on-site after the aggregate has been washed and sent to market, which will dictate through a partitioning process how much atrazine will be transferred to the water. In all likelihood the fines remaining on site will have concentrations of atrazine (and other contaminants) that are several orders of magnitude higher than the concentrations measured for composite samples. Nobody has any idea what these concentrations are likely to be because no effort has been expended to measure them. When the concentrations of contaminant held within the sediments are raised by several orders of magnitude, the partitioning process will likely raise the concentration of contaminant in the water by a similar factor (Exhibit 13, Tab 3, pages 1-2).

243. In examination in chief, Dr. Howard explained the reason he is of the opinion aggregate washing is likely to mobilize bound atrazine more readily than under the natural situation. His explanation for how the washing process will enhance the movement is that in the natural groundwater system, we don't have equilibrium between water and materials. Even in a sand and gravel aquifer that looks pretty similar from top to bottom, there are zones which have more silt and clay. The water will more likely move between permeable zones. There's less opportunity for water to get transferred from the fine grains. To what extent, Dr. Howard did not know. But the washing process maximizes the opportunity for equilibrium to be achieved and to transfer bound atrazine to the water (Testimony of January 9, 2017).

244. In examination in chief, Dr. Howard also testified that CRA was requested to provide complete reassurance that the washing operations would not impact groundwater quality. In his professional opinion CRA failed to provide the good quality data that is required for reliable interpretation and scientifically justifiably conclusions. Therefore, his opinion was there remains a credible threat to public or private water supply from past pesticide use on the Paris Pit site (Testimony of January 9, 2017).

245. In cross-examination, Dr. Howard testified that his concern is much broader than just the washing process. It's the fact that right now we don't understand the mass of

material that is on the site. Part of it will wash and part of it will remain behind. It's not just the washing process it's what happens afterwards with natural recharge with the material that remains on site after the washing process. The material left behind on site will desorb the atrazine (Testimony of January 10, 2017).

ii. Evidence of the Directors

246. It was the evidence of Mr. Bulman in examination in chief and in his written material that he was confident that there would be no adverse impacts resulting from the washing of aggregates at the Paris Pit. As it related to atrazine, this confidence was based on a number of factors: (1) "[n]o atrazine...detected above [its] analytical detection limit..." in soils; (2) no published studies supporting the concentration of pesticides in washed aggregate sediments; (3) topsoil, which contains most of the clay, will not be put through the wash plant; (4) no detections of atrazine in drinking water samples at the Gilbert and Telfer Well Fields; and (5) atrazine was only detected in one groundwater monitoring well at the Paris Pit (Testimony of January 16, 2017; Exhibit 41, Tab 15, pages 26-27, 45).

iii. Evidence of the Instrument Holder

247. In examination in chief, it was the evidence of Mr. Guoth that most of his experience has been with quarries but they have the same wash process. The sediments are typically reused on site as part of the backfill operations and it may have a customer that may have use for it so it's sold as a product. But in all of these situations, it's common to reuse them on site (Testimony of January 24, 2017).

248. In Mr. Murphy's written evidence he states that there is no expectation or evidence that atrazine will exist in the wash water in a concentration that could impact groundwater (Exhibit 60, Tab 1, para 4.11).

249. In examination in chief, it was the evidence of Mr. Murphy that there are pits and quarries all over southern Ontario and all over the world and many of those sites involve aggregate washing as it's necessary to produce high quality concrete and asphalt products. There's no evidence it is contaminating water supplies (Testimony of January 27, 2017).

250. It was the evidence of Mr. Murphy in chief that atrazine application has been stopped on the property since 2013 so the earliest opportunity to wash aggregate there is 4 years since the last there was atrazine application to the land surface which provides time for degradation to occur. He also testified that we know the aggregate deposit is excavated and washed and the wash water will go into the settling pond. Atrazine is degraded more when more moisture is present. Washing the aggregate adds water to it and keeps it wet which promotes bacteria (Testimony of January 27, 2017).

b. The Role of Kd: Another Data Gap

i. Evidence of the Appellants

251. In his written evidence, Dr. Howard stated that a key data omission in Exhibit 16 is Kd, the partition coefficient. According to Dr. Howard, the value of Kd dictates the extent to which atrazine (the primary concern here) partitions between the soil and the water. If Kd is extremely high all the atrazine will stay attached to the sediment. If Kd is zero, the atrazine will tend to stay in solution. It's a crucial parameter that can be very difficult to establish reliably: (1) Kd will vary across the site by orders of magnitude depending on the organic content of the sediment. Where the organic content of the soil is zero, the Kd is likely close to zero; (2) In a single sample Kd may vary considerably as a function of the soil and water atrazine content, especially as concentrations increase. It is not safe to assume that the sorption isotherms are linear (i.e. K is constant). Many isotherms follow Freundlich and Langmuir relationships; (3) Kd is certainly not a value one finds in a book and applies to the site as a whole; (4) right now, we have no reliable values of sediment organic content across the site, no batch tests, and no reliable values for Kd; i.e. no means of reliably estimating how much contaminant is likely to partition into the water (Exhibit 13, Tab 3, page 2).

252. In his written evidence responding to Mr. Bulman's dismissal of Kd as not that important in this particular case (Exhibit 41, Tab 15, page 44), Dr. Howard stated that to dismiss the importance of Kd is to seriously over simplify the potential magnitude of the problem. Kd is important because it is the dominant control on the extent to which organic chemicals adsorbed on to sediment will transfer to pore water, thereby contaminating it (Exhibit 13, Tab 4, page 5).

253. In examination in chief, Dr. Howard testified that a very valuable piece of information missing from the site is a parameter called Kd. It is mentioned in Exhibit 16 on page 12. Its usefulness is explained in Part 5.4 of Exhibit 16. But it is never determined in Exhibit 16. We don't have any values for Kd. Kd is a distribution or partition coefficient. It's a measure of the degree to which an organic chemical prefers to stay on a solid phase and attach itself to, for example, organic material, or prefers to go into solution. It is typically obtained by experiment by putting the chemical in solution, adding it to the sediment, shake it up for 48 hours, then measuring the degree to which the chemical has gone from solution and attached to sediment. In the equation, S represents the mass that attaches to the solid phase, C represents the amount that goes into solution (water). We hopefully get a straight line which allows us to determine the slope of the line called Kd. When we have a very steep slope, Kd is high and it means that we get high concentrations on the solid and very low concentrations on the water. When we have very low slopes, low Kd values, we get very high values in solution but fairly low amounts in the solid. We talk about chemicals which have very high Kd values as hydrophobic - they don't like water. And atrazine falls into that category of being hydrophobic, moderately so, and generally prefers to attach itself. Understanding the degree to which we expect atrazine on the site depends on values of Kd as acknowledged in the report but we don't have calculations or tests to determine this crucial value in

Exhibit 16. K_d is also important because when one carries out a batch test, the line starts out straight but they often do funny things when you increase the concentrations, commonly they flatten off. The slope changes and K_d is not a constant but depends on how much material we have. So it's another reason to carry out batch tests to determine this sort of behaviour. When it flattens off, now we're saying that the amount absorbed on the solid is constant and we can start to dissolve the chemical to the solubility in water which for atrazine is very high. So to be able to reasonably understand what the fate of the atrazine on site is, we need a few of these values and we don't have that information. One other important reason for K_d is that it allows us to calculate a retardation factor [discussed above]. K_d has been introduced in Exhibit 16 but glossed over (Testimony of January 9, 2017; Exhibit 13, Tab 2, page 2).

254. In examination in chief, Dr. Howard testified that batch test involve taking samples in the field and dividing them up and determine their masses. They're done in a batch and you add different concentrations of your chemicals to your solution. You put them on a rack and they shake for 24 hours and then you measure how much chemical you have left behind in solution. Typically, it may be all gone, or certainly reduced. What's gone has transferred to the solid. We determine these relationships and it allows us to understand to what extent the chemicals will be transferred to the water. This is all about understanding whether we have a problem or not. If you have a high K_d , it's virtually irreversible and is so hydrophobic it wants to stay in the soil and will not detach from the organic matter. There are no batch tests in Exhibit 16 (Testimony of January 9, 2017).

255. In examination in chief, Dr. Howard also testified that at a February 2015 stakeholders meeting he briefly explained the role of K_d and indicated that without that value, it is very difficult to determine the extent to which atrazine will transfer itself to water (Testimony of January 9, 2017).

256. In examination in chief, Dr. Howard also testified that in response to Exhibit 60, Tab 1, para 3.9 (Mr. Murphy's comments) Dr. Howard was concerned that CRA were adopting a constant value of K_d ; assuming linearity which is only appropriate at low concentrations. Dr. Howard's concern was that at higher concentrations, we may get significant change in the direction of the slope and an assumption of linearity will break down when the concentrations increase. Dr. Howard would argue that we're not dealing with dilute solutions in the scenario where we have all the clean sand and gravel gone and just have the potentially pesticide-rich fines left on site (Testimony of January 9, 2017; Exhibit 13, Witness Statement, page 4, para 13(ii), bullet 2).

257. In examination in chief, Dr. Howard also testified that in response to Exhibit 17, Tab 1, para 3.7 (Mr. Guoth's comments) Dr. Howard stated Mr. Guoth indicates that a number of analyses have been conducted for the ability of the sediments to adsorb but there are relatively few analyses. He suggests the values are very low, but I've seen much lower values in Ontario, an order of magnitude lower. I'd like to see some K_d values. At the levels Mr. Guoth is suggesting, the level of pesticide could still be of concern. Total organic carbon data is a very inexpensive analysis to do and it would have been useful to have many more analyses of that nature in Exhibit 16 (Testimony of January 9, 2017).

258. In cross-examination, Dr. Howard testified that the German articles in Exhibit 13 do not relate to his concern with aggregate washing although they do give an example of a Kd value which is significant. The basis of his concern with aggregate washing is that the washing process will ensure we achieve equilibrium between how much atrazine stays on the solid and how much stays in solution. Kd controls this equilibrium relationship, controls the amount of adsorption and desorption (Testimony of January 10, 2017).

259. In cross-examination, Dr. Howard testified that aggregate washing will not change the Kd on site but it will change the Kd to the extent that the material that's left behind will have a much higher concentration of organic matter and therefore Dr. Howard would expect to find a higher value of Kd, a steeper slope (Testimony of January 10, 2017).

260. In cross-examination, Dr. Howard also testified that the value of Kd tends to be directly proportional to the amount of organic material we have. The higher the organic matter, the higher value of Kd we'll get. The washing process will allow us to achieve equilibrium with whatever material left behind and the Kd they have. Aggregate washing will affect the Kd because we end up with a higher organic material which leads to a higher Kd. The higher the value of Kd, the more that will adsorb onto the material. We will have a steeper slope. Our problem is, we may have a steeper slope, but at this stage we don't have the first idea how much material we're dealing with, whether we're here on the ground or somewhere up there, because we don't have data we can rely on. Field measurements, not monitoring, will help obtain that information if measured at the appropriate detection level. With a higher Kd you have more adsorbing, but not necessarily less going into the water because we don't know our starting point. We'll have higher organic content but also higher concentration of atrazine because we've concentrated it on the remaining sediment. When you monitor the sediment, those numbers would be apparent if done appropriately at the right levels. This is what ECA Condition 4.8 was all about; to ensure that the monitoring and sampling are appropriate for the levels of atrazine that we have, which we don't know right now (Testimony of January 10, 2017).

261. In cross-examination, Dr. Howard also testified that the linear relationship he explained in examination in chief can swing all sorts of ways but the most common is to increase linearity and then flatten out completely. Whether it happens for atrazine, Dr. Howard does not know. The graph in Dr. Howard's Exhibit 13, Tab 2, page 3 is not for atrazine. The graph is just illustrative of the thousands of organic compounds that are out there. Dr. Howard was just illustrating the non-linearity that occurs with organic compounds in general. (Testimony of January 10, 2017).

262. In cross-examination, Dr. Howard also testified that Kd can be approximated, but the linearity can break down as soon as the concentration is increased. If you had the KOC [organic carbon partition coefficient], and the FOC [fraction of organic carbon], you could estimate it if you had both of them. Often you start with the KOW [octanol-water partition coefficient] and then you can convert it to a KOC value and there are

relationships for that, and you can estimate Kd from that (Testimony of January 10, 2017).

263. In cross-examination, Dr. Howard testified that: (1) he has spent a lot of time doing Kd values and batch tests for organic chemicals but not specifically for atrazine; (2) he has done a little bit of a literature search on what the Kd values are for atrazine but those values depend on the organic carbon content, as one might expect, and since we know the organic carbon content is so variable then Kd would be very variable; and (3) you can estimate the value of Kd at very, very low concentrations and you have to be wary of extending it because Kd can vary as a function of organic carbon content (Testimony of January 10, 2017).

ii. Evidence of the Directors

264. In his written evidence, Mr. Bulman stated that: (1) there are numerous methods to calculate the partition coefficient and each is expected to produce different results; (2) Kd is often determined on small samples in batch tests; and (3) it is a difficult parameter to determine. In this particular case, according to Mr. Bulman, Kd is not that important. What is important is that there were a low number of samples in which pesticides were found above their detection limits, none with respect to atrazine in soils (Exhibit 41, Tab 15, page 44).

iii. Evidence of the Instrument Holder

265. In the written evidence of Mr. Murphy, he stated that: “Based on the widespread and ongoing nature of agricultural practices in the area, the present groundwater concentrations can reasonably be characterized as being in general equilibrium and an indicator of the soil concentrations in the granular overburden above the water table” (Exhibit 16, page 12).

266. In his evidence in chief, Mr. Murphy testified with respect to the issue of Kd by referring to Exhibit 16 on page 12, where he presented equations that describe the adsorption behaviour and provide the relationship between a soil concentration and a groundwater concentration. Kd is the function of the soil and the chemical, in this case atrazine. This reflects the behaviour of these hydrophobic organic compounds. Hydrophobic means is not a water loving thing. Atrazine has some hydrophobic tendencies so it partitions between the soil and water but part of it doesn't want to be in the water so it sticks to something in the soil that is more hydrophobic. To go further we have to talk more about molecules but for this discussion, atrazine tends to be associated with soil. In any mixture of soil and water, some atrazine will be dissolved in water and some will be attached to soil molecules, particularly the organic carbon. The Kd is a factor that describes this partitioning behaviour. The concern is when you wash the aggregate and concentrate the fines down into a smaller volume, we're down to 3-4%, Mr. Murphy testified that Dr. Howard made some comments when we wash aggregate and concentrate the fines down to 2-4% of the outwash deposits, you are concentrating the atrazine by a 25 times concentration factor. What happens is we're concentrating any

material that's adsorbed that is concentrated by a factor of 25 times. The adsorption potential is increasing by that same factor because the adsorption coefficient is proportional to the fines content. If the fines are being concentrated by 25, and the organic carbon is being concentrated by 25, the adsorption coefficient is being concentrated by 25 times. Using the equations on page 12 of Exhibit 16, if we take any number for this relationship and multiply the soil concentration by 25 and the K_d by 25, the groundwater concentration does not vary. Although we're concentrating the potential atrazine, we're also concentrating the adsorption potential and fraction of organic material and the equilibrium does not change. Therefore, washing of aggregate is not going to cause an appreciable change in the concentration of atrazine presenting the water (Testimony of January 27, 2017).

267. In examination in chief, Mr. Murphy testified in reference to Dr. Howard's, witness statement (Exhibit 13, Tab 2, page 2 bottom), where Dr. Howard discusses adsorption and the isotherms and Exhibit 18, that Dr. Howard raised a concern that CRA was assuming a linear adsorption isotherm for that relationship and he said we should only use that at low concentrations. We've encountered no atrazine in soil, only in groundwater, and the highest measured concentration is $0.35\mu\text{g/L}$ with atrazine, and atrazine and desethyl, and that's a low concentration range. Mr. Murphy testified that Dr. Howard did point out that his graph at Exhibit 13, Tab 2, page 3) was a generic example but going to the literature, we find that atrazine isotherms are typically described as either linear or Freundlich in nature but close to linear. If you look at page 2 of Tab 2 of Exhibit 13, if $n=1$ it's a linear relationship but in the literature we're seeing numbers close to 1 so it's described as linear. Mr. Murphy testified that he did not find any literature that says atrazine behaves in a Langmuir relationship. Referring to page 3 of Exhibit 13, Tab 2, Mr. Murphy testified that we see a line that goes up at a 45 degree angle and the top right has the equation. That's the linear isotherm. The Freundlich bends depending on the exponent. If we had an exponent of 1.5 instead of 1, that's the kind of line we'd expect. It's not quite a straight line, there's a bit of a bend. You can also do an exponent of .5, the bottom line in the graph at page 3, and it is fairly close to linear. The line is pretty close to linear when we have an exponent of 1. Dr. Howard may have mis-spoke because he referenced the line that's curved as a Freundlich isotherm but it's the Langmuir. This explains that with respect to atrazine it is quite reasonable to treat it as a linear isotherm because the concentrations are very low, which Dr. Howard agreed with, and also when it is at higher concentrations, it would still be a Freundlich relationship. Mr. Murphy also testified that as we change the soil or the fines concentration of any atrazine that might be there, the partition coefficient changes in a linear relationship so the groundwater concentration associated with that material would stay the same as in the sand and gravel (Testimony of January 30, 2017).

268. In cross-examination, Mr. Murphy testified that K_d describes the degree to which a chemical, such as atrazine, adsorbs to soil and to water; it is the partition coefficient between the two of them. He further agreed that batch testing is one of the means of determining partitioning coefficients from an empirical basis but he did not measure the K_d value of atrazine at the Paris Pit site by performing a batch test. He agreed with Dr. Howard's evidence that if you know the K_d value of atrazine then you can calculate the

equilibrium concentration; that that is the purpose of the partitioning coefficient. He agreed that his, Mr. Murphy's, approach in this case has been not to measure Kd at this site using a batch test, as recommended by Dr. Howard, but to assume based on the literature that it is linear because the literature indicates that linear is a good approximation. Mr. Murphy disagreed with the proposition that to the extent atrazine is hydrophobic and adsorbs to soil that the sediment from the washing process poses a threat to groundwater when it is spread on the site as part of the rehabilitation process one meter above the water table. He agreed that he and Dr. Howard are in disagreement on that point (February 1, 2017).

269. In cross-examination, Mr. Murphy testified that he disagreed that to the extent atrazine partitions to water during the washing process due to a lower organic content in the sediment (organic carbon average of 0.1% derived from 16 samples), that there was the threat to groundwater from the potential of atrazine to leak out the bottom of the "allegedly sealed" settling pond at a rate of 98 L/m stating instead that he does not believe that there's a threat to groundwater from the potential atrazine that's in the material being washed and the fines being accumulated. The fines are where the adsorption potential is and that's not being removed through the washing process. He did agree that this is an area of disagreement between himself and both Dr. Howard and Mr. Malcolm (Testimony of February 1, 2017).

270. In re-examination, Mr. Murphy testified that the most common means of calculating Kd is to base it on published literature and what regulatory agencies produce on it. CRA used site specific fractions of 15 plus 1 duplicate organic carbon values. That is a normal way to do an assessment (Testimony of February 1, 2017).

c. Calculations Performed

271. In the written evidence of Dr. Howard he stated that in an effort to alleviate concerns about the potential release of herbicides to water during the sediment washing process, CRA performed various hypothetical calculations in Section 5.4 of Exhibit 16. In the professional opinion of Dr. Howard these calculations are over-simplistic at best and simply inappropriate at worst. CRA's "conservative" analyses of potential impact involved a mass balance approach and ignored the role of sorption. CRA seems to miss the point as to where and how the greatest threat to groundwater can be expected to occur. The CRA study does nothing to instill any confidence that sediment operations at the site will be safe from a groundwater quality perspective (Exhibit 13, Tab 2, pages 2-3). The evidence on the issue of calculations performed is reviewed below.

i. Mass Balance Calculation Performed by Dufferin on Atrazine

(A) Evidence of the Appellants

272. In his witness statement, Dr. Howard summarized the problems with the first mass balance calculation performed by CRA on behalf of Dufferin as follows:

- The first CRA analysis considered groundwater flow through the wash pond area over a thirty-year period and concluded that concentrations of atrazine would remain significantly below the Ontario Drinking Water Quality Standards (“ODWQS”) by a safety factor of 11 or more. However, this analysis was seriously flawed because it used groundwater quality determined under “natural” or “pre-quarry” conditions as a basis for predicting groundwater quality following thirty years of severe sediment disturbance (Exhibit 13, Witness Statement, para 13(ii), 1st bullet page 5).

273. In his examination in chief, Dr. Howard testified that the first calculation performed by CRA described in the report is a mass balance calculation. However, in Dr. Howard’s professional opinion it is not a mass balance calculation because we don’t have any idea about the mass we have on the site of these various chemicals. To do a mass balance you have to balance masses and if you don’t know what mass you have and where it is then you cannot do a mass balance. But they performed a calculation which is quite difficult to understand. It assumes the average concentration of groundwater is 0.15µg/L. This was correctly calculated in terms of the number of samples collected at the site, but it could not be representative of the site because it’s collected beneath the site. This is quite important because at this stage since we have no idea about retardation and there is still speculation about whether there is atrazine in the soil zone, and how far and quickly it’s moved, what we don’t know is whether the atrazine released at the surface has even found its way into the groundwater to any extent. When we take a groundwater sample, the sample is only partially representative of what has happened in the past few years and can be influenced by older water which could be perfectly clean. However, you can find representative water in the soil’s pores contained within the spaces in the unsaturated zone above the water table. If in fact there are significant levels of atrazine above the water table in the unsaturated zone, then we will find higher levels of atrazine in the waters in those areas. In Europe they sample that area but it is not done here. At the Paris Pit site, we have samples done below the site [the aquifer] but no way to determine if they are representative of the site [in the unsaturated zone] (Testimony of January 9, 2017).

(B) Evidence of the Instrument Holder

274. In examination in chief, Mr. Murphy testified that to try to quantify what the effect of aggregate washing may be on the atrazine presence that is out there somewhere, he wanted to do a screening calculation to assess is there a potential for this to concentrate within the washing process. Commonly we do these to make conservative assumptions and if we get a pass on the answer from those assumptions then we know we have a conservative answer. If we don’t pass, then we need to look at it more closely because it may be that our assumptions were overly conservative. In this case, in Exhibit 16, I did a simple calculation to assess the potential of an issue being created, with a future average concentration increase from washing. The result using the average concentration of 0.15µg/L was 26 times lower than the ODWQS (Exhibit 16, pages 12-13). If he used the highest detected concentration of 0.35µg/L it still resulted in a

concentration 11 times lower than the ODWQS. Mr. Murphy regarded that as a very simple analysis but one that indicated that the water concentrations will be well below the ODWQS for atrazine. If we re-do those calculations using the erratum, the concentrations drop further and even the detected values are lower than previously factored into the calculations. It becomes 36 times lower than the ODWQS. If we do the same calculation for glyphosate, we get an even bigger safety factor relative to the ODWQS. He looked at the calculations and they indicated there was not a high presence of concentrations. This makes sense when we look at the washing process and what is happening there. We're not fundamentally altering the fine grain materials, we're sorting the fine grain materials out from the coarse grain materials and it's the fine grain materials that have the organic carbon associated with them which is what the atrazine is adsorbing to. We're concentrating the adsorption capacity of the aggregate deposits as it concentrates in those fines. Those calculations were done to provide an assessment of the potential for an issue. They indicate there aren't concentrations of concern likely to be developed and those calculations are still conservative because they don't factor in that atrazine application has stopped at the site or that there's degradation occurring so the concentrations present are continuing to decline over time (Testimony of January 27, 2017).

275. In cross-examination, Mr. Murphy agreed that the statement at Exhibit 16, page 12, last paragraph, which reads: "The current groundwater conditions, (concentrations) reflect the natural washing of any herbicides or pesticides from the soil by infiltrating precipitation" represents the aquifer and is the water he used for his first mass balance calculation. He further agreed that the statement at Exhibit 16, page 12, next to last paragraph, which reads: "...the present groundwater concentration can reasonably be characterized as being in general equilibrium and an indicator of the soil concentrations in the granular overburden above the water table" represents the water in the unsaturated zone above the water table and is not the water Mr. Murphy used for his first calculation. It is the unsaturated zone where all of Mr. Murphy's soil testing has been done (and has not detected atrazine). The water Mr. Murphy used for his calculation is not in contact with the unsaturated zone (Testimony of February 1, 2017; Exhibit 16, page 12; Exhibit 67).

276. Mr. Murphy testified in cross-examination that he understands that Dr. Howard characterized Mr. Murphy's calculation as "seriously flawed" because: (1) Mr. Murphy used the wrong water on which to base his calculation; (2) the water in the aquifer is not representative of water in the unsaturated zone and the water to be used during the aggregate washing operations; and (3) Mr. Murphy should have used pore water (defined as water in the pore spaces above the water table or water contained in pores in soil in the unsaturated zone). Mr. Murphy agreed that this is another area of disagreement between himself and Dr. Howard (Testimony of February 1, 2017).

ii. Mass Balance Calculation Not Performed by Dufferin on Atrazine

(A) Evidence of the Appellants

277. In his witness statement, Dr. Howard summarized the problems with the second mass balance calculation performed by CRA on behalf of Dufferin as follows:

- A second CRA mass balance analysis estimated glyphosate concentrations in the wash water if all the aggregate from the sediment in the course of one year were to have the highest concentration CRA observed in its sampling. CRA found that this concentration was below (marginally) the IMAC for glyphosate;
- However, what was significant was that one-third of the samples analyzed had method detection limits such that all of them could have had glyphosate concentrations 100 times higher than the maximum used in the CRA calculation without being detected. A more comprehensive, better designed CRA investigation would have very likely revealed glyphosate values considerably higher than the one CRA used in its analysis. As a result, the safety margin determined by CRA for glyphosate cannot be considered adequate;
- Furthermore, CRA did not carry out a comparable analysis for atrazine. Calculations performed by Dr. Howard suggest that atrazine concentrations in the wash water could be many times higher than the ODWQS (Exhibit 13, Witness Statement, para 13(ii), page 5, last 3 bullets).

278. In his report, Dr. Howard discussed this in greater detail:

“Most significant is the fact that a comparable analysis was not carried [out by CRA] for atrazine [as was done for glyphosate]. When a similar calculation is made [the one by Dr. Howard] using a soil atrazine level of 0.009mg/kg (which is not unreasonably high given that this value lies below the 0.01mg/kg method detection limit for atrazine), the concentration of atrazine in the wash water is found to be 0.135mg/L, or 135µg/L. This concentration exceeds the ODWQS of 135µg/L by a factor of 25. Very clearly, sediment atrazine analyses involving method detection limits of 0.01mg/kg are completely inadequate for the task being undertaken by CRA.

Another way to consider this very serious problem is that a dry sediment sample with a porosity of 25% and a mass of 2kg would have a volume of about 1 litre. With a method detection limit of 0.01mg/kg, the 2kg sample could contain up to 0.02mg (20µg) which is at the very limit of detection. Under conditions of saturation, the 1 litre sample of sediment would contain 250ml of water. If the atrazine present at the lowest level of detection were to be transferred to the water, it would have a concentration of 80µg/L, which is 16 times the ODWQS of 5µg/L. Even a partial transfer due to sorption effects would be significant. Again this demonstrates the inadequacy of the data and the method detection limits adopted” (Exhibit 13, Tab 2, page 4).

279. In examination in chief, Dr. Howard elaborated regarding the second calculation found at Exhibit 16, page 13. He testified that the calculation was performed for

glyphosate and conservatively estimated as described by CRA. CRA took the amount of material that is going to be washed, assumed it has a glyphosate concentration of 0.0094mg/kg, which was the highest of three detections of glyphosate in soil, and then they know the mass of aggregate they have washed at 598,000 tonnes, and they know the mass of glyphosate they have, and then they assume its transferred to 40,000L of wash water that has been used over a one year period. The value they come up with for glyphosate is a concentration of 0.14mg/L. The first thing to note is CRA suggest 0.14mg/L is significantly less than the interim maximum acceptable concentration of 0.28. But 0.14 to 0.28 is not a significant difference; only 50% away from the limit. One needs to also remember that out of the 29 samples of which 0.0094 was the highest, 9 of those samples had a detection limit of 1mg/L. In other words, those 9 test pit samples, particularly those closer to the topsoil, could have 100 times more than the value they actually used and not be detected, making 0.14mg/L even more worrying (Testimony of January 9, 2017).

280. In examination in chief, Dr. Howard testified that out of curiosity, he revised the calculation using the approach that CRA suggested by taking the 29 samples and where he had a detection, where the measurement was below the detection limit, he used half that value. So because he had 9 samples with a detection limit of 1mg/L, he used 0.5 instead of 1. He had 17 samples which had a detection limit of 0.05 so he assumed 0.0025 for those 17 samples. And then he took the 3 measured values above the detection limit 0.005, 0.0066 and 0.0094 and when you determine the average glyphosate concentration based on that approach, he have a concentration in the sediment of 157µg/kg or 0.157mg/kg which is 17 times higher than the maximum value used in the CRA calculation. The concentration we'd get in the water is 2.34mg/L if it's transferred, which is 8 times the standard and not half the standard which was calculated by CRA (Testimony of January 9, 2017).

281. In examination in chief, Dr. Howard further testified that interestingly, CRA chose not to do a similar calculation for atrazine. Therefore, Dr. Howard carried one out, which is in his report (Exhibit 13, Tab 2, page 4, second para). Dr. Howard decided to calculate what the value would be in atrazine if all his 24 soil samples were marginally below the detection limit of 0.01mg/kg and used 0.009mg/kg. He went through exactly the same calculation, transferring the atrazine to the water and the concentration was 0.135mg/L which is 135µg/L which is in excess of the ODWQS of 5µg/L by a factor of about 25. As Dr. Howard indicated earlier in his testimony, to deal with just below the detection limit, he used an extra conservative number just below the detection limit. He used the approach CRA used and suggested that if you're below the detection limit, use the value halfway between the detection limit and zero. Therefore, Dr. Howard also calculated using an average value for atrazine 24 samples, 9 with detection limits of 0.020 and 15 with detection limits of 0.010. So he used 0.010 for the 9 samples, and 0.005 for the 15 samples. That calculation showed the average was a little bit lower at 0.007mg/kg and transferring to water would be 104µg/L as opposed to 135µg/L but still 20 times the ODWQS. Dr. Howard further testified that it is possible according to Kd that 90% of the chemical would prefer to stay on the soil and not go into solution but we don't have a Kd value. Our problem is not having good quality data to do these calculations. If

we had measurements at low enough detection limits, we would have much more reliable estimates of the concentrations we're dealing with. We would have either a real value or a value halfway between 0 and a much smaller detection limit. Right now, based on the few number of samples we have and the detection limits, there remains a risk that we have significant quantities of pesticides including atrazine in these materials at levels which could transfer to the water in significant quantities which would exceed the ODWQS but we can't measure them because our detection limits have not been stringent enough (Testimony of January 9, 2017).

282. In examination in chief, Dr. Howard also testified that Mr. Bulman at Exhibit 38, para 144 stated that calculations were not conducted by CRA on atrazine because it wasn't detected in soil at the Paris Pit site. However, it was Dr. Howard's opinion that ignoring atrazine doesn't mean there's no atrazine on site. CRA should have used the midway point of zero and the detection limit as per their own approach at Exhibit 16, page 13, footnote 3 ("average calculated using one-half detection limit for non-detect samples") (Testimony of January 9, 2017).

283. In examination in chief, Dr. Howard agreed with Mr. Murphy's comment (Exhibit 60, Tab 1, para 3.7) that CRA did a number of calculations, and in a number of cases they were conservative. Unfortunately, in the opinion of Dr. Howard CRA didn't perform the calculations for atrazine that it did for glyphosate. When you're working with such a limited dataset, you can come up with all sorts of numbers (Testimony of January 9, 2017).

(B) Evidence of the Directors

284. In examination in chief, Mr. Bulman gave evidence regarding Dr. Howard's calculations that suggest hypothetically imagining that everything is just below the detection limit at .009mg/kg. Mr. Bulman said it's a realistic assumption in view of the point Dr. Howard was trying to make, but Mr. Bulman does not think the numbers are that high because in the undetected there would likely be a range of detections some at 0.009mg/kg, others would be less. He, Mr. Bulman, could make the assumption that it is half the detection limit. In actual fact there's probably a distribution and we don't know the distribution of sample concentrations in the overburden (Testimony of January 16, 2017).

285. In examination in chief, Mr. Bulman also testified that in his opinion Dr. Howard's hypothetical calculation that assumed all of the atrazine would be desorbed is not likely to be actual because a paper by Wang found that desorption coefficients are less than the adsorption coefficients. Therefore, it is unlikely to come off as easily as it comes on. It is harder to get them off than it is to get them on (Testimony of January 16, 2017).

286. In cross-examination, and with respect to Exhibit 38, paragraph 143, which states that CRA did not perform a comparable calculation for atrazine because no atrazine was detected in the solid matrix samples collected, Mr. Bulman agreed that non-detect does

not mean zero; just that it wasn't detected. It could be zero but it depends on the detection limit. He also agreed that you would want to investigate if it's not zero as far as you need to go to determine if it is present because you would be worried about health effects when looking at soil and groundwater. He also agreed that it's important to look for atrazine at the right detection level (Testimony of January 17, 2017).

(C) Evidence of the Instrument Holder

287. In examination in chief, it was the testimony of Mr. Murphy that Dr. Howard's calculations regarding assumptions in the face of non-detect values are the only calculations in evidence that show a potential for concern. Mr. Murphy's evidence is that Dr. Howard's calculations are not reliable. They're dependent on assumptions about non-detect values. For atrazine, we have no detections in soils at or above the detection limit. So there is no basis for assuming we have a level just below the detection limit. We just don't know what level, if any, we have for atrazine in soil. When it's above the detection limit we know we have a presence. When we look at the groundwater concentrations we have, it would suggest a soil concentration orders of magnitude below the groundwater concentrations so using half the detection limit is not appropriate. When we go to the glyphosate calculation, Mr. Murphy testified that Dr. Howard calculated elevated levels of glyphosate but they were artificially inflated by the assumptions he made on detection limits and CRA wouldn't normally use those assumptions. Referring to Exhibit 16, Table 4.1, the first page, Mr. Murphy testified that there are soil sample results for the test pit samples and the bottom line of data is the glyphosate concentration and the values are less than 1mg/kg and that was the detection limit for the original analytical work on glyphosate. On page 2 of Table 4.1 we see soil concentration data from the investigations of the boreholes. We see detected values of .005 and .0066, and the remaining values are less than .005. We obtained detections 200 times lower than the test pit investigations in the boreholes. The highest detected value is .0094 on page 3, and then page 4, the last 2 boreholes we drilled and the detection limit was .005mg/kg. What we have is a number of borehole samples that are less than .005 or 3 values a little bit above that, and then 9 results from the test pits where the detection limit was 1. In this case, we can see that the earlier detection limits from the test pits are quite elevated than the actual presence. However, in Dr. Howard's calculations he used the assumption of half the detection limit but he included the test pit samples with a detection limit of 1 even though those detection limits are far above the rest of the limits and far above any value found (Testimony of January 30, 2017).

288. In examination in chief, Mr. Murphy further testified that Dr. Howard used 0.5mg/kg for each of the 9 test pit results into the average, which is a value far above the highest measured concentration. When Dr. Howard worked through his calculation he ended up with 94% of the mass of glyphosate being present as a result of the elevated detection limits. It provides a very high bias to those calculations. If we do that calculation and recognize that the rest of the data indicates there are not concentrations at half the detection limit, we end up with an average soil concentration of .0031mg/kg versus Dr. Howard's value of 0.157mg/kg. The average is 50 times lower than the results calculated by Dr. Howard and 6 times lower than the ODWQS and a third lower than in Exhibit 16. Mr. Murphy testified that even this result is conservative as it doesn't

consider the degradation of glyphosate that would continue to occur (Testimony of January 30, 2017).

289. In cross-examination, Mr. Murphy testified that the reason he did not perform a similar calculation on atrazine as the one he did for glyphosate is because there have been no positive detections for atrazine in soil above the detection limit he used. He further testified that using the assumption he did in footnote 3 regarding the first calculation of calculating the average using one-half the detection limit for non-detect samples could not be used where there have been no detections for atrazine above the detection limit in soils. The assumption Dr. Howard called precautionary Mr. Murphy characterized as extremely conservative and may be misleading because the groundwater concentrations we have for atrazine do not indicate high levels of concentrations in soil (Testimony of February 1, 2017).

d. WellHead Protection Areas: Capture Zone Expansion

i. Evidence of the Appellants

290. The evidence and examination in chief of Dr. Howard identified the locations and high vulnerability of the Gilbert and Telfer wellhead protection areas (“WHPAs”) and their general proximity to the Paris Pit site. He testified that the WHPAs (marked in yellow) are where discharge is likely to end up in the wells usually determined by a modeling exercise. He noted that there is overlap onto the site in general but where much of the activity will take place is between the two WHPAs (marked in white). The source pond, located to the extreme south, above that a recirculation pond, a settling pond, and wash plant are where the activities related to the washing of the aggregate material will take place (Testimony of January 9, 2017; Exhibit 13, Tab 8, page 2; Tab 19; and Exhibit 14 being a blowup of Tab 19).

291. In cross-examination, Dr. Howard testified that the colours on, for example, Exhibit 13, Tabs 8 and 19, are an indication of the time of travel for a water particle to reach the municipal well under those particular pumping conditions. The yellow area (on Tab 8) represents the 5-year time of travel to the well. Outside the yellow area is the 25-year time of travel period to the wells. If something lies outside the 25-year time of travel, it means that any contaminant or particle of groundwater that were to flow to the Telfer well would take more than 25 years. That is the theory but in practice we’ve learned that contaminants, like in Walkerton, move much more quickly than that. Dr. Howard also testified that where the 5-year and 25-year line merge to form the 1-year line, that means the water outside of that line does not flow toward Gilbert providing the lines on the map are correct. While Dr. Howard has no information to the contrary specific to this he testified that we know these lines are not set in stone. They help planning and they change on whatever wells happen to be pumping. The WHPAs grow and shrink. They are dynamic. They are very convenient for planning purposes, but we have to be careful because they do move around. While there is nothing in the water policies that preclude one from putting any land use outside of the yellow lines, it’s practical as a hydrogeologist to know these lines are dynamic. He agreed these areas are

probably larger than they actually are because of the current pumping, so they are more conservative (Testimony of January 9, 2017).

292. In cross-examination, Dr. Howard also testified that if you had a hypothetical water molecule at the 25-year line for the WHPA, with a retardation factor of 2.3, the water would take 25 years to get to the Telfer well and atrazine would take 57 years. But there is a very wide range for values. Using a retardation factor range of 1 to 10 the atrazine would take between 25 and 250 years to get to the Telfer well, assuming it's coming from that point. If we have a large store of atrazine sitting in the top soil, and that top soil is sitting over the aquifer that is delivering water to the Telfer well, it could also mean that water is moving from the topsoil zone to the water zone. It may be we're waiting for a period of 25 years or more before it gets to the soil zone from the water zone to the well. In a general sense, it also applies in a vertical sense and that's why the concern remains that the atrazine that's been applied is still above the water table and could move slowly as a function of that retardation factor. If the retardation factor is 10, then it could be a very good reason why the atrazine has still not reached the aquifer (Testimony of January 10, 2017).

ii. Evidence of the Directors

293. In examination in chief, Mr. Bulman testified that the 25-year WHPA line on Exhibit 37 means that in 25 years time in future pumping rates that will be the capture zone for the water. So if you're on the purple line, a molecule of water takes in theory 25 years to get to the well. The lines are calculated by running a model and coming up with an answer and to account for uncertainties in the analysis, they move the boundaries. As a safety factor, and to be more conservative, they increase the zone 20% and rotate it 5 degrees (Testimony of January 16, 2017).

294. In cross-examination, Mr. Bulman testified that the capture zone: (1) defines the area that contributes groundwater to the wells; and (2) represents a balance between water getting into the zone and what comes out at the wells. He also agreed that when you change pumping rates the WHPA lines change. If you increase pumping in a well the capture zone grows. If you decrease pumping in a well the capture zone gets smaller. If you stop pumping in a well the capture zone disappears (Testimony of January 17, 2017).

295. In cross-examination, Mr. Bulman agreed that Grand River Conservation Source Protection Area Approved Assessment Report Exhibit 47 stands for the proposition that the 20 per cent increase was added to account for uncertainty in the hydraulic characteristics of the aquifer system supplying water to the well (Testimony of January 17, 2017; Exhibit 47, page 14-10).

296. In cross-examination, Mr. Bulman agreed that if you were to keep pumping at a well constant, but in a particular year recharge became smaller (due to less precipitation from dry or drought conditions that year), the capture zone would get larger because it must draw water from further out than normal. He also agreed that generally, speaking if

you were to cut recharge in half in a particular year, the area of the capture zone would increase. He did not know whether it would double (Testimony of January 17, 2017).

297. In cross-examination Mr. Bulman, in response to the question was the ECA approved in the belief that the WHPA lines cannot grow beneath the wash pond area (i.e. settling pond and recirculation cell areas in the white zone on Exhibit 37), testified that he did not consider it. The official government position on the WHPA is that those lines are fixed on paper. But he agreed that we know they do move. He testified further that a model under drought conditions was not done but if, under a drought scenario, the WHPA increases it will be underneath the source water pond, the recirculation and settling ponds. If there's water going through then it will go down towards the groundwater. He also agreed that if the capture zone can grow that means that it could include the source pond-wash plant-settling pond recirculation pond area. The settling ponds sit above the groundwater table with the sediment and with some water in it as the fines settle out, then it goes into the recirculation pond and there will be some percolation through the bottom of the ponds. He agreed at the rate of 98 L/m (based on Exhibit 41, Tab 7, page 29). Anything on the water can be drawn as a result of the capture zone through into the groundwater table, including anything coming out of the bottom of the settling pond, anything in solution in the water, including atrazine, which he said was possible (Testimony of January 17, 2017).

298. In re-examination, Mr. Bulman testified that there is no realistic drought scenario in which the current capture zone lines could move under the settling pond system (Testimony of January 18, 2017).

iii. Evidence of the Instrument Holder

299. In examination in chief, Mr. Murphy testified that the WHPAs are so much bigger than the current capture zone. In this watershed, they applied a safety factor to this so they calculated what would be the capture zones then expanded them out 20% and they did some rotation on it a bit with the intent of making the WHPA sufficiently broad and to ensure a high level of protection for water supplies. Considering the 20% factor, the safety factor moves it about 100m. It's good to understand it to recognize what is built into the WHPA (Testimony of January 27, 2017).

300. In examination in chief, Mr. Murphy testified that there's no pathway to the municipal wellfields from the source pond area. We have pink lines as current capture zones under current pumping rates which come nowhere close to the site, and the conservative WHPA and safety factor and the settling pond are still outside of that area. The leakage rates are not very high and won't overcome the regional groundwater flow pattern and force water to go back uphill to the Gilbert well field. We also talked about the overlapping WHPA lines for WHPA c and d meaning over time water doesn't come from further away, it's the ultimate capture zone that occurs there. Telfer is over 1km away and still well outside the WHPA lines. So there is no pathway to the municipal wells (Testimony of January 30, 2017).

301. In cross-examination, Mr. Murphy agreed that portions of the site are within the WHPA. Portions of it are highly vulnerable. With respect to Exhibit 13, Tab 8, the high vulnerability score for the municipal wells within the WHPA is a 10, the highest score possible, and that vulnerability score is due to water quality concerns (Testimony of February 1, 2017).

302. In cross-examination, Mr. Murphy agreed that a high recharge rate is only possible with lots of rain or snow melt and that no precipitation means a reduced recharge. He also agreed that he did not model, or do a sensitivity analysis involving, a drought scenario for this case. The sensitivity analyses that he did do were for dry periods (recharge rate of 250mm/year), but he does not consider a recharge rate of 250mm/year to represent a drought (February 1, 2017).

e. Conclusions

303. Overall, the evidence demonstrated significant disagreement between the experts on whether aggregate washing will create conditions that would encourage significant transfer of adsorbed chemicals to groundwater at this site. Dr. Howard says it will. Mr. Murphy denies it. Dr. Howard says the sediment coming from the wash process will have atrazine concentrations orders of magnitude greater than that in the original, pre-washed, sediment. Mr. Murphy denies it.

304. Dr. Howard says a crucial piece of data, K_d , is lacking for this site for determining much of this and the extent to which atrazine partitions between soil and water. Dr. Howard says you need batch tests to determine K_d , not a literature search because K_d can vary across the site by orders of magnitude depending on things like the organic content of the sediment. Therefore, according to Dr. Howard, you need those K_d values and the organic content values for across the site. Mr. Murphy concedes that no batch testing was done for this site but says relying on general published literature and 15 organic carbon values (plus one duplicate) from Phase 1 is sufficient. Dr. Howard says it isn't.

305. Dr. Howard also characterizes the calculations performed by Mr. Murphy on the potential effect of aggregate washing on groundwater concentrations as seriously flawed (e.g. CRA's use of water in the aquifer, instead of pore water from the unsaturated zone in the first calculation, and; failure to undertake any calculation at all for atrazine in the second calculation). Mr. Murphy says Dr. Howard's second calculation is not precautionary but rather is extremely conservative and may be completely misleading, though he is curiously silent on Dr. Howard's critique of Mr. Murphy's first calculation, other than saying he disagrees.

306. Dr. Howard identified where the aggregate washing activities are located (within the white zone between the two WHPAs on Exhibit 14 or Exhibit 13, Tabs 8 or 19) and the fact that the WHPA time of travel lines are dynamic, they grow and shrink. Mr. Murphy says there's no pathway to the municipal wells, but acknowledges that less precipitation reduces recharge, and that he did no drought scenario modeling for this

case. Mr. Bulman says a drought scenario would reduce recharge and increase the capture zone because municipal wells must draw water from further out than normal. He also says that if, under a drought scenario, the WHPA increases it will be underneath the source water pond, the recirculation and settling ponds. He also says that anything on the water can be drawn as a result of the capture zone through the groundwater table, including anything coming out of the bottom of the settling pond, anything in solution in the water, including possibly atrazine. In re-examination, he resiled from some of the admissions he gave in cross-examination, particularly when he says that there is no realistic drought scenario in which the current capture zone lines could move under the settling pond system. On this last point, CCOB is obligated to submit that Mr. Bulman was not qualified as a groundwater modeler and there has been no drought scenario modeled in this case that could tell us realistically how far, or in which direction, the WHPA time of travel lines could expand under circumstances of drought. It is a gap in the evidence that does not support the position of the Directors or Dufferin.

307. Interestingly, the Directors take on all of the other issues respecting aggregate washing is illuminating. Mr. Bulman is confident that there will be no adverse environmental impacts resulting from aggregate washing at this site based on benchmarks like: (1) one atrazine detection in groundwater at the site; and (2) no detections of atrazine in soil, to name just two grounds for his confidence. However, we now know that groundwater detections of atrazine are plentiful; 60-75% of the samples taken showed positive from every groundwater monitoring well monitored on the site. Furthermore, given the problems in the soil detection limits and other methods connected with the soils investigation program relied on by the Directors and conducted by the Instrument Holder, it is neither precautionary, nor prudent, to assume there is no atrazine in the soils of the Paris Pit.

308. Another key point about the position of the Directors is that Mr. Bulman says that Kd is often determined using batch tests, a view that is consistent with the evidence of Dr. Howard, but contrary to that of Mr. Murphy who says using the published literature and 15 organic carbon samples is the “normal way to do the assessment”. CCOB agrees with Mr. Bulman on this point. However, CCOB parts company from Mr. Bulman’s position when he adds that Kd is not important, and that what is important is the low number of samples at the site in which atrazine was found above detection limits in groundwater, and not found at all in soil.

309. A further point about the position of the Directors is that in the context of the calculations performed, according to Mr. Bulman, non-detect does not mean zero; just that it wasn’t detected. It could be zero but it depends on the detection limit. He also agreed that you would want to investigate if it’s not zero as far as you need to go to determine if it is present because you would be worried about health effects when looking at soil and groundwater. In CCOB’s submission, that view more closely accords with the evidence of Dr. Howard than that of Mr. Murphy.

310. In CCOB’s submission, the questions that should be asked are:

- To the extent atrazine is hydrophobic and adsorbs to soil, will the sediment from the washing process pose a threat to groundwater when it is stockpiled and later spread on the site as part of progressive and final rehabilitation of the site one meter above the water table; and
- To the extent atrazine partitions to water during the aggregate washing process due to a lower organic carbon content in the sediment, is there a threat to groundwater from the potential of atrazine to leak out the bottom of the “sealed” settling pond at a rate of 98 liters per minute, and over 140,000 liters per day, as reviewed more fully below.

311. In CCOB’s further submission, these two questions, based on the evidence, should be answered in the affirmative. Accordingly, they lead CCOB to the conditions that are the subject of the ECA appeal set out below.

7. Conclusions

312. This review of the evidence addressed atrazine in soil and groundwater and the impact of aggregate washing. When the evidence with respect to each of these issues is considered in its totality, CCOB submits that it demonstrates the accuracy of the testimony of Dr. Howard set out at paragraph 61, above. Without repeating the above submissions CCOB urge the Tribunal to again consider our concluding submissions found at paragraphs 77, 82-83, 90, 110-113, 139-140, 173, 205-206, 237, 303-311. Furthermore, these conclusions lead to, and provide a foundation for, CCOB’s evidence on the adequacy of the ECA conditions that are the subject of this appeal.

C. Conditions under Appeal - ECA

1. Introduction

313. The ECA conditions that are the subject matter of the appeal are: (1) Condition 4.8; and Condition 5.

314. The Leave Decision stated that Condition 4.8 does not specify future uses of sediment for on-site rehabilitation (Appendix C – Leave Decision, para 119). In its findings on Condition 4.8, the Leave Panel stated that: “Condition 4.8 provides that after sediment in the settlement pond is analyzed, ‘the Director and Owner shall discuss suitable uses for the sediment for on-site rehabilitation’. Details of the rehabilitation plan therefore remain to be determined, which would make a full assessment of the cumulative effects of the ECA impossible to determine at this time. While it may be reasonable for the ECA to allow the testing of the sediments to be done before determining the appropriate uses for it in the rehabilitation plan, the ECA currently leaves this discretion in the hands of the Director and Owner at the time (which CCOB notes may or may not be Dufferin). It would be more appropriate, for example, to include in the ECA a condition that if the sediment is found to contain unacceptable levels of pesticides, it shall not be used for on-site rehabilitation. This would provide more assurance that cumulative effects of the ECA will not include the possibility of allowing concentrated levels of

pesticides, if any are found, to pose a risk to the surface and ground water in the area. Without such assurance, it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have effectively applied a cumulative effects analysis in issuing the ECA when the ultimate use of the sediment in the site rehabilitation remains to be determined decades in the future” (Appendix C to CCOB Final Argument – Leave Decision, para 79).

315. The Leave Decision stated that Condition 5 of the ECA (Contingency and Pollution Prevention Plan) is not available and will only be subjected to scrutiny by the MOECC and the Proponent, after the instruments are granted. It further stated that the ECA Contingency and Pollution Prevention Plan does not contain a trigger mechanism (Appendix C to CCOB Final Argument – Leave Decision, para 119). In its findings the Leave Decision stated that: “[110]The Directors and Dufferin repeat in several places in their submissions that significant monitoring requirements have been added that, if any of the possible risks do materialize, they can be dealt with by a...Contingency and Pollution Prevention Plan (ECA). However, there are no specific objectives for the various components of the monitoring program. Dufferin’s argument that the overall context of the instruments creates the objective of environmental protection too vague to provide the kind of information required for adaptive management. [111] Of greater concern is the fact that these contingency plans have not yet been received or reviewed by MOECC even though several years of analysis and consultations have occurred since these instruments were first applied for. The...Contingency and Pollution Prevention Plan in the ECA must be prepared (but not reviewed or approved by the MOECC) prior to commencement of operation of the sewage works (ECA Condition 5). The ECA does not include a trigger mechanism for the Contingency and Pollution and Prevention Plan...[t]he ECA Plan will [not] be subjected to consideration, analysis and comment by CCOB, the County or other interested stakeholders. Without knowing what is in the Contingency Plan..., for example, it is not clear whether it will be possible to take appropriate measures in the event the kinds of environmental risks of concern to the parties do materialize....” The Leave Decision then quotes and discusses the applicability of the *Guelph* decision to the case at bar and then states: “[112] In this case, the Tribunal finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have granted:...the ECA without seeing, assessing, making available for public comment as part of the consultation, and approving the Contingency and Pollution Prevention Plan, and requiring a trigger mechanism for that Plan (Appendix C to CCOB Final Argument – Leave Decision, paras 110-112).

316. The Leave Decision also states, with respect to the ECA: “The Tribunal finds that, given its findings in relation to the first branch of the test, there are informational gaps in relation to the ECA, caused by the inadequacy of specific conditions. If as a result of the ECA there are negative effects on the water quality or quantity of this aquifer in a highly vulnerable wellhead protection area, and as a result on the drinking water supply of the County, City and others, it is clear that the decision to issue the ECA appears to be a

decision that could result in significant harm to the environment” (Appendix C to CCOB Final Argument – Leave Decision, para 131).

317. A review of the evidence in connection with the ECA conditions that are the subject matter of the appeal follows.

2. Overall Conclusions of the Witnesses

a. Evidence of the Appellants

318. Mr. David Malcolm has been a professional engineer, principal, and President of Malroz Engineering, Kingston, Ontario since 1989 when the firm was established. He also has expertise as a contaminant hydrogeologist having practiced for over 35 years in that capacity. He has a B.Sc. in geological engineering and an M.Sc. in environmental engineering with a specialization in hydrogeology from Queen’s University. He has been licensed as a professional engineer by the Professional Engineers of Ontario since 1988. He also has been certified by the Province of Ontario (MOECC) as a Qualified Person in respect of environmental site assessments and risk assessments since 2005. Mr. Malcolm’s professional focus has been on environmental site assessments, soil and groundwater monitoring, remediation projects, remedial monitoring programs, investigations and compliance issues, as well as management of a number of risk assessments and wellhead protection studies. He has been involved with a number of aggregate studies both below and above groundwater. His first involvement with a sand and gravel project was in 1978 in the Yukon. He was also involved in gravel testing and quality control during the paving of the Alaska Highway. He has been involved in a number of water taking applications, some municipal water takings, some for remedial programs, and some for dewatering for construction. He has implemented trigger plans with respect to ECA waste disposal sites. He has also been involved in a number of sewage and waste management facility projects. He has previously been qualified to give opinion evidence before the Ontario Municipal Board in 2011 in a case involving contaminant hydrogeology specifically in the context of contamination of a drinking water supply. Mr. Malcolm was qualified to give opinion evidence in the areas of engineering and hydrogeology (Testimony of January 10, 2017; Exhibit 20, Tab 1). He has been responsible for at least 2 ECA trigger plans in connection with waste disposal facilities (Testimony of January 11, 2017).

319. It was the professional opinion of Mr. Malcolm that the ECA conditions that are the subject of the appeal and the documents in support contained data gaps, unresolved methodologies, and outstanding information requirements. The ECA contains terms that include operations, maintenance, testing, contingencies, and reporting. Mr. Malcolm reviewed the Contingency and Pollution Prevention Plan (“CPPP”) for the ECA despite only having received it shortly before having to file his evidence with the Tribunal. His initial conclusions were that the CPPP was not adequate for the protection of current and future users of the aquifer. In his professional opinion, the conditions under appeal imposed by the Directors in granting the ECA are not sufficiently detailed so as to reasonably assess, prevent, adapt to, mitigate, or otherwise manage the impact from the

sewage works. Given the high vulnerability of the aquifer to pollution, and the rapid movement of contaminants through the shallow aquifer, and the reliance of municipal and private takers for the water, it is imperative, according to Mr. Malcolm, that these details be developed before the ECA conditions under appeal are approved by the Tribunal. Mr. Malcolm was also of the opinion that the documentation provided by CRH and the Directors does not establish that the ECA conditions under appeal will prevent adverse environmental impacts, or that such impacts can be properly monitored or mitigated in the circumstances (Testimony of January 10, 2017; Exhibit 20, Tab 3, pages 12-13).

b. Evidence of the Directors

320. It was the overall opinion of Mr. Bulman that the ECA is protective of the natural environment and other users, particularly because it contained a number of firsts including: (1) a recirculation cell within the aggregate wash cycle; (2) precautionary sampling of sediment and wash water for pesticides in an aggregate operation; and (3) the inclusion of pesticide standards from jurisdictions outside Ontario within an ECA (Exhibit 38, para 146).

321. Mr. Adedoyin Adenowo is a licensed professional engineer in the Province of Ontario and is a senior review engineer (wastewater) MOECC Environmental Approvals Branch, where he has been employed since 2010. He routinely reviews semi-complex ECA applications for industrial, municipal, and private sewage works. He has a chemical engineering degree from Obafemi Awolowo University, Ile-Ife, Nigeria, a masters of science degree in human ecology from Vrije Universiteit Brussel, Brussels, Belgium, and a certificate in project management from Humber College in Toronto, Ontario (Exhibit 39, paras 1-2).

322. Mr. Adenowo drafted the ECA and recommended it for approval to Director Pannu, based on input from Mr. Bulman, on groundwater matters, Sarah Day, a surface water specialist, as well as on his own engineering review of the sewage works (Exhibit 39, paras 19-23, 27). He regards the ECA monitoring conditions relating to pesticides to be a first of their kind in Ontario relating to a pit or quarry (Exhibit 39, para 24). He recommended that Condition 5 be included in the ECA to ensure CRH would have in place a plan to address potential spills of fuels, but such a plan does not require MOECC approval (Exhibit 39, paras 39-41).

c. Evidence of the Instrument Holder

323. It was the evidence of Mr. Murphy that granting the ECA will not result in environmental harm and that the ECA conditions for sampling, analysis, and evaluation of sediment collected in the settling pond are suitably precautionary and protective to ensure the protection of water resources relative to the approved aggregate washing activities (Exhibit 60, Tab 1, paras 2.1, 7.2).

324. It was the evidence of Mr. Guoth that the sampling and monitoring requirements with respect to pesticides and herbicides in the ECA are onerous for a typical sand and gravel pit operation such as the Paris Pit and reflects a precautionary approach (Exhibit 17, Tab 1, para 5.1).

3. Condition 4.8: Use of Sediment On-Site is Unclear

a. Problems with the ECA Condition as Drafted

i. Evidence of the Appellants

325. In his written evidence, Mr. Malcolm noted what the Leave Panel had to say about Condition 4.8: that it does not specify future uses of sediment for on-site rehabilitation. He also noted in his written material that the sediment should be adequately characterized to assess its suitability for various uses on-site or proper off-site disposal if it is defined as a waste. In examination in chief, Mr. Malcolm testified that he agreed with the Leave Panel and that in order to specify what uses are available, one needs to completely characterize the sediment or soils and whether they are potentially contaminated with atrazine (Testimony of January 11, 2017; Exhibit 20, Tab 3, page 11).

326. In his examination in chief, Dr. Howard explained that the adequacy of sampling is relevant because, in simple terms, good knowledge of the site is what drives how monitoring should be undertaken, how rigorous and frequent the monitoring should be. It doesn't matter what type of site it is, monitoring is always driven by an understanding of what is on the site, what may be mobilized, and what sort of levels we may expect, potentially contaminant levels, in the water that leaves the site. Essentially, it is background information to the conditions that need to be put in the ECA, particularly Condition 4.8 of the ECA. It was Dr. Howard's testimony that his work fundamentally recognized a problem that Mr. Malcolm has a solution to (Testimony of January 9, 2017).

327. In his written evidence, Dr. Howard indicated that the ECA Schedule A incorporation by reference of what is now Exhibit 16, in light of his foregoing comments, was of concern to him and that it was his opinion that Condition 4.8 may be undermined to the extent it is dependent on Exhibit 16. In his examination in chief, he testified that he was concerned that a condition based on Exhibit 16 may not be sufficiently rigorous (Exhibit 13, Witness Statement, page 7, para 15; Testimony of January 9, 2017).

328. In his examination in chief, Dr. Howard also disagreed with Mr. Murphy's statement (found at Exhibit 60, Tab 1, para 3.8), noting that Mr. Murphy seems to believe that the conclusions of the investigation can be verified by sample analysis afterwards when we finalize the conditions of the ECA. As far as Dr. Howard is concerned, how we actually do the sampling and perform the analysis depend on what we have on site. Until we know that, it is difficult to know what kind of sampling needs to be carried out and the analysis. We're at the reactive stage rather than the proactive stage (Testimony of January 9, 2017).

ii. Evidence of the Directors

329. In examination in chief, Mr. Bulman testified that the function of Condition 4.8 is that it is meant to be a trigger. The company samples the sediment before using it on on-site rehabilitation they come and talk to the MOECC before they use it on on-site. Under the ARA site plans it says they will use it for on-site rehabilitation. Mr. Bulman wanted to ensure that if there was atrazine that the MOECC would know about it and some actions would happen depending on the level of atrazine in those sediments (Testimony of January 16, 2017).

iii. Evidence of the Instrument Holder

330. It was the evidence of Mr. Murphy in examination in chief that condition 4.8 of the ECA pertains to the fines coming out of the aggregate washing operation, not the topsoil. We need to look at what gives us a representation of the aggregate washing and what may be associated with it (Testimony of January 30, 2017).

b. Scope of the Problem

i. Evidence of the Appellants

331. In his written evidence, Mr. Malcolm stated that Condition 4.8 of the ECA does not specify future uses of sediment for on-site rehabilitation. However, it is particularly important to properly characterize sediment at the site because if contaminated with atrazine, and/or other pesticides, the quantity of such atrazine-contaminated sediment could be considerable. CRH estimates 2-4% of the 600,000 tonnes of aggregate processed at the wash plant every year will contain silt and clay-sized particles (from what is now Exhibit 41, Tab 13, page 15). Mr. Malcolm noted in his written evidence that Dr. Howard identifies these as the materials atrazine would adsorb to. This represents 12,000 to 24,000 tonnes per year, or 384,000 to 768,000 tonnes over 32 years (the pit operation lifespan), of potentially atrazine-contaminated sediment stock-piled and/or being spread on the site for rehabilitation purposes. A quantity of atrazine-contaminated sediment of this magnitude would present a serious issue as to whether it could be properly managed on-site, or would require off-site disposal. In his testimony during examination in chief, Mr. Malcolm testified that we are talking about a large volume of sediment at the Paris Pit site. Managing it will be a significant task and Dufferin is proposing to progressively rehabilitate the site by putting the sediment back on the site and then putting the topsoil on top of it so they can return the site to agricultural use. That will all be occurring as close as 1 meter to the water table (Testimony of January 11, 2017; Exhibit 20, Witness Statement, page 10, para 20(i), 1st bullet; and Tab 3, page 11).

332. In examination in chief, Mr. Malcolm explained his purpose in including Tabs 4 and 5 in Exhibit 20. They address a new policy with expected regulations in 2018 for excess soil management. Tab 5 is the policy framework that the MOECC has developed. What this does is put more emphasis on the source of the soils to ensure that the soils being taken off site are being moved and tested and meet conditions of the site where

they'll be deposited. Referring to Tab 4 on page 8, consideration for pits and quarries... the second sentence states: "owners are encouraged to design and implement a fill management plan. [as described in the Tab 4 description of best management practices] to facilitate transition from pit/quarry operation through to rehabilitation to a future land use". This is a policy that is currently being developed and the direction the MOECC is going with respect to movement of soils and contaminated soils. There is a final version of Tab 5 which came out in December 2016 but doesn't change the version we have (Testimony of January 11, 2017).

333. In examination in chief, Mr. Malcolm also testified that the wording revision to Condition 4.8 that the Director supports ("No sediment shall be used on Site for rehabilitation without complying with all applicable laws in place at the time of reuse" – from Exhibit 39, para 35) partially addresses his concern but does not address the stockpiling of the materials on site nor does it consider the large volumes of sediment that will be generated. If, as Dr. Howard says, these materials could be concentrated with atrazine then we've got a large volume of soil that we may or may not be able to manage properly (Testimony of January 11, 2017).

334. Mr. Malcolm also testified in chief that in reviewing Mr. Adenowo's witness statement he noted that Mr. Adenowo indicated that Mr. Bulman believes that it's unlikely pesticides would be concentrated in the wash and believes Conditions 4.6-4.8 would be effective. Mr. Malcolm added that Mr. Adenowo goes on to say that if the sediment has pesticide concentrations that result in it not qualifying as inert fill, the sediment would have to be disposed of as waste rather than be used for on-site rehabilitation. Mr. Malcolm says inert fill is not the standard Mr. Bulman wants to apply but agricultural clean up standards from Alberta (discussed below). It was Mr. Malcolm's evidence that clarity is needed from the Directors whether we're looking for inert fill standards or agricultural cleanup standards (Testimony of January 11, 2017).

335. In cross-examination, Mr. Malcolm testified that the question that needs to be asked is whether the sediment from this site will be waste. His assumption in referring to documents such as Tabs 4-7 of Exhibit 20 is that the sediment coming out of the ponds and distributed across the site may be contaminated, based on Dr. Howard's evidence (Testimony of January 12, 2017).

336. In cross-examination, Mr. Malcolm testified that Exhibit 20, Tabs 4 and 5 do not apply but they do encourage a fill management plan. With respect to Tab 4, page 4, Mr. Malcolm testified that excess soil also includes soils that are moved off, stockpiled and then reused on the site. Tab 4 is usually used for construction sites with a large amount of soil. Tab 5 is to the same effect. Mr. Malcolm's purpose in including them in his evidence was to show what some of the best management practices are suggested to be in Ontario. Mr. Malcolm testified that Tab 6 is the determination of groundwater contaminant limits and attenuation zones and is predominantly used for landfill sites. If you go to the policy that's under tab 7, under section 2 it says this document explains the role of the reasonable use approach related to protection of groundwater quality. Mr. Malcolm has used reasonable use on a sewage lagoon that the MOECC accepted so it has applications outside a landfill. The idea here is there's an allowable degradation of the

water. Mr. Malcolm's reliance on these documents is based on the assumption that the sediment coming out of the ponds and distributed across the site may be contaminated, based on Dr. Howard's evidence. He is not suggesting that an ECA for waste is required for this site at this time (Testimony of January 12, 2017).

ii. Evidence of the Directors

337. In his written evidence, Mr. Adenowo indicated that he relied on Mr. Bulman's opinion that it is unlikely that pesticides will become concentrated in the wash sediment, but noted that Mr. Bulman also proposed Conditions 4.6-4.8 addressing sediment sampling as a protective measure. Mr. Adenowo's witness statement goes on to say that if, the sediment is found to have concentrations of pesticides that indicate that the sediment does not qualify as inert fill within the meaning of O. Reg. 347 (EPA) – i.e. earth or rock fill or waste of a similar nature that contains no putrescible materials or soluble or decomposable chemical substances” – then the sediment would likely have to be treated as waste and disposed of appropriately rather than used for on-site rehabilitation (Exhibit 39, paras 32-33).

338. In his witness statement Mr. Adenowo indicated that a sewage works ECA is required for the aggregate washing system because the water used to wash the aggregate is considered sewage (Exhibit 39, para 5). In cross-examination, Mr. Adenowo testified that the sediment in the proposed sewage works is sewage because it will be disposed of on land and, therefore, would require a groundwater impact assessment. If MOECC determined the sewage is waste it would have to be taken off-site (Testimony of January 18, 2017; Exhibit 48, page 57).

iii. Evidence of the Instrument Holder

339. In examination in chief, Mr. Guoth testified that Tabs 4-5 of Exhibit 20 do not have any relevance to the use of this material on site because when you look at the definition for excess soil at Tab 5, page 3 it's quite clear it applies to excess material generated at a construction site or a site being redeveloped. It also refers to material being moved on or off the property. In particular, when you look at the last sentence it says soil remaining in a project site is not considered excess soil (Testimony of January 24, 2017).

340. In cross-examination, Mr. Murphy testified that with respect to Condition 4.8 shipping sediment offsite is not a small decision to make due to the large volume of material involved and would have implications for site rehabilitation, which would then trigger other concerns. Bringing in clean fill would be one way to deal with it, which isn't simple as it would require a site plan amendment. He indicated there is a lot of concern in the community about bringing fill to sites. He agreed there's concern about the sediment on site as well (Testimony of February 1, 2017).

c. Need for New Science Risk Assessment

341. In his written evidence, Mr. Malcolm stated that he disagreed with the ECA's reliance on, and the MOECC rationale for, the use of Alberta and Nova Scotia sediment standards for evaluating sediment samples at this site [found at Exhibit 41, Tab 15, section 10.3-page 40 and section 13.0, page 45] because: (1) while MOECC indicated that there is no Ontario standard for atrazine under O. Reg. 153/04 of the *Environmental Protection Act (EPA)*, Mr. Malcolm suggested that section 43(1) of the regulation could be used to develop a standard using a new science risk assessment⁹; and (2) MOECC identified a detection limit for atrazine + metabolites [Exhibit 41, Tab 15, Table 10] that exceeded the referenced Alberta agricultural land use standard MOECC suggests using, thereby raising the question of what are the appropriate management/regulatory actions that should follow detection that exceeds the limits (Exhibit 20, Witness Statement, page 10, para 20(i), bullet 2; and Tab 3, page 12).

342. Therefore, based on the lack of generic Ontario standards for soil and groundwater, Mr. Malcolm recommended that a new science risk assessment under the *EPA* be employed to properly set standards, implement appropriate laboratory detection limits, and develop risk management measures, so that surplus soils from the washing process can be properly managed, including the use of off-site disposal (Exhibit 20, Witness Statement, page 10, para 20(i), bullet 3; and Tab 3, page 12).

343. A review of the evidence on this issue follows.

i. Alberta-Nova Scotia Guidelines Do Not Apply

(A) Evidence of the Appellants

344. In examination in chief, Mr. Malcolm testified that at this stage the important consideration is to make sure we have the appropriate standards. What level of contamination of atrazine will be safe, if any, and if standards are not stringent enough because they are not appropriate, then we have an issue of contamination of ground water. The Directors have suggested the use of standards from Alberta and Nova Scotia. Mr. Malcolm is not sure those are appropriate (Testimony of January 11, 2017).

345. In examination in chief, Mr. Malcolm testified that he did not feel the guidelines from Alberta and Nova Scotia are appropriate for the Paris Pit site. We have a site in a WHPA, considered by the Grand River Conservation Authority as having a 10 vulnerability, which is highly vulnerable, before Dufferin will mine the sand and gravel

⁹ Section 43 says that where there is no applicable standard in Ontario's standards for soil, groundwater, and sediment for a contaminant that has been detected on, in or under a property a new science risk assessment ("NSRA") may be submitted to the Director, if the owner or qualified person is of the opinion that an NSRA is necessary in order to complete a record of site condition. Section 9 of Schedule C states that a risk assessment is an NSRA if (1) there is a contaminant of concern identified during a Phase two environmental site assessment for which there is no applicable site condition standard, and (2) the property owner chooses to develop a standard by undertaking a quantitative analysis for human health and the environment, or adopts a standard from a credible agency.

above the water table. Mr. Malcolm does not think that the Alberta and Nova Scotia guidelines contemplate a site such as we have here. If the sediment is contaminated with atrazine, we need a standard that is appropriate (Testimony of January 11, 2017).

346. Referring to Exhibit 26 (page 32), the Alberta Remediation Guidelines, Mr. Malcolm testified in chief that these are the standards Mr. Bulman has suggested be used at the Paris Pit site. Under section 5.1.6, of Exhibit 26 the title is “Conditions Where Tier 1 Guidelines Are Not Applicable”. It says “Some examples of situations where Tier 1 guidelines are not applicable are highlighted below. These situations must be addressed through the Tier 2 process”, which Mr. Malcolm testified is the Alberta process for a risk assessment. One of the conditions where the guidelines are not applicable is where there is a stagnant water body. Mr. Malcolm indicated that Exhibit 26 defines stagnant water body as a water body without a significant outflow. He indicated that the Paris Pit site has one of those on-site; the existing large pond. Referring to Exhibit 41, Tab 7, last 2 pages (MMM letter to Mr. Murphy, dated March 6, 2013), Mr. Malcolm noted that the authors stated that the aquatic habitat is a closed system with no inflowing or outflowing watercourses. This, according to the evidence of Mr. Malcolm, is consistent with the Alberta groundwater flow to stagnant waters without significant outflow prohibition and would on its own disqualify the use of the Tier 1 Alberta guidelines (Testimony of January 11, 2017).

347. In examination in chief, Mr. Malcolm also referred to another part in the Alberta guidelines (Exhibit 26, page 34) where Exhibit 26 says the Tier 1 guidelines are not applicable. The guidelines apply when the source of groundwater contamination is 3m deep, 10m wide, with a length of 10m parallel to the direction of groundwater flow. That’s the size of their contaminant zone. If the contaminant zone is greater than 10m in the direction of groundwater flow, Exhibit 26 says the only way Alberta would accept applying the guidelines is if the total volume of contaminant soils or sediments is less than 300 cubic meters. If it doesn’t pass that test then they state that a Tier 2 risk assessment must be done. With respect to the progressive rehabilitation across the site, it could be more than 10m in length in the direction of groundwater flow, and based on the CRA estimate of the amount of sediment present at the site (Exhibit 41, Tab 13, page 15) it will be 15,000 cubic meters. Mr. Malcolm also testified that Mr. Bulman, in his analysis (Exhibit 41, Tab 15), indicated that there are Nova Scotia standards for atrazine in soils, but not for atrazine plus metabolites (Testimony of January 11, 2017).

348. In his examination in chief, Mr. Malcolm elaborated on his second concern with the MOECC reliance on the Alberta guidelines [see Exhibit 20, Tab 3, page 12, item 4(c)], which is in respect of the detection limits identified in Mr. Bulman’s Exhibit 41, Tab 15, Table 10, page 46 that he proposes to use in conjunction with Exhibit 26]. Referring to Table 10, Mr. Malcolm testified that if we look at the atrazine desethyl and atrazine metabolites, Mr. Bulman identified no standard or value for Nova Scotia. The value he suggested for Alberta of 0.01mg/kg unfortunately we have a detection limit of less than 0.02mg/kg. Therefore, Mr. Bulman is proposing the use of a method detection limit that is higher than the Alberta standard he proposes using so how will we know if we exceed the standard or not. Mr. Malcolm testified that what would be the appropriate

regulatory management actions required in a case like this were not addressed in ECA condition 4.8 (January 11, 2017).

349. In cross-examination, Mr. Malcolm agreed that the existing pond is connected to the groundwater, which is what MMM said. The groundwater goes in and out (Testimony of January 11, 2017)..

350. In cross-examination, Mr. Malcolm agreed that both Alberta and Nova Scotia Environment are credible agencies (Testimony of January 12, 2017).

351. In cross-examination, Mr. Malcolm agreed that the Alberta Tier 1 guidelines are designed to deal with remediation. The tables give benchmarks on what you are allowed to leave in place when cleaning a site and what has to be remediated. ECA Condition 4.8 says the results of the sediment samples shall be compared to the lower of the standards for the parameters in Condition 4.7 to those set out in the Alberta and Nova Scotia guidelines. These are the numbers to be used as a comparison to what's in the sediment samples. If the sediment samples exceed these standards I don't expect they'll be allowed to stay on site. If I read the witness statement of Mr. Adenowo, he has said if the sediment exceeds inert levels, it will be disposed of elsewhere. Condition 4.8 says that is what the monitoring has to be compared to and there's clarification in the witness statement. Looking at Condition 4.8, that would be like an initial screening and there'd be further discussions and that was one of the Leave Panel's questions, what does that mean. With reference to Exhibit 26, page 20, Mr. Malcolm testified that you could be risking a lot by assuming the Alberta Tier 1 standard is what you're going to benchmark against (Testimony of January 12, 2017).

352. In re-examination, Mr. Malcolm testified that in regard to the existing pond in the no extraction area, where the groundwater goes in and out that that the characterization would be consistent with what the Alberta guidelines (Exhibit 26, page 32) calls a stagnant water body. They're looking for no outflow vis a vis significant surface runoff (Testimony of January 12, 2017).

(B) Evidence of the Directors

353. In cross-examination, Mr. Bulman agreed that the only justification his use of the Alberta and Nova Scotia guidelines he recommended for adoption in the ECA was on page 45 of tab 15, of Exhibit 41. That is the sum of his analysis as to why the Alberta and Nova Scotia guidelines should be used. He needed a number. There was concern expressed about pesticides in the sediment and he needed a number to get the company to notify the MOECC if they detected pesticides in the sediments. Otherwise, under the ARA, they're told to use the fines in onsite rehabilitation and he wanted to know whether they had pesticides in them before they used them for rehabilitation (Testimony of January 17, 2017).

354. In cross-examination, Mr. Bulman agreed that in respect of Exhibit 26, page 34, that at the Paris pit site we have a potential source of groundwater contaminant bigger than 10m x 10m x 3m and so you would not be using the Alberta guidelines in Alberta if

your source of groundwater contamination was bigger than that. But he used the guidelines in Ontario at the Paris Pit site because he needed a guideline to get the company to talk to the MOECC if there was a presence above the guidelines.

355. In cross-examination, Mr. Bulman agreed that looking at the second criteria where you can use the guidelines in Alberta (Exhibit 26, page 34) that at the Paris Pit site we have a total potential volume of contaminant source greater than 300 cubic meters, and looking at Exhibit 41, Tab 13, page 15 that the potential contaminant source is 15,000 cubic meters per year of sediment that could potentially be contaminated with atrazine. So potentially the Alberta guidelines are not applicable in these circumstances if we were in Alberta, but he wants to use them in Ontario at the Paris Pit site. He agreed that on the face of the Alberta guidelines prohibition about when not to use these Tier 1 guidelines, these Tier 1 guidelines would not apply in Alberta in circumstances similar to the Paris Pit. He also agreed that they shouldn't apply in Ontario, unless Ontarians should be exposed to what he thinks Albertans should not be exposed to. In defense of his approach he testified that if the atrazine concentration is as high as some people think it is, it will be detected in sediments above that number but agreed that we have also been talking about whether detection will ever occur using the detection limits CRA has been using (Testimony of January 17, 2017).

356. In cross-examination, Mr. Bulman with reference to the Alberta guidelines (Exhibit 26, page 32) and groundwater flow to stagnant water bodies he agreed that this is another circumstance where the Alberta Tier I guidelines are not meant to be applied if you have a stagnant water body as defined by these guidelines. You would have to go to Tier II risk assessment. In this regard, he agreed that with respect to Exhibit 41, Tab 7 next to last page in Tab 7 (MMM letter) regarding the existing on site pond that the 2nd paragraph, 2nd sentence, which states that the aquatic habitat is a closed system with no inflowing or outflowing watercourses meets the definition of a stagnant water body under the Alberta guidelines and that this is a second reason not to apply the guidelines in similar circumstances in Alberta if that site was there but he wants to apply them in Ontario at the Paris Pit site (Testimony of January 17, 2017).

357. In re-examination, Mr. Bulman stated that based on Exhibit 41, Tab 17, page 2 (MOECC memo), which states: "The upper unconfined aquifer is hydraulically connected to the surface water features where groundwater discharges to those features from the northwest and reinfilters along the southeast side of the on-site pond" and Exhibit 41, Tab 21, page 7 (MMM letter), which states: "This pond is a permanent system receiving water contributions from surface runoff and confirmed groundwater source springs present at the northwest end of the pond" this would not make the existing pond a stagnant water body because it has a significant outflow through that soil (Testimony of January 18, 2017).

358. It was the evidence in chief of Craig Fowler (qualified to give opinion evidence in surface water quality and quantity) that with respect to the same above descriptions he would be reluctant to call the existing pond a stagnant water body without a groundwater investigation being completed given that there is inflow and outflow occurring regularly

at the pond (Testimony of January 18, 2017).

(C) Evidence of the Instrument Holder

359. In examination in chief, Mr. Guoth testified that the comparison of the sediment samples to a standard developed in another jurisdiction is quite accepted even with the MOECC. If there isn't a standard, as long as it is from a credible agency, in this case, Alberta that is a credible agency (Testimony of January 24, 2017).

360. In examination in chief, Mr. Murphy testified that he does not consider the pond to be a stagnant pond. If we put that designation into the context of the Alberta guidelines (Exhibit 26) the concern is a situation where you have water draining into a pond and there isn't significant water leaving the pond as a water flow. Such a process might result in anything present in the water as a chemical or contaminant or natural substance getting more concentrated as the water evaporates. When we look at the existing pond, that is not the case. It was evaluated as part of the PTTW application studies because we wanted to know if it was connected to the groundwater flow system. That would determine how it would be affected by the water takings. If it is perched, we wouldn't expect to see any effect on the pond. If we go to Exhibit 41, Tab 7, Figure 3.6 this is a cross-sectional view from west to east across the site and what we have is in the middle of the page is the existing pond. We can go to Figure 3.5 which is the map view of the area and cross-section A is shown on this figure. It crosses the Paris Pit south boundary to the west of the source pond location. Off towards the northeast looking at the figure we can see the Gilbert well field on the west side, then coming east we see up at the very top where the WHPA is marked and just underneath is the extraction area, then we move east to the existing pond and further east we're in the WHPA for Telfer and into the extraction area again. When we look at the existing pond, we've looked at where the geology sits relative to the pond and confirm that the top of the regional till unit is at an elevation that underlies the pond but the outwash sands and gravels are sitting above the till unit and intersect the depth of that existing pond. The green line at the top is the ground surface line where we have the dashed line and the blue below it is where the water table occurs and where it sits in the sand and gravel deposit. The water table in the aquifer area underneath the extraction area is sitting around 244.4m or 244.3m above sea level. When we come to the pond we can see the pond is in the same horizon as the outwash deposits. We can see we've got consistency with the ground water levels, we can see the pond is sitting lower than the groundwater levels on the upgradient but higher than on the downgradient side. We call it a flow through pond, groundwater is coming in one side of the pond, moving through the pond and flowing out the other side of the pond, much like the source pond when it's excavated below the water table. We also have numbers for groundwater seepage into the pond. Exhibit 41, Tab 21, page 7 at s. 5.1.1, the fourth last line says: "This pond is a permanent system receiving water contributions from surface runoff and confirmed groundwater springs present at the northwest end of the pond". At the bottom of the same page, in the last paragraph we can see that flow is present during the March 2012 investigation: "Although the culvert is almost completely blocked with organic debris, flow was present during the March 2012 investigation". If we turn to page 22, there's another observation from MMM group and their investigations of the pond. In the third paragraph on the page under 5.3.1.1 it reads that groundwater upwellings were

observed in the south end of unit 2” and to find out where unit 2 is we have to go to Figure 2 where Q2 is the pond feature and to the southwest of Q2 there’s a small 2e, it’s an area of different vegetation that’s associated with water being present at the surface. Table 1, page 2, on the next page says, with respect to unit 2e, that groundwater upwellings were observed. Those are groundwater upwellings that have been observed by MMM and during the field visit in October 2012 with Bulman and Day. Mr. Murphy also testified that in response to the evidence of Mr. Malcolm, Mr. Murphy double-checked on the water quality data CRA have for the site and looked at total dissolved solids and found that there is no evidence at all of concentrations increasing as a result of evaporation. They are consistent with groundwater evaporations and sometimes they go down when you get precipitation (Testimony of January 27, 2017).

361. In cross-examination, it was Mr. Murphy’s testimony that the statement at Exhibit 41, Tab 21, page 8, last sentence before s. 5.1.2 that reads: “During the September 2012 field investigation, the swale was dry indicating that it only conveys seasonal flow when high water levels are present in the large open water pond feature” is not indicative of a stagnant body of water because this is what Mr. Murphy calls a flow through pond where the primary flow is into and out of the pond. The swale is active during very high water conditions but not year round. Mr. Murphy indicated that a month after this observation, in October 2012, Mr. Bulman, Ms. Day, and Mr. Murphy examined the feature and observed groundwater upwellings flowing into the pond during that time and yet the pond level wasn’t rising so water was leaving that pond as well (Testimony of February 1, 2017).

362. In cross-examination, it was Mr. Murphy agreed that with respect to the statement at Exhibit 41, Tab 21, page 7 under s. 5.1.1.1 that reads: “The large open water pond feature (Figure 1) is approximately 500 m long and ranges in width from 40 to 120m with a detritus/muck substrate”: (1) water flow through the muck/detritus layer would be slower than not having it there and slower than if the layer were sand; (2) muck is fine-grained; and (3) the muck/detritus layer may have the potential to slow down both groundwater inflow and outflow but not to a significant extent (Testimony of February 1, 2017).

ii. Why a New Science Risk Assessment Should Be Conducted

(A) Evidence of the Appellants

363. In his examination in chief, Mr. Malcolm introduced his discussion of O. Reg. 153/04, by indicating that under page 5 in the definitions, it says sewage works qualify as industrial land use and mining and quarrying qualify as industrial land use (Exhibit 20, Tab 8). Mr. Malcolm also explained that Exhibit 20, Tab 9 contains the standards in Ontario for use under Part XV.1 of the *EPA*. On page iii, 9 tables are listed. Each of these tables has about 120 chemicals. If we go through these, we see there are tables for generic standards for potable and non-potable, for shallow soils, subsoils, and surface water bodies. Of all these tables, the one that we could apply is Table 8 for potable water and surface water lying within 30m of the site, or Table 1 which is our background

conditions. Unfortunately, atrazine and atrazine plus metabolites are not included (Exhibit 20, Tab 9).

364. In summary, what Mr. Malcolm suggested is that a new science risk assessment should be conducted that would be tailored to the conditions we have at the Paris Pit site. A new science risk assessment could properly characterize the site and establish a standard that is appropriate for the site characteristics. It would also ensure that the method detection limits are achievable to meet that standard (Testimony of January 11, 2017).

365. In examination in chief, Mr. Malcolm summarized Exhibit 60, Tab 1, paras 7.1-7.3 – Mr. Murphy’s witness statement, which said that a record of site condition was not relevant to ECA activities, and that Condition 4.8 is not a typical ECA condition being more protective than what would otherwise be required for aggregate operations. In response, Mr. Malcolm testified that he was of the view that a record of site condition is required. Referring to O. Reg. 153/04 (Exhibit 20, Tab 8, pages 9-10, part IV Change of Property Use, section 14.2, indicates that a change of use from industrial to agricultural will trigger a record of site condition. Here we have an industrial use, which will soon be progressively rehabilitated to agricultural use (Testimony of January 11, 2017).

366. In examination in chief, Mr. Malcolm summarized Exhibit 17, Tab 1, para 5.2, Mr. Guoth’s witness statement, which said that a record of site condition only applies to a change from less sensitive to more sensitive use, atrazine is not a contaminant of concern, and a new science risk assessment is not warranted. In response, Mr. Malcolm testified that under O. Reg. 153/04, the Paris Pit would qualify as industrial land use now and is in transition to becoming agricultural land use and, therefore, will trigger a record of site condition (s. 14, O. Reg. 153/04). The issue of atrazine not being a contaminant of concern is puzzling because we don’t know if it is sufficiently present enough or at what concentration. Mr. Bulman’s memo to Mr. Adenowo, (Exhibit 41, Tab 15, page 24), shows atrazine highlighted in red in monitoring well MW2-12 for atrazine and atrazine plus metabolites. Monitoring well MW2-12 is just north of the existing pond. It is on site and it is in the area of the wash plant. Though CRA have been unable to verify whether it is in the soil, Mr. Malcolm was puzzled as to why atrazine is not a chemical of concern at the site even if it has not been detected in soils (Testimony of January 11, 2017).

367. In examination in chief, Mr. Malcolm summarized Exhibit 7, paragraph 81, Mr. Chappel’s witness statement, which said a new science risk assessment is inappropriate because the site is not a brownfield site. Mr. Malcolm disagreed because the situation appears to meet all the criteria for a record of site condition, and the use of another agency’s standards may not apply to the Paris Pit site. Mr. Chappel’s other point a new science risk assessment should be undertaken is that there already is an Ontario drinking water standard for atrazine. Mr. Malcolm disagreed on this point as well because there are questions whether this is the right benchmark to use when we may need to also protect aquatic life the guidelines for which are lower (Testimony of January 11, 2017).

368. In examination in chief, Mr. Malcolm summarized Exhibit 38, paras 127-131, Mr. Bulman's witness statement, about why it was appropriate to adopt Nova Scotia and Alberta standards in the absence of any Ontario standards, says a new science risk assessment is not necessary because Alberta and Nova Scotia Environment are credible agencies, and points out that where there is no standard, a property owner can either choose to develop a site specific risk assessment or adopt from a credible agency. Mr. Malcolm disagreed that either Alberta or Nova Scotia standards apply here because they don't consider a highly vulnerable site in a WHPA, there are great doubts Alberta's standards can be applied to this site, and Nova Scotia lacks standards for atrazine metabolites (Testimony of January 11, 2017).

369. In cross-examination, Mr. Malcolm testified that he feels a new science risk assessment is appropriate and should be required because this site is a very unique. The concept comes from O. Reg. 153/04. He agreed that the record of site condition is the document you file with the government that evidences remediation of a contaminated site. A qualified person files it that says I did this work He agreed that no record of site condition is proposed to be filed for this site at this particular time. He agreed that no record of site condition is required to change from agricultural to aggregate use. He agreed that right now it's a gravel pit and will be one for the next many, many years but there is a rehabilitation program and progressive rehabilitation will bring the end use to agricultural, so the site will be going from industrial to agricultural. It is not happening today. Mr. Malcolm's evidence in cross-examination is that when or if the land use changes from aggregate pit to agricultural, he believes a record of site condition will be required. He is aware that a gravel pit is required by law to undertake progressive rehabilitation. He agreed that as you are mining you are rehabilitating. His evidence was we need to know what standards are going to be acceptable to put the sediment back on the land. If we don't have a standard or benchmark to confirm whether the sediments meet the requirements, it will not be clear what will be done with the sediment. His opinion is that a record of site condition is legally required to change from aggregate extraction to agriculture. His evidence was also that the record of site condition has to be in the MOECC's hands and approved when the use becomes agriculture. But he does not know if progressive rehabilitation includes agricultural use or not. His testimony was also that the putting back of topsoil that was on the site for future agricultural use does not constitute agricultural use. If the site is licensed under the ARA but it's used for agricultural purposes, it is not an industrial use, its agricultural use, if it is solely used for agricultural purposes. It's the use that's important and the timing of when that use is going to be in effect. When you start farming the site is when it goes back to agricultural use. He is not aware of any gravel pit in Ontario that has filed a record of site condition to go back to agricultural use. He is also not aware of the government telling them to file one to go back to agriculture. A new science risk assessment is a form of risk assessment and can be done voluntarily or can be required. He has never seen a new science risk assessment required as a condition of any instrument such as an ECA or a PTTW (Testimony of January 12, 2017).

(B) Evidence of the Instrument Holder

370. In examination in chief, Mr. Guoth testified that he is not aware that anyone has asked that a record of site condition be filed for this property, so O. Reg. 153/04 doesn't apply. Progressive rehabilitation does not mean that a change of use to agriculture has occurred because the pit is still operating under its ARA licence and is still considered a sand and gravel pit and he is not aware of progressive rehabilitation requiring a record of site condition. Atrazine is not considered to be a contaminant of concern because there have been no detections of atrazine in soils at the site. He has never been asked to do a risk assessment on something that was non-detect. Risk assessments are only done when you know you have a contaminant above a generic criterion (Testimony of January 24, 2017).

371. In cross-examination, Mr. Guoth did not dispute that based on Exhibit 55, para 6 (Mr. Mitchell's witness statement), which states that the site plans authorize aggregate extraction, and Mr. Mitchell's testimony of January 23, 2017 in connection with Exhibit 57 (excerpt from Brant County Official Plan), that the current land use designation for the site is resource development. Those are the current descriptions for the use of the land on the Paris Pit site. He also agreed that both aggregate extraction and resource development constitute a less sensitive uses than agriculture. He also agrees that progressive and final rehabilitation of the site will be to restore it to an agricultural use eventually. His testimony is that the reason why a new science risk assessment is not necessary is because atrazine has not been detected in soils at the site and you would not be doing a risk assessment on something you cannot detect. But he agreed that that is predicated on the detection limits used by CRA and that if atrazine had been detected in soil then it may end up being a contaminant of concern (Testimony of January 24, 2017).

d. Remedy: Proposed Condition 4.8

372. In examination in chief, Mr. Malcolm summarized his recommendations for amending Condition 4.8 contained in Exhibit 21. Mr. Malcolm's primary recommendation is for the development of a new science risk assessment to ensure that we have adequate characterization of the site, identify receptors and the pathways to these receptors, and establish a standard appropriate for the site. He also testified that proposed Condition 4.8(e) would ensure proper detection limits are developed that will achieve meaningful interpretation of the data. He also testified that a lot of proposed Condition 4.8(c) reflects Dr. Howard's input to ensure we have proper characterization of atrazine and atrazine metabolites. The overall purpose of proposed Condition 4.8 is to ensure that appropriate standards are applied to this sensitive site (Testimony of January 11, 2017).

373. In examination in chief, Mr. Murphy testified that with respect to proposed Condition 4.8 in Exhibit 21 that Condition 4.8(a) and 4.8(b) recommend a new science risk assessment using O. Reg. 153/04 as a basis. Mr. Murphy does believe that's applicable. Regarding Condition 4.8(c) it is re-doing site characterization and analysis. That's clearly not the subject of 4.8 or the leave to appeal. I believe sufficient work has been done to conclude there will not be adverse effects and Condition 4.8 has a separate

purpose. When samples were collected for soil, different horizons were not mixed as has been suggested. With respect to topsoil there were separate samples collected and we have those results available. Proposed Condition 4.8(vi) and (vii) addresses mass balance calculation. If we take atrazine and do a mass balance calculation, we would have to assume how much atrazine is present in the soil concentrations but it would be a calculation using a variety of different assumptions and estimates to try to ascertain a particular concentration. As Mr. Murphy mentioned earlier in his testimony we don't have a detection of atrazine in soil and whatever presence is there would be degrading. Regarding proposed Condition 4.8(d) Mr. Murphy's evidence was that he does understand that O. Reg. 153/04 is applicable or the new science risk assessment provision. Regarding proposed Condition 4.8(e), Mr. Murphy testified that it deals with sampling and analysis of the media and the sampling plan is developed under Condition 4.6 and the analytical requirements are spelled out in Condition 4.7. Regardless, those are aspects that Mr. Murphy would expect to be working out with MOECC prior to carrying out the activity since MOECC has to sign off on it. Regarding Condition 4.8(f), this is the reporting requirement, beyond that it's not a technical matter. Looking at the group of proposed conditions, down through proposed Condition 4.8(i), these are to compare the standards in Condition 4.8 for evaluation and the language in these provisions say that if there is a detection greater than the listed limits it's a violation. Mr. Murphy thinks it's a comparison not a violation. If there are detections, that would engage a discussion with MOECC as to the suitable use of the fines and whether there are other considerations. Dufferin's obligations are to satisfy the various legal requirements. In proposed Condition 4.8(i), which says: "Where detections indicate an exceedance of these standards..." Mr. Murphy testified that he would caution that the provision seems to be jumping to a conclusion. If there are detections then certainly evaluation of that is warranted as to the appropriate use or placement of the sediments but to presume there is a detection above a generic criteria is not grounds to have it shipped offsite to a landfill. That's a lot of material and the ARA license has incorporated the fines into the rehabilitation component so there would be a shortfall of material which may result in having to import material to the site. It's not a small matter to say it should go off-site. Also is there truly a reason for concern. This is material that has come from the site, outside of the WHPA so it's removing pesticide presence from the WHPA and putting it in the wash process and eventually placed back on the ground surface. Surely any risk associated with whatever presence of atrazine will have diminished over that time because of degradation. So I would not presume there is a risk putting that material back onto the land a number of years later (Testimony of January 30, 2017).

e. Conclusions

374. Overall, it is the submission of CCOB that the Leave Panel accurately characterized the problems with Condition 4.8 as drafted. Dr. Howard's and Mr. Malcolm's observations were that complete characterization of the sediments on the site and their potential for contamination with atrazine is necessary and has not been done by Dufferin and is not properly reflected in Condition 4.8. Until that is done you cannot specify uses for the sediment material. So that is the pre-condition for making Condition 4.8 work.

375. Furthermore, it is Mr. Malcolm's un-contradicted evidence that the quantities of potentially atrazine contaminated sediment on this site as a result of the washing process are enormous; up to 24,000 tonnes per year; up to 240,000 tonnes over a 10 year span. This much sediment, if contaminated will cause major sediment management problems. Mr. Malcolm included precedents in his evidence (Exhibit 20, Tabs 4-5) that address best practices for managing large quantities of excess soils, particularly when the soil may be contaminated. Mr. Guoth says these are not relevant to pits and quarries but Exhibit 20, Tab 4, page 8 addresses considerations for pits and quarries receiving large scale deposits of fill and facilitating through fill management plans the rehabilitation process to a future land use.

376. Why mention fill in the context of this case? Because Mr. Adenowo's evidence was that if the sediment is found to have pesticide concentrations that disqualify it as inert, it would have to be treated as waste and disposed of off-site, which means Dufferin might have to import inert fill. But as Mr. Malcolm testified, inert fill is not the standard Mr. Bulman wants to apply to the Paris Pit site. Mr. Bulman wants to use agricultural cleanup standards from Alberta. So as Mr. Malcolm said clarity is needed from the Directors as to whether MOECC is looking for inert fill standards or agricultural cleanup standards to use at the site.

377. As to the Alberta standards themselves, Mr. Malcolm says they simply do not apply to this site. He is the only witness who is an engineer, a hydrogeologist, and a qualified person with respect to both environmental site assessments and risk assessments to testify on this point in this case. Mr. Guoth is not a qualified person with respect to risk assessments. Mr. Murphy is not a qualified person for either environmental site assessments or risk assessments. Mr. Chappel is qualified as both but he is a toxicologist, not a hydrogeologist, or an engineer. The reasons Mr. Malcolm says the Alberta guidelines do not apply here include: (1) we're in a WHPA here, not a farm field in Alberta; (2) on their face they do not apply because one or more of their listed prohibitions on being used appears to apply to the Paris Pit site (stagnant water body though the evidence is split on this; and length and quantum of potential groundwater contamination source (not disputed in the evidence); (3) Mr. Bulman is proposing the use of a detection limit that is higher than the Alberta standard he proposes using so how will we know when the standard is exceeded? and (4) the Nova Scotia guidelines do not have values for atrazine desethyl and total atrazine metabolites so they are not going to be very helpful at the Paris Pit site.

378. So if the guidelines Mr. Bulman wants to use are problematic, what's left? The answer is Mr. Malcolm's proposal use new science risk assessment approach. Ontario Regulation 153/04 (promulgated under the *EPA*) has been included because it sets out a procedure for developing a standard at a site where a standard does not otherwise exist for a particular contaminant. Director Pannu, in approving Condition 4.8, effectively chose an O. Reg. 153/04 approach to do something similar by adopting contaminated site remediation standards from Alberta and Nova Scotia for atrazine because Ontario does not have such standards. Mr. Bulman said he was looking for a number. This is one approach recognized in O. Reg. 153/04; adopting a standard for a contaminant from a

credible agency because a standard does not otherwise exist in Ontario for the particular contaminant in question. However, for the reasons noted above, the Alberta and Nova Scotia standards are not appropriate in the circumstances of this case. Therefore, Mr. Malcolm is recommending adoption of the other approach recognized in O. Reg. 153/04; i.e. developing a standard for atrazine through a new science risk assessment. The standard that would come out of that process would apply to this site alone because of its unique circumstances. To be completely clear we are not saying that O. Reg.153/04 applies here because the section itself can only be triggered by the site owner, in most cases. What we are saying is that the regulation establishes a process that the tribunal can incorporate into Condition 4.8 to produce a result we say will be superior to simple reliance on Alberta and Nova Scotia standards for the reasons we noted above. If the Directors can adopt the credible agency option from O. Reg. 153/04, there is no reason the Tribunal cannot adopt the new science risk assessment option if it thinks it is a superior approach in the circumstances.

379. Accordingly, and for all the above reasons, CCOB states that this is why it proposed amendments to Condition 4.8 that are now contained in Exhibit 21. Mr. Murphy's concerns about the proposed amendments to Condition 4.8 are just a re-statement of his concerns otherwise addressed earlier in the CCOB argument.

4. Condition 5: Contingency and Pollution Prevention Plan and the Lack of a Trigger Mechanism

a. Problems with the ECA Condition as Drafted

380. In examination in chief, Mr. Malcolm testified that the Leave Panel stated that the Contingency and Pollution Prevention Plan ("CPPP") is not available and will only be subject to the scrutiny of MOECC and the proponent (Testimony of January 11, 2017).

381. In examination in chief, Mr. Malcolm testified that his concern with Condition 5, as drafted, is that it does not allow the public to comment on the adequacy of the CPPP (Testimony of January 11, 2017).

382. In examination in chief, Mr. Adenowo testified that Condition 5 is not a spill prevention plan, but a contingency and pollution prevention plan. It is included in the ECA to go beyond what the MOECC has demanded in the regulations. If someone is refueling on-site and you have a spill, the question becomes what does the first person on the site do, what is he trained to do, to make sure the spill doesn't get to the groundwater. Mr. Adenowo indicated that he was not talking about a spill, because you have to report a spill. He wants something that tells someone what to do. MOECC does not use a condition like Condition 5 for every ECA, but only in situations where pollution could occur from outside the sewage work. That is why there is no provision for the Director to review or approve the plan. He has no objection to the CPPP being posted for public comment but comments should go to CRH. His evidence also indicates that the CPPP must comply with O. reg. 224/07 (Testimony of January 18, 2017; Exhibit 39, para 42).

383. In examination in chief, Mr. Guoth testified that CPPPs are specific to preparing a plan on how to deal with an unexpected spill. If you're storing chemicals at a particular site or managing them, it's a document on how you deal with preventing a potential spill. That plan outlines what measures you would take for those particular activities that are potentially contaminating. Referring to Exhibit 17, pages 413, Mr. Guoth explained that the plan outlines hazard identification and other considerations. The chart on that page outlines the main components of a CPPP. It outlines the administrative requirements, contact information for the Ontario spills centre, and for contractors to come in and clean up a spill. Then it basically says this is what the spill plan should include, the hazard identification, which activities are higher risk than others. The whole context of that is what do I need to do to prevent a spill from happening. These are the actions I should be doing to prevent a spill. The second portion is the spill contingency which says if a spill does happen this is what I need to do to be prepared, maybe certain pieces of equipment should be available to deal with the spill, and what procedures you do to respond to the spill, including having a contractor come in and address the spill. Based on the outcome and how that is dealt with, you do a lessons learned analysis to understand how the spill occurred and you update the plan accordingly. It's a living document that is updated regularly on how you manage, handle, and store chemicals. It's specific to the chemicals being used and stored on the property (Testimony of January 18, 2017).

384. In examination in chief, Mr. Guoth testified that the discharge quality of sewage works subject to an ECA are all managed by the conditions of the ECA which would stipulate what the effluent quality would be and what to do if there were exceedances. That's all dealt with under the ECA itself (Testimony of January 24, 2017).

385. In examination in chief, Mr. Guoth also testified that what he means by a spill is the CPPP pertains to the management of chemicals that may be on site. If there's fuel storage on site, and if there is a spill or release into the environment, that's what he is referring to as a spill (Testimony of January 24, 2017).

386. In his witness statement, Mr. Murphy indicated that Condition 5 is a standard condition that was included to handle potentially hazardous materials (Exhibit 60, Tab 1, para 7.4).

b. General Problems with the Plan as Drafted

387. In examination in chief, Mr. Malcolm testified that just prior to filing his witness statement in October 2016 he received a copy of the CPPP dated Jan 2016 through the hearing process. The CPPP wasn't available at the time the Leave Panel made its decision in March 2016. His preliminary comments on problems with the CPPP are contained in Exhibit 20, Tab 3, pages 8-10, items b through l (Testimony of January 11, 2017).

388. In examination in chief, Mr. Malcolm testified that there is no consideration in the CPPP for atrazine or other pesticides that may be present at the site. There are no triggers to take any action or to do anything should atrazine residues be found at levels that exceed the standard, whatever that standard may be. If MOECC are not going to review the CPPP or determine if there are proper plans in place or a trigger, the lack of which

was identified by the Leave Tribunal, then who will be reviewing the CPPP to ensure there is no impact to the groundwater and the environment.(Testimony of January 11, 2017).

389. In examination in chief, Mr. Malcolm in response to Mr. Murphy's evidence at Exhibit 60, Tab 1, para 7.4, testified that the CPPP as presented does not consider atrazine and metabolites, a potential contaminant of concern. It's silent on that. The CPPP is dealing with operations of the site, items such as fuel handling, chemical storage and does not deal with the issue of potentially contaminated sediment or waste water in the settling and recirculation ponds (Testimony of January 11, 2017).

390. In examination in chief, Mr. Malcolm in response to Mr. Guoth's evidence at Exhibit 17, Tab 1, paras 4.3, 5.5, testified that the CPPP follows the outline of the guidelines, however Mr. Malcolm does not think the CPPP follows the intent of the guidelines or the regulations with respect to atrazine and its metabolites. Mr. Malcolm testified that if we look at O. Reg. 224/07 (Exhibit 41, Tab 2, page 2, s. 5(1)1), it is very clear that all spills are to be identified that are reasonably foreseeable or have the potential to cause adverse effects. I think that includes the discharge of atrazine through wastewater and groundwater. Then they go through a methodology of characterizing the spill, the likelihood of the spill, identify sensitive receptors under s. 4, under s.7 to assess the risk of the spill and then once we've done all that, in s.2 the line of defense is to construct or install containment structures to contain the spill. The intent is to prevent spills from happening, and if we can't, then how do we respond. In Mr. Malcolm's opinion, if we're discharging potentially contaminated water out of the ponds that's a spill (Testimony of January 11, 2017).

391. In examination in chief, Mr. Guoth testified that he had reviewed the CPPP and it follows the main components outlined on Exhibit 17, page 314 and the requirements of the ECA which asks for a CPPP. In his written evidence he states that the CPPP follows O. Reg. 224/07 (Testimony of January 24, 2017; Exhibit 17, Tab 1, paras 4.3, 5.5 and Tab E).

392. In his witness statement, Mr. Murphy indicated that the CPPP is already in place pursuant to requirements under the ARA site plan (Exhibit 60, Tab 1, para 7.4).

393. The two Condition 5 matters addressed in this argument are: (1) the "sealed" settling pond bottom; and (2) the lack of a trigger mechanism in the CPPP and how that can be remedied.

c. The Leak from the "Sealed" Settling Pond Bottom: Spill, Pollution in Need of Prevention, or Both?

i. Evidence of the Appellants

394. In his written evidence, Mr. Malcolm stated that he anticipated up to 10 million litres per day (300 million litres per month) of wastewater discharging into the natural

environment for an undefined time period between the start of effluent discharge to the time the sediment pond is “sealed”. The timeline to achieve a “seal” of the sediment pond is not known. Once “sealed” the bottom of the wastewater settling pond will lose 98 litres per minute (141,120 litres per day, 4.2 million litres per month, over 50 million litres per year) from the wastewater ponds back to the natural environment through the bottom of the ponds. Wastewater seeping into the environment needs to be thoroughly monitored and tested to understand waste plant discharges or, alternatively, lined wastewater ponds should be engineered and constructed before operations commence to prevent leakage of the wastewater into the aquifer (Exhibit 20, Witness Statement, page 5, last bullet; Tab 3, page 6, item b).

395. In his written evidence, Mr. Malcolm also indicated that Condition 4.9(a) and (c)(i) require that the Wash Plant “closed loop” system be sampled after the recirculation cell bottom is “sealed”. Because the current cell design is unlined, a testing and water sampling methodology must be determined to define when the system is “sealed”. This methodology must be employed on an on-going basis so Wash Plant operators know if the integrity of the “seal” is holding, recognizing that “sealed” still means that 141,120 L/day or potentially 50 million litres per year will be leaking into the natural environment (Exhibit 20, Witness Statement, page 8, 3rd bullet; Tab 3, page 9, item f).

396. In examination in chief, Mr. Malcolm testified that one of the concerns he had was that the water samples from the recirculation cell are not to be taken until the recirculation cell bottom seals. We don’t know what is defined as a seal as there is no testing methodology to determine when a seal is achieved (Testimony of January 11, 2017).

397. In cross-examination, Mr. Malcolm testified that if atrazine appears in the sediment or in water in the recirculation cell, there is a sampling program to detect it three times a year. However, he questioned if that’s adequate and we won’t start collecting that sample until after the seal seals, whenever that is. It’s a leaky system (Testimony of January 12, 2017).

398. In cross-examination, Mr. Malcolm agreed that if CRH had put a liner in the pond so there was no leakiness, CRH would not need an ECA (Testimony of January 12, 2017).

ii. Evidence of the Directors

399. In cross-examination, Mr. Bulman testified that the settling ponds sit above the groundwater table with the sediment and with some water in the ponds. As the fines settle out the wastewater goes into the recirculation pond and there will be some percolation through the bottom of the ponds at the rate of 98 litres per minute. Anything on the water can be drawn as a result of the capture zone through into the groundwater table, including anything coming out of the bottom of the settling pond, anything in solution in the water, including atrazine, which he said was possible (Testimony of January 17, 2017).

400. In his witness statement, Mr. Adenowo stated that Condition 3.3 of the ECA, “requires the owner ‘to make all reasonable efforts to promptly develop a seal at the bottom of the settling pond (comprised of the settling cell(s) and recirculation cell) and to maintain the integrity of the seal when removing excess sediment from the bottom of the settling pond’” and that the condition “is intended to reduce the potential for migration of water in the settling and recirculation cells into the groundwater” (Exhibit 39, para 23, bullet 1).

401. In cross-examination, Mr. Adenowo testified that Condition 3.3 is intended to reduce the potential for migration of water, not pollutants. In response to the question whether you would not want pollutants to go out the bottom of the seal he testified that he is not a scientist. He looks at what the scientists say and he defers to them. He further testified that if there is a sewage work that doesn't distribute into the natural environment, if there is no discharge to surface water or groundwater, you don't need any seal. If there is no discharge into the environment where the environment means surface water or groundwater, you don't need an ECA. Mr. Adenowo's understanding of the intention of the seal is reflected in Exhibit 39, para 23 and there was an interest in continuing to use the water. He testified that he depends on the scientists to tell him: “here's a proposal from a proponent, can you let me know if you have concerns about contaminants”. In this case, the only contaminant of concern was suspended solids. The only thing that could settle this out is the settling ponds. He does not know what atrazine is. He agreed that the settling pond is a structure designed to contain sewage. He also testified there has to be a way out for the sewage otherwise Dufferin does not need an ECA. He also agreed that wash water is defined as sewage. He agreed that if there were releases of water with atrazine into the groundwater from the settling pond his scientists would be concerned. But their recommendation said they had no concern (referring to Mr. Bulman and Ms Day). He agreed that for this particular site, there is a discharge from the sewage work into the environment but he does not know what that number is. He did not read the PTTW, only the ECA. After being referred to Exhibit 41, Tab 7, page 29, bullet 5 which reads: “The Settling Pond water leakage through the bedding material is estimated to be 98L/min, using a bottom sediment hydraulic conductivity of 1.0×10^{-5} cm/s” he agreed that after the seal seals, there will be 98L/minute going out the bottom. He testified that when he was shown Exhibit 41, Tab 7 during his cross-examination it was the first time he had seen the PTTW application material. He testified that the reference to 98L/m was not mentioned to him in Mr. Bulman's Exhibit 41, Tab 15 memorandum to Mr. Adenowo. He does not know how long it will take for the bottom of the settling pond to seal. It is not his job to know whether this is a highly vulnerable aquifer. It was not his job to look at the page from Exhibit 41, Tab 13 (ECA application) that says that the site is in a highly vulnerable aquifer. He agreed that the settling cell of the settling pond will leak as well as the recirculation cell because that is what Exhibit 41, Tab 7, page 29 says; the settling pond will leak 98 L/m. He says there will be discharge from the sewage work into the environment. He agreed that the settling cell is not what Condition 4.9 says will be sampled; rather the samples will be collected from the recirculation cell. He testified that it is not his job to know whether water leaking out the bottom of the settling cell (that is not in the recirculation cell) is acceptable or will impair the aquifer with atrazine or other pollutants; he would depend on the scientists to know

that. He only knows what they know. With reference to Condition 4.9(c)(i) which says: “if sediment is to be removed from the recirculation cell, the sediment shall be removed prior to the start of the aggregate washing season. A water sample shall be collected one week after the bottom of the cell has been sealed...”, Mr. Adenowo testified that it is possible that the seal could be breached depending on how the operator digs into the sediment at the bottom of the recirculation cell. Regarding Mr. Malcolm’s testimony on constructing an engineered or clay liner as an alternative to the use of a seal, Mr. Adenowo testified that it is an option but you would not need an ECA because it’s not discharging to the environment. He also testified that treated water from the settling cell will move into the recirculation cell (Testimony of January 18, 2017).

iii. Evidence of the Instrument Holder

402. In examination in chief, Mr. Guoth testified that with regard to Mr. Malcolm’s suggestion about governing the settling pond as part of the CPPP, the effluent in the settling pond itself is being addressed through the ECA. The upside with this site is that the wells are already in place and with most sites the wells aren’t already in place so you’re in reactionary mode. Since the wells are there, after the release, one of the first things I’d do is increase monitoring frequency on those wells. The MOECC will ask you to do that (Testimony of January 24, 2017).

403. In cross-examination, Mr. Guoth indicated that atrazine, or the discharge of atrazine through waste water or to groundwater, is not mentioned or identified as an issue that needs to be prevented in the CPPP, nor should it be because we don’t know if it’s an issue. He testified that it should not be identified in the CPPP because the CPPP is a plan for the management and handling of materials on site, such as gasoline. Anything related to the settling pond is covered in the ECA (Testimony of January 24, 2017).

404. In cross-examination, Mr. Murphy testified that the purpose of the settling pond is to let total suspended solids (a contaminant) settle out. As that’s happening, the water is coming into equilibrium with the fines in the wash water (February 1, 2017).

405. In cross-examination, Mr. Murphy testified that the settling pond allows the fines to settle out of it. The washing process takes the aggregate material, washes fines out of the material, and the water is discharged into the settling pond, the fines settle out, any pesticides adsorbed to those fines have the potential to move into the water phase as part of the equilibrium relationship and so at the far end of the settling pond, allows the most time for equilibrium to occur. Mr. Murphy stated that he doesn’t believe concentrations of any pesticides would be higher as that water is initially discharged to the settling pond than it is in the recirculation cell (Testimony of February 1, 2017).

406. In cross-examination, Mr. Murphy confirmed that: (1) there is no requirement in the ECA to sample the water in the settling pond apart from water in the recirculation cell; (2) there will be no sampling conducted until after the recirculation cell bottom seals; (3) for some finite period of time until the bottom seals 10 million litres of water will be directly discharged daily though it may not be quite that volume because the seal will be a gradual process. It will start off with most of the water infiltrating and will slow

down over time; (4) based on all the information Mr. Murphy has he does not believe that water will have appreciable concentrations of pesticides, however it's not being directly monitored; (5) Condition 4.9(c)(i) means that the removal of sediment from time to time from the recirculation cell could potentially reopen the seal; (6) there is no explicit reference in the Stantec Report (Exhibit 41, Tab 10) to 98L/m of water leaking out the bottom of the settling pond though Mr. Murphy knows it was something the Stantec authors considered from his discussions with them (Testimony of February 1, 2017).

d. Lack of Trigger Mechanism

i. Evidence of the Appellants

407. It was also the written evidence of Mr. Malcolm that the Leave Panel found that under ECA Condition 5, which provision authorizes preparation of the CPPP, there is no requirement for a trigger mechanism. In examination in chief, Mr. Malcolm stated that in his opinion the CPPP should contain a trigger mechanism (Testimony of January 11, 2017).

408. In his written evidence, Mr. Malcolm indicated that:

- ECA trigger mechanisms should be developed that (1) are linked to the Contingency, Sediment Management Plan, and Pollution Prevention Plans, (2) take effect when the monitoring, observations, or sampling identify a threshold exceedance, (3) require scrutiny by all stakeholders prior to issuance pursuant to the ECA, and (4) include triggers for wastewater, sediment, groundwater, and surface water sampling and analyses;
- The trigger mechanism and contingency measures are critical to ensuring that groundwater is protected and downgradient users (including private wells and the Grand River, which is the source of drinking water for many communities and First Nations), are not adversely affected. Because the groundwater flow velocity is 1.4m/day (Exhibit 41, Tab 13, page 11) or 511 m/year, and the nearest private well is approximately 225 metres downgradient and the Grand River approximately 500 metres downgradient of the CRH property boundary, the travel times to these two receptors are in the range of 6 to 12 months. Moreover, because contaminants can migrate off-site within a few days or weeks, timely detection of impairment is imperative and contingency measures are critical, as there is virtually no time to organize and implement remedial measures should contamination be identified. Furthermore, pollution prevention measures are imperative as 1 metre of sand and gravel overburden offers virtually no protection to the aquifer;

- The trigger mechanisms should be adaptively updated on an ongoing basis based on the site operations, monitoring data, and recommendations of the qualified person preparing the annual reporting, with input from all stakeholders (Exhibit 20, Witness Statement, page 9, last 3 bullets; Tab 3, pages 10-11).

409. In examination in chief, Mr. Malcolm elaborated on why in his professional opinion the CPPP should contain a trigger mechanism. He testified that a trigger mechanism in a contingency plan is critical to ensure that the groundwater is protected both for downstream water users and the municipality. Given that we have a groundwater flow identified by CRA at 1.4m/day (Exhibit 41, Tab 13, page 11). That would be just be over 500m a year for a contaminant to travel. We have two potential sources: (1) the sediment that will be deposited across the site and, if those are contaminated, then it will be a matter of weeks before the contaminant will hit the property boundary; and (2) the other source is the settling pond and recirculation pond. Mr. Malcolm estimated the travel time to the nearest well receptor which would be property lot 43, would be about 6 months, looking at Exhibit 24. We're about 225m away from property lot 43 and the settling pond. We're about 450-500m away from the Grand River. Given these travel times, Mr. Malcolm felt that it's imperative that we get timely detection of any contaminants that might be migrating off-site given the speed at which these contaminants travel and the potential size of the plume (Testimony of January 11, 2017).

410. In examination in chief, Mr. Malcolm referred to Tab 7 of Exhibit 20. This is MOECC's reasonable use policy developed in 1994. It is the guideline widely used across the province to estimate permissible degradation of groundwater on an owner's property. However, there's a limit to the allowable degradation but there is a cap on the concentration that is permitted to migrate off-site. You are not allowed to degrade it over the drinking water standard but you may be allowed to degrade it by half or a quarter of what the standard is. Tab 6 is the determination of how you calculate the degradation of water. The point here is we are allowed to degrade water but it has to be acceptable so the users down gradient can still enjoy use of the water. This relates to atrazine because if we did have a standard, the procedure would permit degradation of half the difference between the acceptable standard and the background level. Most of the time when we use reasonable use it's for waste disposal but there is no restriction preventing it from being used for other conditions (Testimony of January 11, 2017).

411. In examination in chief, Mr. Malcolm responded to Mr. Murphy's Exhibit 60, Tab1, para 4.11 comments by indicating that he does not believe CRA has 3 monitors downgradient. There is 1 and that one may not be in the centre of the plume of ground water. It would be considered at the edge of the plume, so it may not be as concentrated (MW1-12). Mr. Malcolm also referred to Dr. Howard's evidence that atrazine can be concentrated and it does exist in the groundwater on site and has been detected at monitoring well MW2-12. Mr. Malcolm also testified that Mr. Bulman's memorandum (Exhibit 41, Tab 15, page 24) shows we have detections of atrazine and atrazine metabolites in the groundwater. Mr. Malcolm would consider atrazine a chemical of concern at the site. Mr. Malcolm also testified that he disagreed with Mr. Murphy's

contention that the wash water will be sampled directly under the ECA and wondered whether sampling the recirculation cell is a worst case scenario or would it be better to sample the settling pond where the water is being cleaned or directly off the wash plant. According to the flow direction, the monitoring well downgradient is off gradient (BH88-5)t. We feel that there is a need for additional monitoring to ensure we detect any impact early and have time to react (Testimony of January 11, 2017).

412. In cross-examination, Mr. Malcolm testified that he had some concern that there was inadequate monitoring downgradient from the settling pond because he did not think the location of the well was ideal and one well may not be sufficient. He testified that there will be some sampling related to both the fines and the water in the settling complex but he is not sure he would call it extensive. He did not think that the ECA Condition 4.9 requirement for sampling three times in the first year and three times in the second year was adequate and that sampling will not start until after the seal seals, whenever that is. He regards the waste water sampling as on the weak side. The mere fact of water going into the environment is not a problem as long as it meets the standard. Mr. Malcolm's concern is what if there's contaminant of concern in water that goes into that groundwater from the bottom of the ponds (Testimony of January 12, 2017).

413. In cross-examination, Mr. Malcolm testified that there is no trigger mechanism or contingency plan in the ECA for atrazine (Testimony of January 12, 2017).

414. In cross-examination, Mr. Malcolm testified that he disagreed with Mr. Murphy (Exhibit 60, Tab 1, para 2.4) that the closest downgradient private water supply wells are more than 700m away from the aggregate washing area. Mr. Malcolm indicated that looking at Exhibit 24, the private property owner on lot 43 is 500m away and it has a well though nobody is on the property at the moment. However, he added that doesn't mean tomorrow it won't be used. He agreed that the closest one to the settling pond being used is 700m away and that would mean less than a year and a half for water from the settling pond to reach the private well (Testimony of January 12, 2017).

ii. Evidence of the Directors

415. It was Mr. Adenowo's evidence that any CPPP will by its very nature have triggers; i.e. the spill is a trigger that requires containment, cleanup, and reporting (Exhibit 39, para 37).

iii. Evidence of the Instrument Holder

416. In his written evidence, Mr. Murphy indicated that there are monitoring wells potentially downgradient, looking at Exhibit 25, monitoring well MW1-12, Borehole 88-6, and monitoring well MW3-16, which has not been identified by location but is to be situated downgradient of the settling pond. Mr. Murphy also indicated that there's no evidence or expectation that atrazine or other contaminants will exist in the wash water in a concentration of concern that could impact the groundwater, that the wash water will be sampled and analyzed and that the existing pond to the east of the settling pond, SW-1

will be sampled and no further requirements for monitoring are necessary (Exhibit 60, Tab 1, para 4.11).

417. In examination in chief, Mr. Murphy testified that looking at Exhibit 66 I touched there are 3 monitoring wells I identified at Exhibit 60, Tab 1, para 4.11 as being downgradient: (1) is MW1-12; (2) MW3-16, recognizing these are groundwater flow contours during non-pumping conditions but when pumping will bring water down to the east side of the source pond so under some conditions will be downgradient; and (3) BH88-6, which is in the direct flow path under ambient conditions. The existing pond is also downgradient of the settling pond because there's a large portion of the groundwater flow regime underneath the settling pond going into the existing pond or coming into the groundwater upwellings and then flowing into the pond. Add on to that, the mound in the underlying till unit at the north edge of the settling pond, so we can see the existing pond is getting water coming around from the south side of that so we're clearly getting water from the settling pond into the existing pond (Testimony of January 30, 2017).

418. In cross-examination, Mr. Murphy testified that the reason why 3 wells were needed upgradient is that the MOECC wanted to look at the settling pond activities, recognizing that there's also a background groundwater flow into the site and there may be pesticide concentrations in that flow so they wanted upgradient wells to see if there were concentrations coming onto the site in comparison to the sampling from the settling pond (Testimony of January 30, 2017).

419. In cross-examination, Mr. Murphy agreed that there is a disagreement between himself and Mr. Malcolm on how many wells are downgradient of the settling pond and whether they are going to pick up contaminants (Testimony of February 1, 2017).

420. In cross-examination, Mr. Murphy testified that lot 43 is just over 600m away from the settling pond and that he would not want to adversely impact that well just because there is no habitation there at the moment (Testimony of February 1, 2017).

421. In cross-examination, Mr. Murphy agreed that there is no early warning threshold level or trigger level for pesticides in the ECA or the CPPP (Testimony of February 1, 2017).

e. Remedy: Proposed Condition 5

422. In examination in chief, Mr. Malcolm testified that the purpose of his proposed amendments to Condition 5 is to develop an early warning trigger level and identify contingency and remedial plans in the event that anything is triggered. He testified that his recommendation is to look at the waste water, look at the ground water, test the sediment, and test the surface water for contaminants of concern here, including atrazine and its metabolites (Testimony of January 11, 2017; Exhibit 21 – ECA Proposed Amendments).

423. In examination in chief, Mr. Murphy testified that from a hydrogeological and engineering perspective, Mr. Adenowo explained that the purpose of Condition 5 is to

protect against other activities occurring on site, specifically with spills and fuel handling, and these are regulated in Ontario through TSSA and other legislation. They are not items specific to the ECA and the protection of the environment relevant to the settling pond. Those are dealt with through other parts of the ECA. The rest of Exhibit 21 and proposed ECA Condition 5 is, in large part, restating or changing the monitoring requirements specified elsewhere in the ECA or other programs. Mr. Murphy does not think these are necessary components of the CPPP (Testimony of January 30, 2017).

f. Conclusions

424. There is a fundamental disconnect in the evidence surrounding the purpose of ECA Condition 5. Mr. Malcolm says there are two primary gaps that a CPPP needs to address concerning this site: (1) the lack of triggers, which the Leave Panel identified in its decision; and (2) the “leakage” that will occur from the settling pond bottom that will allow up to 50 million litres of water and maybe contaminants, like atrazine, to escape out the bottom of the settling pond every year even when “sealed”. The settling pond has another name in the submission of CCOB; it’s the box without a bottom.

425. Dealing first with the seal, the evidence is uncontroverted that the so-called “seal” using sediment at the bottom of the settling pond is inferior to a clay, or engineered, liner of the type recommended by Mr. Malcolm and acknowledged by Mr. Adenowo as capable of solving the leakage problem. The evidence is also clear that the ECA only requires sampling of the recirculation cell, not the whole settling pond. Furthermore, it is also clear that the whole settling pond is subject to the leakage problem. Therefore, sampling the recirculation cell all by itself does not tell you all that you need to know. We also don’t know how long it will take for the seal to seal, presumably less than three months, but that it unclear and until it does seal the settling pond is capable of losing 10 million litres a day into the groundwater system. How much of that water also contains atrazine is anyone’s guess. The reason for the uncertainty is that there is no requirement to sample even the recirculation cell until the seal seals. Furthermore, the evidence is clear that the seal is capable of being breached when it is being cleaned, which could start a whole new cycle of uncertainty as to how long it will take for the seal to seal. On the whole, therefore, this is a thoroughly unsatisfactory state of affairs.

426. Mr. Malcolm’s response to the problem is that these leaks are spills and should be treated as such for the purpose of preventing and containing the problem using the CPPP before any potential contaminants, like atrazine, contained in the leak have the chance to reach downstream users, which he says could happen very quickly.

427. Dufferin’s response is that there is nothing in the CPPP about atrazine and it should stay that way. Interestingly, both Mr. Murphy and Mr. Guoth say Condition 5 authorizes a spills plan but they characterize it very narrowly; far more narrowly than Mr. Malcolm thinks is appropriate given the circumstances and given the wording of O. Reg. 224/07. Mr. Adenowo says it is not a spills plan, but a pollution prevention plan, but adds that MOECC does not assume responsibility for approving such documents.

428. The witnesses for the Directors and the Instrument Holder all dismiss Mr. Malcolm's attempts to develop a trigger mechanism for the CPPP that would be based whole or in part on the MOECC's reasonable use policy. They also dismiss his concerns about the monitoring he says may not provide adequate coverage downgradient of the washing area. Mr. Murphy says there is plenty of monitoring for this site. Mr. Malcolm's answer is but not where you need it. In CCOB's submission you can never have enough of the right kind of monitoring and the right kind of preparatory response where protection of water resources is concerned.

429. Accordingly, in CCOB's submission, Mr. Malcolm's proposed Condition 5 amendments go to the heart of what is wrong with the ECA and the CPPP that, among other things, both lack early warning threshold levels or trigger levels for pesticides. Therefore, CCOB respectfully requests that the Exhibit 21 proposed ECA amendments to Condition 5 be adopted by this Tribunal.

5. Conclusions

430. This review of the evidence addressed ECA Conditions 4.8 and 5. When the evidence with respect to each is considered in its totality, CCOB submits that it demonstrates the accuracy of the testimony of Mr. Malcolm's evidence, which CCOB urges the Tribunal to adopt. Without repeating the above submissions CCOB urge the Tribunal to again consider our concluding submissions found at paragraphs 374-379, 424-429.

D. Conditions under Appeal - PTTW

1. Introduction

431. The PTTW conditions that are the subject matter of the appeal are Conditions 3.3, 3.4(b), 3.6, 4, and 4.7. Conditions 3.3 and 3.4(b) have been resolved and CCOB makes no further reference to them in this final argument.

432. The Leave Decision stated that Condition 3.6, "which states that 'within 60 days following two full years of operation, the Permit Holder shall submit to the Director a report evaluating water taking needs and making recommendations regarding future water needs and potential changes to the permitted rates and volumes'. This means that the permitted water taking for almost eight years of the PTTW is unknown and will not be known for over two years" (Appendix C to CCOB Final Argument – Leave Decision, para 119). In its findings on Condition 3.6, the Leave Panel stated that: "The Tribunal finds that the evidence shows that the Director made significant efforts to consider cumulative effects. However, based on the Tribunal's finding above in relation to the ecosystem analysis and the PTTW that there is no guarantee that after two full years of operation, the permitted rates and volumes of water will not be increased, and CCOB, the County, water users and other affected stakeholders may not be consulted or have the opportunity to submit concerns about any new permitted water taking levels, it appears that it is not possible to fully assess the cumulative impacts of the water takings until the

final permitted water taking limits are determined, which will not be for more than two years. Therefore, the Tribunal finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have effectively applied a cumulative effects analysis in issuing a 10 year PTTW with the possibility that the permitted water taking levels could be increased after two years” (Appendix C to CCOB Final Argument – Leave Decision, para 76). The Leave Decision also stated that: “...the possibility that the water taking permitted may increase after the two year report is submitted, with no indication of maximum levels that could be permitted, makes it difficult to conclude that the water taking from the PTTW, and the aquifer and the community water supply, will remain sustainable. Again, a two year PTTW, for example, which might be renewed once the data on two years of operation has been obtained and assessed, would be reasonable while a 10 year PTTW appears to be unreasonable. Therefore, the Tribunal finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have effectively applied a cumulative effects analysis in issuing a 10 year PTTW with the possibility that the permitted water taking levels could be increased after two years” (Appendix C to CCOB Final Argument – Leave Decision, para 86).

433. The Leave Decision stated that Condition 4 of the PTTW lacked “clear and specific objectives for the monitoring requirements” (Appendix C to CCOB Final Argument – Leave Decision, para 119). In its findings, the Leave Panel stated: “The Directors and Dufferin repeat in several places in their submissions that significant monitoring requirements have been added that, if any of the possible risks do materialize, they can be dealt with by a Trigger Mechanism and Contingency Plan (PTTW)... However, there are no specific objectives for the various components of the monitoring program. Dufferin’s argument that the overall context of the instruments creates the objective of environmental protection too vague to provide the kind of information required for adaptive management” (Appendix C to CCOB Final Argument – Leave Decision, para 110).

434. The Leave Decision stated that Condition 4.7 of the PTTW (Trigger Mechanism and Contingency Plan) is not available and will only be subjected to scrutiny by the MOECC and the Proponent, after the instruments are granted. It further stated that Condition 4.7 does not contain a trigger mechanism (Appendix C to CCOB Final Argument – Leave Decision, para 119). In its findings the Leave Panel stated that: “[111] Of greater concern is the fact that these contingency plans have not yet been received or reviewed by MOECC even though several years of analysis and consultations have occurred since these instruments were first applied for. The Trigger Mechanism and Contingency Plan in the PTTW must be reviewed and approved by the MOECC before construction of the Source Pond begins (PTTW Condition 4.7)”. The PTTW will [not] “be subjected to consideration, analysis and comment by CCOB, the County or other interested stakeholders. Without knowing what is in the Contingency Plan..., for example, it is not clear whether it will be possible to take appropriate measures in the event the kinds of environmental risks of concern to the parties do materialize....” The

Leave Decision then quotes and discusses the applicability of the *Guelph* decision to the case at bar and then states: “[112] In this case, the Tribunal finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have granted:...the PTTW (i) without objectives for its monitoring programmes and (ii) without seeing, assessing, making available for public comment as part of the consultation, and approving the PTTW Trigger Mechanisms and Contingency Plan (Appendix C to CCOB Final Argument – Leave Decision, paras 111-112).

435. The Leave Decision also states, with respect to the PTTW: “Given its findings in relation to the first branch of the test, the Tribunal finds that there are significant informational gaps in relation to both instruments, caused by the inadequacy of specific conditions in the PTTW. If the PTTW does affect the water quality or quantity of this aquifer as a in a highly vulnerable wellhead protection area, and, as a result, the drinking water supply of the County, City and others, it is clear that the decision to issue the PTTW appears to be a decision that could result in significant harm to the environment” (Appendix C to CCOB Final Argument – Leave Decision, para 125).

436. A review of the evidence in connection with the PTTW conditions that are the subject matter of the appeal follows.

2. Overall Positions of the Parties

437. The overall positions of the Parties on the PTTW are substantially the same as set out above with respect to the ECA.

3. Condition 3.6: What is its Purpose?

a. Evidence of the Appellants

438. In examination in chief, Mr. Malcolm testified that the Leave Panel indicated the permitted water taking for almost 8 years under PTTW Condition 3.6 is unknown (Testimony of January 10).

439. In his written evidence, Mr. Malcolm stated that the reduction in the volume of water taking from 10 million litres per day to 1 million litres per day after 3 months under conditions 3.4a and 3.4b only applies to the first two years. Condition 3.6 makes the water takings and rates for the remaining eight years unknown. Either a cap on water takings as to duration and volume should be imposed in the condition, or the PTTW should be issued for two, not ten, years, as has been the case for other permits issued in Ontario, to allow for further evaluation of impacts and determination of appropriate flow volumes (Exhibit 20, Witness Statement, page 5, para 18(i), 2nd bullet on page; Tab 3, page 5).

440. In examination in chief, Mr. Malcolm testified as to his understanding of the evidence of Mr. Bulman in Exhibit 38, paragraphs 94-99 on Condition 3.6. Mr. Malcolm testified that Mr. Bulman was saying that Condition 3.6 was added to provide an

additional layer of protection and to encourage further consideration about whether the water taking can be further limited. Mr. Bulman goes on to suggest that this is an example of ongoing conservation efforts. Mr. Malcolm in his testimony then referred to Exhibit 38, paragraph 48 where Mr. Bulman says that the other reason Condition 3.6 was included was because this was a new facility, and the water taking records are not yet available. The MOECC thought they needed some records for the first couple years of the facility operation in order to more precisely re-evaluate water taking needs for this facility. Mr. Malcolm's testimony and also his reply statement (Exhibit 22, page 3) on Mr. Bulman's witness statement comments was that if the true purpose was as expressed at paragraphs 94-99, that should be made explicit by amending Condition 3.6 to state that the purpose of the post year 2 review is to examine and report on whether water taking can be further reduced and also confirm that the purpose of the condition is not to determine whether the water taking can be increased (Testimony of January 10, 2017).

441. In examination in chief, Mr. Malcolm also testified that he had suggested similar language in Exhibit 21 regarding amendment of PTTW Condition 3.6. However, given what Mr. Bulman said in Exhibit 38 about the intent, Mr. Malcolm suggested wording to the effect that the holder of the permit provide a report detailing conservation efforts along the lines of Mr. Malcolm's reply statement (Exhibit 22, page 3, para 5).

442. In cross-examination, Mr. Malcolm agreed that it would be impossible to increase the amount of water takings without an amendment to the PTTW and posting on EBR but he wanted some clarification that the purpose is to limit the water taking, not increase it. Mr. Malcolm also testified that Mr. Bulman did state clearly state in Exhibit 38 (paragraphs 94-99) the purpose of the review is to limit and try to conserve the water and Mr. Malcolm is suggesting utilization of that terminology. Mr. Malcolm would not suggest a 60-day posting if the language of Condition 3.6 was amended along the lines he suggested in Exhibit 22 (Testimony of January 11, 2017).

443. In cross-examination, Mr. Malcolm testified that he did not recall if conservation appears in the leave to appeal decision, though he knows it was discussed by Mr. Bulman in Exhibit 38 (Testimony of January 12, 2017).

b. Evidence of the Directors

444. In examination in chief, Mr. Bulman testified that in Condition 3.6 he wanted to give the signing director an option of decreasing the water taking based on actual amounts taken. It's not uncommon for a PTTW that the amounts requested and allocated are greater than what's actually used. He also testified that he has no problem with Mr. Malcolm's suggested wording from Exhibit 22 that Condition 3.6 be amended to explicitly indicate that the purpose of the report should be about whether the water taking could be further reduced (Testimony of January 16, 2017).

445. In cross-examination, Mr. Bulman testified that when he said he had no problem with adding Mr. Malcolm's language to Condition 3.6, it was his evidence that if the Tribunal sought to add that language, he would have no objection. Condition 3.6 was drafted to look at actual water use at the operation and Mr. Malcolm's evidence is that

he's looking at the same thing but wants the company to be looking at conservation (Testimony of January 17, 2017).

c. Evidence of the Instrument Holder

446. In examination in chief, Mr. Murphy testified that based on Mr. Malcolm's testimony, Mr. Murphy understood that he was suggesting that a conservation objective be added. In Mr. Murphy's opinion the purpose of PTTW Condition 3.6 is to re-evaluate the actual water taking at the site over time to see if the amount of water taking allowed under the permit was actually needed or being used and if not the MOECC could lower the water taking down to what is necessary for operation. In Mr. Murphy's view the conservation aspect is a different objective, and is already considered as part of the PTTW application. He also testified that Dufferin agreed to monitor the design to conserve water in the recirculation cell, and it's either an on or off thing so there's not a clear additional step to focus on for conservation measures beyond those already addressed (Testimony of January 27, 2017).

d. Remedy: Proposed Condition 3.6 as Amended

447. Mr. Malcolm in Exhibit 21 proposed certain wording which he then amended in Exhibit 22 and during his testimony before the Tribunal. The new wording to the beginning of his Exhibit 21 language would read: "Within 60 days following two full years of operation, the Permit Holder shall submit to the Director a report examining and reporting on whether water taking can be further reduced". It was also his testimony that if the amendment was adopted the remainder of his proposed amendment in Exhibit 21 would not be necessary (Testimony of January 11, 2017).

e. Conclusions

448. In the submission of CCOB, there is nothing unacceptable either substantively or jurisdictionally with Mr. Malcolm's proposed amendment (in Exhibit 22) to his own amendment (Exhibit 21) of Condition 3.6. Mr. Malcolm's evidence supports the amendment and Mr. Bulman's evidence was that he would have no objection to it. As to whether the amendment has a conservation objective that is outside the scope of what the Leave Panel granting leave considered, CCOB would note that the findings of the Leave Panel with respect to Condition 3.6 included concerns about whether the water taking would be "sustainable" (Appendix C to CCOB Final Argument – Leave Decision, para 86). By any benchmark, a concern about sustainability includes a concern about conservation.

4. Condition 4: Monitoring

a. Evidence of the Appellants

449. In examination in chief, Mr. Malcolm testified that the Leave Panel found there was a lack of clear and specific objectives for the monitoring requirements in the PTTW. It was also Mr. Malcolm's testimony in chief that the objectives of the monitoring program were unclear, the sufficiency of data and how the data would be interpreted was an issue, and how risk would be assessed and managed. Matters like the type and placement of wells, the number of wells, the collection period, and related details were not there. Modeling and how the computer generated groundwater model would be calibrated has not been clearly defined. Those were the sorts of things that Mr. Malcolm attempted to correct in his proposed amendments to Condition 4 of the PTTW. Mr. Malcolm also suggested that additional wells be installed, that the surface water monitoring station and the multi-level piezometer be monitored longer than the one year period after the startup. We requested some administrative issues with respect to who is going to look at the data and how it's going to be interpreted (Testimony of January 10, 2017; Exhibit 20, Tab 3, pages 5-6; Exhibit 21 – PTTW proposed amendments for Condition 4; Exhibit 22).

450. It was also Mr. Malcolm's testimony during examination in chief that we have the withdrawal of 10 million litres a day. Water goes through the wash plant, goes back into the settling pond and into the recirculation pond. At this stage, initially the settling pond and recirculation pond are unlined and water will be going directly into the aquifer. The period of time it will take for the settling pond and recirculation cell to seal has been reported as unknown. And even after we achieve a seal, we'll still be discharging 98 litres a minute or 141,000L each and every day into the aquifer. This is a significant discharge into the wellhead area, into a sensitive aquifer (Testimony of January 10, 2017; Exhibit 20, page 6).

451. In examination in chief, Mr. Malcolm summarized the reaction of Mr. Bulman to some of his evidence by noting that Mr. Bulman says many of Mr. Malcolm's concerns have been addressed in the ARA monitoring program and that the ARA monitoring program will report both to the Ministry of Natural Resources, the MOECC, and the County of Brant (Exhibit 38, paras 101-109, 112-113). Mr. Malcolm also testified in chief that Mr. Murphy voiced some of the same concerns including that the ARA monitoring program is a condition of the ARA license and is subject to acceptance by the MOECC and that this program under the ARA requires significantly more monitoring locations than in the PTTW (Exhibit 60, Tab 1, paras 6.4-6.5) (Testimony of January 10, 2017).

452. In response to this written evidence from Mr. Bulman and Mr. Murphy, Mr. Malcolm in examination in chief testified that his Exhibit 22 is a partial answer. Mr. Malcolm's concern was that the monitoring program for the Paris Pit would be administered by the MOECC. The monitoring program that was set up the ARA is not administered by the MOECC and as such is not enforceable by the MOECC for the

PTTW and ECA. Mr. Malcolm also testified that there are some differences between the two programs. Referring to Exhibit 25, Mr. Malcolm testified that the PTTW requires 3 monitoring locations: one down gradient of the source pond, one west of the source pond (BH88-5), and MW1-12. The PTTW also requires surface water sampling be taken at SW1, and they were looking for water levels to be taken essentially February 5-December 5 during plant operation but nothing taken in the winter months. The ARA requires 12 monitoring locations and that includes at the very extreme north end of the property, across the centre part of the property, and a number of wells where the plant and pond are located. In addition to that, they also require the monitoring of a small pond. That was not included in the PTTW. What the ARA included was year-round monitoring as opposed to 10 months of the year. There are significant differences. The ARA plan captures a number of concerns Mr. Malcolm identified which is a big step forward. However, at this stage there's no provision to take this data from both the groundwater and surface water and bring it back to the computerized groundwater model that made all the predictions to begin with and let us know that the predictions are either on track or not on track. It's called calibrating our models to go forward. In addition, the monitoring of the small pond is a good idea, but there was under the surface water PTTW, a multi-level piezometer at the southwest side of the pond that again will allow us to know what is happening with the water taking, discharge and the pond. So those are the differences between the two programs (Testimony of January 10, 2017).

453. In examination in chief, Mr. Malcolm testified that the fact that the ARA program requires the taking of year round samples is positive. Our biggest issue is that the ARA monitoring program is not administered by the MOECC and therefore not enforceable by MOECC. And if we're to incorporate the ARA program into the PTTW so that the MOECC can enforce it, then we would request the data be used to recalibrate the ground water model to ensure predictions continue to be valid and to ensure that monitoring well MW3-16 does not get dropped from the monitoring program (Testimony of January 10, 2017).

454. In examination in chief, Mr. Malcolm also testified that with respect to the seal. There is a potential of 10 million litres of water a day that before this settling pond and recirculation pond seals will be discharged into the environment. For how long, we don't know. There's no information provided in any of the reports about how long it would take to achieve the seal. Once the seal is achieved, there is still a discharge of 141,000L of water per day into the shallow aquifer about 50 million litres per year. In the opinion of Mr. Malcolm, this doesn't constitute a true seal. It is not a true preventative mechanism to allow this wastewater to discharge into the aquifer. Mr. Malcolm suggested an engineered liner would be a better mechanism that could be used to prevent the discharge into the aquifer and if there are any contaminants in the settling or recirculation pond they would not end up in the natural environment or aquifer. Mr. Malcolm also testified that he has not seen a timeline for establishment of a seal. The only clue in the CRA report (Exhibit 41, Tab 7) was that you could take the maximum discharge permitted under the PTTW for 3 months. So Mr. Malcolm assumed after that CRA assume it will be sealed. The other recommendation Mr. Malcolm made was that there's nothing in any of the reports, or the instruments, that defines what is a seal. What

conditions and what rate do you achieve a seal of the settling pond and recirculation pond. In addition to that, there's no monitoring after the seal is achieved to ensure that the integrity of the seal is maintained (Testimony of January 10, 2017).

455. In response to a question from the Tribunal, Mr. Malcolm testified during examination in chief that the seal will form as the fines get deposited on the bottom of the settling or recirculation pond. The pond is going to be dug down to 1 metre above the aquifer. So it will be very close to the aquifer (Testimony of January 10, 2017).

456. In examination in chief, Mr. Malcolm summarized the reaction of Mr. Murphy to some of his evidence regarding the seal by noting that Mr. Murphy said at Exhibit 60, Tab 1, para 4.2 that: (1) Condition 4.10 of the ECA has a requirement to monitor the quality of the wash water which is the water that would seep into the groundwater from the settling pond; and (2) the ECA has a requirement to monitor down gradient and surface water, as well as the sediment in the settling cell (Testimony of January 10, 2017).

457. In response to Mr. Murphy's first comment, Mr. Malcolm testified in examination in chief that if you look at ECA Condition 4.10, it does not require the sampling of the wash water, nor does it require sampling down gradient of the settling pond. Condition 4.10 requires sampling of the recirculation cell, which is in essence after the fines have started to clear out of the water. Mr. Malcolm questioned whether taking a sample from the recirculation cell as opposed to the settling pond or the wash water itself, provides the worst case scenario for contaminants in the water. There has been no data provided about this and Mr. Malcolm was of the opinion that taking water from the recirculation cell probably does not provide the worst case scenario (Testimony of January 10, 2017).

458. In response to Mr. Murphy's second point that the ECA also includes monitoring of down gradient ground water, surface water, and sediment, Mr. Malcolm testified during examination in chief that CRA had identified a groundwater flow direction to the southeast. Unfortunately, to the southeast we have a number of properties that have wells, no municipal service, and these properties in yellow are potential receptors as well as the Grand River. If we look at the monitoring program proposed and superimpose the groundwater flow direction on the monitoring program (now Exhibit 25) he indicated that the diagonal lines he drew on Exhibit 25 represent the direction of groundwater flow. He placed the lines on each side of the settling and recirculating ponds. If we have a groundwater plume originating here, it would be migrating within these two lines, save a little bit of diffusion. If we examine the groundwater monitors down gradient then we would find at the end of the day, we only have one monitor, MW1-12, which is down gradient of the settling recirculation pond. All of the other 11 monitors are either up gradient or off gradient. That's not sufficient monitoring. In addition, the surface water monitor will not be an indicator because the surface water monitoring station is perpendicular to the groundwater flow. We would not anticipate any impact from the settling pond or recirculation pond on the surface water monitoring station (Testimony of January 10, 2017).

459. In cross-examination, Mr. Malcolm testified that the PTTW deals with water quantity and the ECA deals with water quality but there is some overlap. He was not suggesting in his evidence that we should require monitoring for atrazine in the PTTW, but there is a big overlap between the two programs (Testimony of January 11, 2017).

460. In cross-examination, Mr. Malcolm testified that when he initially began his review he did not have the ARA monitoring program. It has some overlap with the PTTW and the ECA, but they are three slightly different programs. The amendments Mr. Malcolm proposed that are now in Exhibit 21 are intended to address the concerns that he had about monitoring, and his amendments propose some modifications (Testimony of January 11, 2017).

461. In cross-examination, Mr. Malcolm testified that his proposed amendment with respect to PTTW Condition 4.2(a) would require that three monitoring wells be installed or used prior to the construction of the source point. The purpose of those wells would be to assess the impact of the water taking from that source pond on groundwater levels. The reason for that proposal is if we're trying to calibrate to the computerized groundwater model, and trying to ensure that the groundwater model is accurate, we need monitoring outside of this small pond area the wells are located in. You can only get a rough assessment of the impact of the water taking on groundwater levels in a small area. The purpose of these wells is to assess locally what is happening and to take it back to the groundwater model to make sure that the groundwater model used to make predictions is accurate and anticipates what will happen across the site. Mr. Malcolm is aware that Stantec, CRA, and Mr. Bulman have looked at groundwater PTTW issues and that Mr. Bulman has looked at actual pump tests. The model and the output of the model presented results at the pond but Mr. Malcolm does not recall seeing the data that indicated what the impact was 1000m away, but he would suggest that there is a low risk of it having an impact 1000m away. He does not know if it is a low risk at 500m away (Testimony of January 11, 2017).

462. In cross-examination, Mr. Malcolm testified that with respect to Condition 4.2(e) he wanted additional wells to ensure that the monitoring wells would work and ensure the groundwater monitoring would function as expected and continuous monitoring in the 2 month shut down from December 15 through February 15. He understands that CRA are doing year round monitoring but it is under the ARA licence, which is not enforceable by MOECC, only MNR, even though the ARA licence requires MOECC approval of the ARA monitoring. He understands that all of the ARA monitoring results must be submitted in a combined annual report pursuant to PTTW Condition 4.4 (Testimony of January 11, 2017).

463. In cross-examination, Mr. Malcolm testified that the purpose of Condition 4.3(b) was to monitor prior to the construction of the source pond and monitor the existing pond after the completion of the source pond for 1 year. The reason for that was that the water takings would be at their worst case because it would involve high water takings as the plant gets up and operational. The purpose is to monitor the impact of the water takings on the surface pond. Mr. Malcolm's proposed amendment to the monitoring of the surface water monitoring would allow it to continue for 10 years. His rationale for

wanting to do this was to be able to examine climatic variability, such as a really wet season, on the pond and whether it would react differently than in a dry season with the aquifer under stress. There would also be variables with respect to the operation and the water taking and we don't know whether the full water taking will occur in the first year due to market forces, equipment breakdown, and whether that could influence full water taking. The pond is connected to the groundwater, according to the MMM report (Exhibit 41, Tab 21). The groundwater goes in and out (Testimony of January 11, 2017).

464. In examination in chief, Mr. Malcolm testified that the reason he was proposing to amend Condition 4.2(c) to require that the Permit Holder ensure that groundwater levels at the three groundwater monitoring wells are collected one week prior to and during construction of the source pond, settling pond and recirculation cell is that this information would help to ensure that the computer generated groundwater model is working as it should and that the response that we're seeing is as predicted. If there was a storm event the impact on the groundwater table might be more than minor. The idea behind the recommendation is to help with the groundwater data model that we already have (Testimony of January 11, 2017).

465. In cross-examination, Mr. Malcolm testified that with respect to the monitoring conditions, he is trying to ensure that what is monitored is done properly. Three wells are not going to be sufficient to monitor the whole area. We need to look at what the requirements were and if they're going to be effective. He wants to fix the implementation but not the goals. He testified that if one were trying to set out an objective for a groundwater monitoring program, identifying any quantity or quality issues attributable to the activities at the pit would be a reasonable objective (Testimony of January 12, 2017).

b. Evidence of the Directors

466. In his written evidence, Mr. Bulman states that CCOB's proposed additions to the monitoring requirements of the PTTW (Conditions 4.2)(a), 4.2(c), 4.2(e), 4.3(b), and 4.4, are unnecessary (Exhibit 38, paras 101-113).

467. In examination in chief, Mr. Bulman testified that he disagreed with Mr. Malcolm's recommendation concerning Condition 4.2(a) that 6 wells (as opposed to 3) was desirable because it could calibrate CRA's model. In Mr. Bulman's opinion CRA used its model in its application for its permit and it looked at various scenarios, various effects that would happen. Once the permit is issued, there's nothing in the conditions that say the model has to be re-run. What happens under the permit is that CRA monitors impacts and looks at actual impacts. Models are used when you do not have actual data. When the source pond starts pumping you monitor impacts by your monitoring wells. There is no value to calibrating the model at that point. He added that whether you had 3 or 6 wells is neither here nor there. In cross-examination, he agreed that three would be necessary six would be fine (Testimony of January 16, 2017).

468. In examination in chief, Mr. Bulman testified that with respect to Condition 4.2(e), regarding monitoring between February 15 and December 15 its purpose is to only

have the monitoring apply to periods of water taking. In fact, it is being monitored year round (Testimony of January 16, 2017). In cross-examination, Mr. Bulman agreed that if Dufferin is already doing year round monitoring there was no reason Condition 4.2(e) should not reflect that (Testimony of January 18, 2017).

469. In examination in chief, Mr. Bulman testified that the purpose of Condition 4.4 is to ensure that data from each of three instruments (ARA, PTTW, ECA) for the site are under one cover. He indicated that he had no objection to Mr. Malcolm's suggestion of adding a requirement that the reporting include comparing surface water levels (Testimony of January 16, 2017).

c. Evidence of the Instrument Holder

470. In examination in chief, Mr. Murphy testified regarding Condition 4.2(a) that CRA used 21 wells to calibrate its model (Testimony of January 27, 2017; Exhibit 41, Tab 7, Appendix H, Table H.1).

471. In examination in chief, Mr. Murphy testified that there are several water quantity monitoring programs concerning the site under the: (1) ARA licence (Exhibit 61, Tab G); (2) PTTW respecting drawdown – Condition 4.2(a); (3) TMCP; and (4) ECA has water quantity monitoring conditions (Testimony of January 27, 2017).

472. In examination in chief, Mr. Murphy testified that he disagreed with Mr. Malcolm's proposals concerning: (1) Condition 4.2(a) that anymore than 3 wells were necessary to evaluate the influence of the taking relative to what was predicted and no recalibration of the model is planned; (2) Condition 4.2(c) on the timing to start collecting water level monitoring data since the area has already been stripped of topsoil and the aggregate deposits opened up to recharge in that area there is nothing more to learn; (3) Condition 4.2(e) changes in groundwater levels in winter months because there is no taking occurring; (4) Condition 4.3(b) respecting monitoring multilevel piezometers for more than one year (Testimony of January 27, 2017).

d. Remedy: Proposed Condition 4

473. Mr. Malcolm in Exhibit 21, page 2 proposed certain amendments to Condition 4 to enhance monitoring under the PTTW. Although Mr. Malcolm recommends all of them, at least two [amendments to Conditions 4.2(a) and 4.2(e)] are not opposed by the Directors.

5. Condition 4.7: Trigger Mechanism

a. Evidence of the Appellants

474. In his written evidence, Mr. Malcolm indicated that the Trigger Mechanism and Contingency Plan ("TMCP") authorized by PTTW Condition 4.7 was only provided by

CRH on October 17, 2016, a little over a week before Mr. Malcolm was to submit his material. His preliminary concerns about the TMCP included:

- The TMCP should be reviewed annually by a qualified person who has visited the site, is familiar with the works and operations, and updated as required;
- The TMCP should be reviewed whenever there are process changes and updated, as needed, by a qualified person who has visited the site and is familiar with the works and operations;
- The TMCP are not considered in the annual reporting required under Condition 4.4 but a discussion of all triggers and actions undertaken, should be included in the Combined Annual Monitoring Report (CAMR);
- The CAMR also should include a summary of all complaints received, how or whether the complaint relates to the PTTW, and steps taken to address and resolve the complaint;
- To ensure the integrity and effectiveness of the TMCP, there should be a comparison of actual surface water elevations to simulated water elevations in addition to the comparison of groundwater elevation contours to simulated (modeled) water levels set out in Condition 4.4;
- The TMCP should evaluate performance with respect to simulated elevations, as well as relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives;
- The TMCP proposal of using the lowest monthly groundwater level measured between 1988 and 2016 (28 years) to initiate the Early-Warning Threshold Level (EWTL) is neither protective of water users, good science, nor standard practice. The lowest measured level ignores the purpose of the trigger by suggesting further water takings are permissible. Given the vulnerability of the groundwater and its importance to municipal and private users and the watershed as a whole, a more precautionary approach is needed such as use of the “average observed conditions from 2006 to 2012” (Exhibit 41, Tab 7, page H-2) from the groundwater model as the Threshold Value. This approach would be consistent with the groundwater modeling exercise and the impact assessment presented by CRH;
- The same concerns arise with respect to the proposed use by CRH of the lowest measured surface water level as the EWTL as this is not protective of the ecology and not consistent with the modeling exercise and impact assessments presented by CRH;

- The Groundwater Trigger Levels proposed by CRH are not consistent with the groundwater model, and should be tied to levels predicted by the model and the impact assessment. The groundwater model was calibrated to “average observed conditions from 2006 to 2012” (Exhibit 41, Tab 7, page H-2), not the lowest level recorded between 1988 and 2016 as proposed by CRH. The impact assessment presented by CRH was based on outcomes predicted by the groundwater model;
- Similarly, the Surface Water Trigger Level should be consistent with the modeling exercise and impact assessments presented by CRH (Exhibit 20, Witness Statement, pages 6-7, para 19(i)(A); Exhibit 20, Tab 3, items 3b-k).

475. In examination in chief, Mr. Malcolm testified respecting one particular example from the TMCP that concerned him. The concern was that the TMCP proposes to use the lowest monthly groundwater levels measured between 1988 and 2016, a 28-year period. That level will then initiate the early warning trigger level. In Mr. Malcolm’s opinion he did not feel this is protective of the water users, nor was it good science, nor standard practice. Using the lowest level seen in 28 years ignores the purpose of the trigger mechanism by suggesting that further water takings are permissible at the lowest level that has been seen in 28 years. He further testified as to what the effect would be of adopting the instrument holder’s TMCP proposal for the early warning threshold level (“EWTL”). He indicated that the lower the groundwater level that serves as the EWTL, the greater the potential impact on groundwater resources by permitting the user to continue to take water after the early warning threshold is reached. He was of the opinion that if we don’t even start to look at water takings until we reach this lowest level ever seen in 28 years, what we’re going to do is probably have action that is too little too late (Testimony of January 11, 2017).

476. In examination in chief, Mr. Malcolm, in explaining what he meant by saying that using the lowest ever observed monthly level is neither good science nor good practice, described the approach he felt should be used instead. He suggested using the average water level observed. The reason for this is that it would be consistent with the computer model generated and the impacts as identified by the Instrument Holder on what effect that would have on other users and the natural environment. He testified that the model used is identified in Exhibit 41 (Tab 7, Appendix H, page H-3), which contains the details on the modeling exercise. Page H-3 states that the groundwater flow model was calibrated to the average observed conditions from the 2006 to 2012 available data. Therefore, all the predictions that were derived from the groundwater model, the impacts to the water resources and the natural environment, are based on using average conditions of the aquifer (Testimony of January 11, 2017).

477. In examination in chief, Mr. Malcolm also testified regarding his proposed amendments to PTTW Condition 4.7 contained in Exhibit 21 (page 3). He indicated that what he was trying to achieve in amending Condition 4.7 was to put into operational language what we’re looking for in the TMCP. The thrust of this is to start with an early

warning threshold level that is consistent with the model and will give ample time to undertake various actions before the water taking affects other users in the aquifer (Testimony of January 11, 2017).

478. In examination in chief, Mr. Malcolm also reviewed what CRH had to say about his concerns. Referring to Exhibit 60, Tab 1, paras 4.8-4.10, Mr. Malcolm testified that Mr. Murphy stated that comparison to the predicted drawdown that Mr. Murphy used is precautionary and if there is more draw down than predicted then further evaluation would be undertaken and if warranted water taking would be reduced. Mr. Murphy goes on to say it is not reasonable to use any form of annual or long term average level as a basis for setting an early warning level or trigger level for the water taking. Mr. Murphy's argument is if we use an average the water levels will be below the average level and therefore a trigger would be triggered half the time. Mr. Murphy also said the trigger levels themselves are calculated by subtracting the amount of maximum draw down the model tells us (i.e. the predicted drawdown or change) from the EWTL. At the EWTL CRA would be doing monitoring (they're proposing), and only when the trigger level is reached is CRA looking at reducing the water takings, pumping rates, etc (Testimony of January 11, 2017).

479. In examination in chief, Mr. Malcolm responded to Exhibit 60, Tab 1, paras 4.8-4.10 by testifying that when CRA undertook the computer model for this work, CRA used an average water level and determined what the response would be for other users and the natural environment. CRA did not do any modeling or any predictions to determine what will happen when you withdraw at the lowest level you've seen in 28 years. Mr. Malcolm said we don't know what the response of the aquifer will be when it is under stress at a 28 year low. He also testified that we do not know what the impact will be for other uses or the environment. It's information that is missing at this stage (Testimony of January 11, 2017).

480. In examination in chief, Mr. Malcolm also testified that the aquifer here is very sensitive aquifer. It's a shallow aquifer. The depth/thickness of the aquifer is only 0-7.5m thick according to CRA (Exhibit 41, Tab 7, page 15). The fluctuations in the water levels are 1-4m (Exhibit 41, Tab 7, page 11). That means that we have an aquifer that in some places doesn't exist, in some places is up to 7.5m. Seasonally, we could lose anywhere from 1-4m of that water. This means we may end up with 3.5m of water in that aquifer. It is sensitive to seasonal fluctuations, there isn't a lot of water to begin with and we're trying to share this water with multiple users. In addition, in a dry summer the existing pond has 1.2-1.7m of water in it Exhibit 41, Tab 7, page 23. The prediction of the model says the effects on the pond will draw that pond down between .2-.3 meters under average conditions (Exhibit 41, Tab 7, page 33). Mr. Malcolm does not know what would happen under very dry conditions because we don't know the answer to that at this stage (Testimony of January 11, 2017).

481. In examination in chief, Mr. Malcolm also reviewed what the Directors had to say about his concerns. Referring to Exhibit 38, paras 115-117 in examination in chief, Mr. Malcolm stated that Mr. Bulman's evidence was that MOECC does not prescribe the

detailed content of TMCPs. Mr. Bulman said it's not appropriate to set a trigger level at which the pumping is completely halted as opposed to significantly reduced. Only under extreme circumstances when there are adverse effects can the water taking be completely halted (Testimony of January 11, 2017).

482. In examination in chief, Mr. Malcolm responded to Exhibit 38, paras 115-117 by testifying that in his experience the MOECC does not necessarily identify all the components of the TMCP. However it is often a back and forth negotiation until the MOECC is satisfied that what they see in the TMCP is to their satisfaction. Mr. Malcolm's understanding is that MOECC had the TMCP before Mr. Bulman submitted Exhibit 38 but has not commented on the TMCP. Regarding the issue of turning the pump off completely, Mr. Malcolm testified that it is one of the scenarios that were contemplated by CRA in the TMCP itself (Exhibit 60, Tab F, page 6, item 8). CRA indicated that after 14 days of levels below the trigger level, they will shut off the pump but maintain pumping for dust suppression. So, according to the testimony of Mr. Malcolm and contrary to Mr. Bulman's statement that halting the pumping is not reasonable, it is a measure contemplated by the TMCP (Testimony of January 11, 2017).

483. In cross-examination, Mr. Malcolm testified that the explanation of the variability from 0-7.5m in the thickness of the aquifer is there's a till layer at the bottom of the aquifer that's an aquitard. That till layer has a topography layer to it and in one place it goes right through the groundwater level. Referring to Exhibit 41, Tab 7, Figure 3.7, Mr. Malcolm testified that that means there's no source of water in that area. From a hydrogeological point of view, it's called a boundary condition and you can't draw water from that place unless you go through the till. The aquifer will go around it though. Mr. Malcolm agreed that the aquifer is thicker in the areas around the Gilbert and Telfer (34m) wellfields. However, his evidence was that there are private and commercial well users downgradient of this site that have to be considered, not just municipal users (Testimony of January 12, 2017).

484. In cross-examination, Mr. Malcolm testified that one way to tell if an aquifer is stressed is if the wells are going dry, which is quite common in a shallow well environment. The explanation could be weather or water takings elsewhere that could interfere with the taking of an individual. You could also look at water level long-term trends and if remained steady then the problem may not be caused by water takings, assuming climatic factors are ruled out. MOECC's monitoring well network data, though public, is not necessarily helpful because the density of the wells have not been sufficient. Regarding Exhibit 41, Tab 20, Figure 3.1, Mr. Malcolm testified that under current conditions the trend is fairly level, no evidence of a long-term downward trend, but there are significant fluctuations (3m), which do give him cause to want to look more closely. Figure 3.1 is a snapshot under current, pre-pit pumping conditions with just the Gilbert and Telfer wells pumping. The combined water takings for both Gilbert and Telfer are 3500L/min and approved takings are 11,000L/min on an annual basis. The PTTW allows 3 months at 14,000L/min for 3 months and then 1,400L/min for 180 days per year, but it all adds up to a significant increase in the water taking. 14,000 is greater than 11,000, even if for only 3 months. We have fluctuations in the water and usually the water is

down in the summer months and not in the spring and that's when operations are occurring here. They're not occurring in the wet seasons. We're looking at a water taking when the aquifer may be under stress. The operations are allowed under the PTTW for 180 days per year. They start in February and finish in December. In the late summer and early fall is the dry period and means the aquifer is under stress. The water table will drop, there will be less water truly available for all of the users, and that is when this water taking will occur, spring, summer, fall (Testimony of January 12, 2017).

485. Regarding Mr. Malcolm's proposals for the TMCP, he testified during cross-examination that: (1) he does not like that the various triggering levels proposed in Exhibit 60, Tab F are calibrated to the lowest monthly levels over the last 28 years; (2) the groundwater model used based its predictions on average conditions, not when the water drops 1-4m; (3) he calls for in Exhibit 21, amended Condition 4.7(f) for reduced pumping if the EWTL is violated (meant exceeded), which differs from the Exhibit 60, Tab F, which would trigger only monitoring, not reduced pumping; (4) when the trigger level is hit, he wants pumping halted, except for dust suppression (though dust suppression was not mentioned in amended Condition 4.7(f)) (Testimony of January 12, 2017).

486. In cross-examination, Mr. Malcolm testified that his reference to standard practice meant that the standard practice is to understand the ramifications that you are proposing on the system. So if we model the groundwater and identify impacts based on the average level, we should not ignore that information and decide there will be the same impact when you see the lowest level of 28 years. It's similar to driving around Toronto on an empty gas tank. You can get away with that. You take that same practice to northern Ontario and wait until the gas tank hits empty to fill up, you'll be walking. His standard practice is based on his 30 years of practice. There is no textbook that identifies standard practice with respect to water taking. The issue is preserving the water (Testimony of January 12, 2017).

487. In cross-examination, Mr. Malcolm testified that in principle he is not opposed to an early warning threshold that requires increased monitoring followed by a trigger that requires reduction or eventually cessation of pumping as long as the thresholds are right. When he did his triggering plan for landfill sites, that is how he structured it, an increase in monitoring, a second threshold that required more assessment, and it was the third trigger that required action. That plan is different from this but that's how it was structured. In principle, he does not have any objection to the way CRA has done it by calling the trigger level which in CRA's plans has tiers to it; 25% if monitoring continues to show low levels, then 50%, then cease all pumping except for dust but it's a matter of what the trigger levels are (Testimony of January 12, 2017).

488. In cross-examination, regarding the average observed water levels over six years, Mr. Malcolm agreed that there has to be some reason to be concerned about the level. The reason he is concerned relates to the unknowns. We don't know how the aquifer is going to respond if its 20% below the average level. We don't know how it's going to affect the other users or affect the natural environment. Until we get that information and

get those details, we can't make a solid decision on what are appropriate trigger levels. The only information we have is how this aquifer is going to react at average levels based on the groundwater model. He does not remember seeing an assessment Mr. Bulman did using different methods but agrees that if there are assessments out there that give a level of confidence that going below the average level will not cause problems, it might be appropriate to set a threshold lower than the average level. Mr. Malcolm's testimony is that the seasonal variations of 1-4m constitute a significant depletion for non-municipal users (Testimony of January 12, 2017).

489. In cross-examination, Mr. Malcolm testified that every time the TMCP is recalibrated it should be posted on the EBR Registry for 60-day comment (Exhibit 21, proposed Conditions 4.8-4.9) because this is a sensitive site where it would be subject to appeal. Furthermore, there are a lot of people depending upon the groundwater in this area and this is a trigger mechanism we do not have, we don't know how its going to be set up, or what the contingency plan will be. So until we know that, we don't know whether it's going to be effective or not. Mr. Malcolm saw the TMCP just before he had to file Exhibit 20 and has concerns with the TMCP (Testimony of January 12, 2017).

490. In re-examination, Mr. Malcolm testified that the purpose in giving notification to those identified in his proposed amendment to PTTW Condition 4.9 regarding deviations from the predicted groundwater modeled levels (to be amended to significant deviations) is to ensure that we will not wait until the end of the year until the information is posted. It should come out forthwith where there is a (significant) deviation (Testimony of January 12, 2017).

b. Evidence of the Directors

491. In examination in chief, Mr. Bulman testified that the TMCP is based on using the lowest monthly groundwater level measured between 1988 and 2016. He wanted to know whether that would be an appropriate trigger. The MOECC has been looking at a percentile mechanism to determine drought levels so Mr. Bulman was looking at Exhibit 42 in the context of the percentile method. Exhibit 42 tells Mr. Bulman that between 2009 and 2013 there was an overall decrease in water availability in the aquifer, and between 2013 and 2015 there's an increase, and now it's flattening out (Testimony of January 16, 2017).

492. In examination in chief, Mr. Bulman testified that the purpose of Condition 4.7 is connected to the province's low water response program. The MNR has a low water response program in which they look at surface water and from the flows they determine whether, the Grand River for instance, is under stress. And they have trigger levels, tier 1, 2, and 3. At the various levels, action happens. At level 1, they ask all users to reduce their taking by 10% voluntarily. At level 2, reduce by 20% and then level 3 can be more stringent requirements put on by the MOECC as the program is a partnership between the MOECC PTTW program and the MNR relationship with conservation authorities. The purpose of the TMCP is that during periods of water stress or drought, water taking by the company would be reduced (Testimony of January 16, 2017).

493. In examination in chief, Mr. Bulman testified that the CRH proposal in its TMCP to use the lowest monthly groundwater level measured between the last 28 years (1988 and 2016) is not appropriate because in the last 28 years it is the maximum low. It is a problem because there have been lows since that time and today that were a little higher. It is a problem for the TMCP because Mr. Bulman would rather be a little more conservative. Mr. Bulman also testified that he did not think Mr. Malcolm's proposal of using the average for the period 2006 to 2012 is appropriate because on average the TMCP would always be triggered. The purpose of a trigger plan is that if something of consequence happens, an action has to be taken. Mr. Bulman wanted a trigger plan here because he wanted to address some of the concerns of the citizens of Brant. Using Mr. Malcolm's approach the trigger plan would always kick in. If you set it at the average level that you must increase monitoring, that's fine. If you say at average levels, you have to reduce water taking amounts you'd only be able to not have triggers on non-average years. In a trigger plan, it is appropriate to require reduction in a water taking at the lower 10% because that's the trigger listed in the percentile method that the provincial groundwater monitoring network uses and that is also used in other jurisdictions. In terms of the purpose of a trigger plan and reduction in water taking, you would only reduce water taking when you get to a lower 10% because that is when you're worrying about the elevation of the water. By lower 10%, Mr. Bulman means if you take all the data from all the water level elevations from all the years taken, you take the lowest 10% and that would be the trigger. A water taker should always be allowed to take water for dust suppression purposes because there would be dust in the air and non-compliance with other instruments. He agreed that a trigger plan should be updated every two years and MOECC would have to decide whether it wants to subject the proponent to doing it. There would not likely be a drastic change from year to year unless there was a drought. If there is a severe drought MNR tells water takers to reduce takings and to what levels depending on what the water is being used for (Testimony of January 16, 2017).

494. In examination in chief, Mr. Bulman testified that he had not completed his assessment of the TMCP because he wants to do some further review of data from the site and also the provincial groundwater monitoring network well further north (Testimony of January 16, 2017).

495. Referring to Exhibit 60, Tab F, Table 1 (TMCP), Mr. Bulman testified in examination in chief that the predicted drawdown from the water taking in well BH-88-5-1 is 0.6m. Mr. Bulman's testimony was that a trigger level in a monitoring well should not take into account the predicted drawdown because you're actually looking at the water levels of the whole aquifer, not just right here on site. Mr. Bulman noted that in reference to note 3 on page 36 of Tab F which says "Trigger levels are based on using the EWTL minus the maximum predicted drawdown at the monitoring well location" that GD does not take into account the drawdown because they do not want to adversely impact the surface water value. He testified that one school of thought is that in setting trigger levels one should take into account the predicted drawdown of the water taking but also be looking at the natural fluctuations in the water levels around it. In response to the question in what way does his view about how to set up an appropriate trigger plan for this water taking differ from what GHD is proposing, Mr. Bulman testified that

GHD's assessment is set on the lowest water level in 1988. I would prefer to take a more cautious approach and use a water level that's higher, subject to the trigger plan being reviewed every couple of years so that could be adjusted (Testimony of January 16, 2017).

496. In examination in chief, Mr. Bulman testified that on January 17th he is now in favour of the GHD TMCP (Exhibit 60, Tab F) with one small change; that the early warning system be put in at a water level elevation that's slightly higher so that minimizes chance of missing the early warning threshold. He would like to see how this would fit in with a percentile method on one of the provincial well monitoring network wells and also compare this threshold level and declarations of level 1, 2 and 3 in that area of the Grand River. Mr. Bulman testified that this is probably a change from he told the Tribunal on January 16th but he can't say exactly where. He would now like to see how the TMCP from Dufferin would fit in with the Tier 1, 2, 3 notification system but that's something the MOECC would have to do but with actual data so you could see whether it is overly sensitive. He would like the TMCP reviewed every two years. He is now saying that we should not use the percentile method but instead use the TMCP. His opinion has also changed from the evidence he gave on January 16th on the issue of using 28 year lows because the data (Exhibit 45) shows that the difference between the 28 year high and 28 year low is about 1 m. Exhibit 45 changes his opinion because what he did was he looked at the predicted draw downs at the 3 monitoring wells and the on site pond, the predicted radius of influence done by himself, Stantec, ARL and CRA, the depth of the source pond to 10m and the depth of the aquifer in both wellfields and came to the conclusion it's highly unlikely at the low end of the range that there would be an effect at the Gilbert and Telfer wellfields. Exhibit 45 is the monthly groundwater elevations for BH88-5-1 stacked from the years 1988 to 2014. It is based on a spreadsheet given to him by GHD. He does not know how the data was picked. All the data sit in a range of about a meter, which means the water fluctuates about a meter annually, which tells him that there is unlikely to be an adverse effect with the trigger being set where it is. In response to the question how is the fact that there's a 1m range in water levels over the years and for each month connected to his assessment that the trigger levels proposed by GHD are unlikely to cause adverse effect, Mr. Bulman testified that he looked at the range of the water levels and then he also looked at the distance from the source pond from all the features that we're concerned about and came to the conclusion it's unlikely that taking water down at the trigger level would have an adverse effect. The MNR program has no relevance as to how he would assess the TMCP (Testimony of January 17, 2017).

497. In cross-examination, Mr. Bulman testified that although he now is in favour of the GHD TMCP with one small change, the one small change is to have the EWTL, the groundwater elevation raised by 5-10% (Testimony of January 17, 2017).

498. In cross-examination, Mr. Bulman testified that he was supporting the lowest water level recorded in 28 years on a monthly basis to be the EWTL plus 10%. The trigger level would stay where it is. These are the same EWTL and trigger levels that GHD proposed except for the 10%. Exhibit 45 is for just BH88-5-1. There are other wells

(MW3-12 and MW3-16) but he did not have the data to do the same thing as he did in creating Exhibit 45 for BH88-5-1. He has not evaluated the other wells with a chart similar to Exhibit 45. While he thinks the fluctuations would be similar in the other wells he does not know. You would take 10% up from the EWTL. He does not know what the drawdown would be under permitted takings and during drought conditions (Testimony of January 17, 2017).

499. In cross-examination, Mr. Bulman agreed that the blue diamonds across the middle of Exhibit 45 are the EWTL and they represent the 28 year lowest water level ever recorded for BH88-5-1. He also agreed that approximately 0.6m below the blue diamonds are the brown squares representing the trigger level and it is at that level that CRA (GHD) would propose to start any reductions in pumping. He also agreed that at the levels represented by the brown squares we would be at record lows never seen before in the area in the 28-year period 1988 to 2014. His testimony is that it is precautionary to wait until those levels are reached before starting to reduce pumping. He also agreed that Exhibit 45 does not have data plotted for five different years between 1988 and 2014 (1994, 1999, 2002, 2003, 2007). He agreed that that meant that he was missing data for 20 per cent of the years between 1988 and 2014 for BH88-5-1. He further agreed that that might impact the usefulness of Exhibit 45 as a baseline for establishing a trigger mechanism (Testimony of January 18, 2017).

c. Evidence of the Instrument Holder

500. In examination in chief, Mr. Murphy testified that the TMCP (Exhibit 60, Tab F) constitutes an additional precautionary measure in the PTTW protective of water resources in the area. MOECC has not yet approved the TMCP (Testimony of January 27, 2017).

501. In examination in chief, Mr. Murphy testified that the TMCP is part of the implementation of the PTTW. This is a plan that needs to be approved by the MOECC prior to the source pond being constructed. GHD developed the plan after the issuance of the instrument recognizing that the MOECC has been very engaged in the PTTW. The purpose of the TMCP is to evaluate what are the actual changes that are being seen as a result of the water taking relative to what is being predicted. If the changes are greater and potential negative impacts may occur, then certain actions will be taken. This is a living plan document with MOECC that may change over time. MOECC is very engaged with the County at the Gilbert wellfield so there may be other information that they want to incorporate into the plan. Climatic conditions can vary so there are things that may influence the TMCP. The TMCP has been set out by GHD under Mr. Murphy's direction. GHD recognize in the TMCP that the key characteristics in respect of this water taking, include the prolific aquifer, the lack of stress, no long-term decline in water levels, and the taking is not predicted to have a large effect. Mr. Murphy also testified that GHD knows that the draw down that may occur is not anticipated to have a negative impact on groundwater supplies under average or dry climate conditions. The TMCP has a couple of components to it. The TMCP has been set up in reference to the monitoring required under the PTTW. There are three monitoring well locations under the PTTW under

condition 4.2, and also surface water level monitoring under condition 4.3, particularly 4.3a. GHD set up what it termed an EWTL under which GHD would undertake additional monitoring to look more frequently and closely at conditions so Dufferin is on top of what is happening. These EWTLs are set on the basis of historical maximum groundwater elevations. In terms of surface water level monitoring, we have a much shorter history, only 4 years, so it's a bit more conservative because we don't have a long history. Because there is less likelihood of actually having measurements of low water levels, the EWTL is more conservative for the pond in that respect. We then set a trigger level to reduce water takings at the EWTL minus the predicted draw down (Testimony of January 27, 2017).

502. In examination in chief, Mr. Murphy testified that he chose that because those are levels where GHD have predicted that degree of draw down, evaluated surrounding aquifer conditions, and concluded no negative impact at those levels. So the trigger is not set to identify when there is a negative impact but that there is more drawn down than predicted. When that occurs the response might be no water taking operating in that area, or if that's occurring, the need to further evaluate what is happening. In discussing Exhibit 60, Tab F, Figure 1 Mr. Murphy testified that there are 3 monitoring wells identified within the TMCP to be used, MW1-12, MW3-16 which is a newly installed well, and to the west of the source pond, BH88-5 which is a long term monitoring well. The surface water monitoring location built in to the TMCP is SW1 which is the large existing pond located east of the washing operations. In the TMCP, at page 2, and just above the blue box with the table, the two lines above that say Dufferin will not take water at a rate higher than condition 4.3a of 1,400L/minute when the groundwater level is below the EWTL. Mr. Murphy testified that that is a condition built in that at any time the water level is below the EWTL, the higher rate of water taking is not permitted. In this table (on page 2), what is described are the locations and required actions for what happens when the levels are below the EWTL. The first is to increase the manual frequency of measurements for the monitoring wells to weekly, to review that data weekly to ensure the water level hasn't dropped below the target and normal monitoring frequency would resume once the water levels are above the EWTL. The listing of what those EWTLs are is in Table 1 (page 36), a monthly EWTL and a monthly groundwater level target for each individual location. When we move to the next section of the report, the groundwater trigger levels, this describes what happens if the water drops below the trigger level. The basic actions include continue to do at least weekly monitoring, continue weekly reviews, once you're below the trigger, within one business day of that determination, reduce the daily water taking by 25% and provide notice to MOECC that this condition has occurred and it's being actively addressed. If reducing the taking by 25% does not address the lower water level and it remains below the trigger level after one week, the reduction becomes a 50% reduction from 1,400L/minute. If another week goes by and it hasn't recovered, then the water taking ceases completely for the washing operations. The water taking for dust control would still continue but it's a small water taking. There are specifics in terms of how the water taking ability is restored as the water level comes back up over time. In item 9 (page 31), GHD have proposed that when the water level recovers above the EWTL that Dufferin be allowed to take water at the

higher rate for up to 10 days to refill the washing operation capacity (Testimony of January 27, 2017).

503. In examination in chief, Mr. Murphy testified that his understanding of the testimony of Mr. Bulman was that he felt the EWTL should be set somewhat higher than what we suggested, at the 10th percentile. This provides warning of hitting the historic low but he agreed with the trigger level basis and keeping it where we calculated it. Mr. Murphy testified that he had no concerns with that, because it would make things a little bit more protective in terms of when extra monitoring is engaged. Section 3 of the TMCP contains the surface water trigger levels but it's essentially the same plan as for groundwater. There is an additional check that if there's a lower pond level it's related to a groundwater level that is associated with it and not another climatic issue so we respond appropriately (Testimony of January 27, 2017).

504. In examination in chief, Mr. Murphy testified that he understood Mr. Malcolm to be concerned about the potential for draw down at MW2-12 at the north end of the pond area and was suggesting it be built into the TMCP. GHD didn't include MW2-12 because its purpose is to put a check in place on the predicted influence of the water taking to see if it's in line and we're not anticipating any substantial draw down at MW2-12 because we're getting further away from the water taking and surface water pond. Mr. Murphy testified that it may be helpful to look at the hydrogeological considerations relative to the area water taking around MW2-12. Referring to Exhibit 41, Tab 7, Figure 3.8, Mr. Murphy testified that what Figure 3.8 shows is it's a contour map for the top of the till unit, which is the low permeability material underlying the outwash sand and gravel aquifer. When we look at Figure 3.8, just to the north of the source pond, that there are 2 closed loop contours at 240 and 240.5 and that's depicting an area where the till surface rises up above the groundwater table which means there isn't continuity within the outwash aquifer between the settling pond and MW2-12. Therefore, GHD didn't feel MW2-12 was appropriate or necessary to have a trigger in the TMCP because its not very well connected and any influence to that direction would be reflected in MW1-12 and we would also expect to see an influence in the existing surface level pond and MW2-12 should not have a substantial amount of draw down and there are no nearby water resource receptors in proximity to it. Its many hundreds of meters before we get to a domestic well, so we didn't feel it was critical (Testimony of January 27, 2017).

505. In examination in chief, Mr. Murphy testified that he disagreed with Mr. Malcolm's suggestion of setting the EWTL at the average level because from a practical sense it means 50% of the time you're into an early warning condition and you have this additional commotion going on. It's a crying wolf situation where we'll be in that condition too often. You wouldn't have quantity concerns just because you're below the average in the area (Testimony of January 27, 2017).

506. In examination in chief, Mr. Murphy referred to the low response program (Exhibit 61, Tab E) and the fact that it is a program that's in effect outside of the PTTW. Mr. Murphy also included Exhibit 61, Tab F, which is part of the program for low water level response that the Grand River Conservation Authority and others have developed

and the Tab F table contains suggested actions in response to low water for major water use sectors. Mr. Murphy testified that this provides more details on the kinds of actions that are anticipated in response to low stress conditions. On the right hand side of Tab F, there's a consideration for aggregate users and different things they can do to conserve water and what might happen under the different low flow levels, but ultimately the MOECC could reduce the water taking under the PTTW (Testimony of January 27, 2017).

507. In examination in chief, Mr. Murphy, in referring to Exhibit 21's proposed amendments of Condition 4.7, testified that with respect to proposed Conditions 4.7(a) – (d) in his opinion: (a) it's not reasonable to use the average at the EWTL, the trigger level is consistent with how the draw down was evaluated so the trigger level is reflective of the model; (c) three wells are enough to satisfy the requirements; and (d) the surface water monitoring is included in the TNCP and a piezometer doesn't have the same intent and is not consistent with the TMCP objectives. Mr. Murphy testified that with respect to proposed Condition 4.7(e), it's not really a hydrogeology point, but the word "violation" has been used and based on the TMCP, Mr. Murphy wouldn't characterize the water levels dropping below the EWTL or trigger level to be a violation, it's just a threshold that requires monitoring or a certain action. With respect to the rest of proposed Condition 4.7, the requirement for the production of a report is part of the annual monitoring report and in the TMCP itself, which is Exhibit 60, tab F, page 7, this is section 4 entitled reporting, the first paragraph reads: "The Combined Annual Monitoring Report that is a requirement of the PTTW will include documentation of the monitoring results and any notifications, response/contingency actions associated with this [TMCP]". In Mr. Murphy's view this conveys the intent that the annual reporting includes the TMCP and anything that happens under the TMCP. Therefore, further specification in the conditions is unnecessary according to Mr. Murphy. Regarding proposed Condition 4.7(f), Mr. Murphy testified that this seems to recommend a different approach to setting EWTLs and trigger levels, which isn't consistent with the levels laid out in the TMCP. Mr. Murphy testified that the TMCP GHD proposed is appropriate and the EWTL is simply the call to action to pay closer attention to what is transpiring and the trigger level is the appropriate place to require staged reduction in pumping. You don't need to stop everything all at once (Testimony of January 27, 2017).

508. In examination in chief, Mr. Murphy testified that the combined effect of proposed Conditions 4.7(a) and (f) would result in a lot of unnecessary shutting down of the wash plant operations under conditions that are relatively normal and able to sustain the water taking. If we applied this in a broader context, not allowing water takings below average conditions or historic low level conditions, it would prevent any new water taking from occurring because every water taking is having some draw down effect (Testimony of January 27, 2017).

509. In examination in chief, Mr. Murphy testified that proposed Condition 4.7(g) recommends a specific schedule for re-evaluation of the TMCP. The TMCP GHD worked on and the involvement GHD had with the MOECC has been an engaged process to share information and adapt what's been proposed. So in Mr. Murphy's view he does not think it necessary to lay out a concrete schedule. Over time the TMCP will be

reviewed regularly, there's reporting, and the MOECC at any time can request alterations to the TMCP (Testimony of January 27, 2017).

510. In examination in chief, Mr. Murphy testified that with respect to the proposed Condition 4.7(h)(i) and (ii) these are normal components of the annual monitoring reports. Mr. Murphy testified that in his opinion there's lots of clarity that the TMCP reporting is required on a regular basis and the MOECC is going to be informed anytime there's a triggering under the TMCP. As for proposed Condition 4.7(h)(iii) respecting reporting on complaints, Mr. Murphy testified that PTTW Condition 5.1, requires notification of the MOECC regarding complaints and this is a standard condition in PTTWs. So there's a very clear reporting requirement for complaints already and in the annual reports we tend not to put complaints in because they are public documents and there are privacy concerns (Testimony of January 27, 2017).

511. In cross-examination, Mr. Murphy agreed that notwithstanding that the aquifer is prolific and there is a high recharge rate, you only end up with a high recharge rate if there is lots of rain or snowmelt. No precipitation means a reduced recharge rate (Testimony of February 1, 2017).

512. In cross-examination, Mr. Murphy agreed that with respect to Exhibit 41, Tab 7, page 11, which says that: "Based on regional hydrogeologic parameters and infiltration, groundwater flux through the area of WHPA associate with Gilbert and Telfer Wellfield is estimated to be approximately 10,000 to 20,000L/min" the current water takings from Gilbert and Telfer of 3,500L/min, and their future or approved water takings of 11,280L/min (Exhibit 41, Tab 7, page 21) represent 35%-112% of the low end of the groundwater flux range. Mr. Murphy added that mathematically the numbers are correct but he clarified that the 11,280L/minute is the approved capacity that Stantec had at that time but that was not the projected future pumping rate. Municipal wells always try to have a higher projected pumping rate in case a well goes down or water is blended so it's higher than the future rate projected for WHPA purposes (Testimony of February 1, 2017).

513. In cross-examination, Mr. Murphy agreed that the initial taking approved for Dufferin in the PTTW is 14,000L/min which is greater than the low end of the groundwater flux. He also agreed that it then drops down to 1,400L/min, which is 14% of the low end of the groundwater flux (Testimony of February 1, 2017).

514. In cross-examination, Mr. Murphy referred to consumptive and non-consumptive uses of water and came up with 160L/min as the consumptive impact of the PTTW water taking, which he agreed is 1-2% of the groundwater flux in the area and also agreed that Dufferin did not apply for a water taking of 160L/min (Testimony of February 1, 2017).

515. In cross-examination, Mr. Murphy agreed that with respect to Exhibit 64 that while the water level variation in BH88-5 is 1m/year and does not vary dramatically, the water level variation in BH88-3 (green triangle), located west of the source pond and upgradient of the source and settling ponds is 3m/year. This well, which is no longer functioning, was replaced by MW5-16 (northwest corner of Phase 2). Mr. Murphy was

uncertain whether the new well would have the same or less water level fluctuation than BH88-3 (Testimony of February 1, 2017).

516. In cross-examination, Mr. Murphy, having testified in chief that the aquifer was not sensitive to wet and dry periods and therefore he did not expect impacts from water taking, agreed in cross-examination that scenario 3A and 3B was the one with the largest drawdown influence and was the one he did a sensitivity analysis on at different recharge rates. Referring to Exhibit 41, Tab 7, Table H.3, the bottom half represents the sensitivity analyses CRA conducted for the PTTW, Mr. Murphy agreed that: (1) scenario 1 used a higher recharge rate of 450 mm/year (a heavy rainfall scenario and more recharge); (2) scenario 3A and 3B used a lower recharge rate of 250mm/year (a dry period simulation); (3) he did not do a sensitivity analysis for a drought and 250mm/year would not represent a drought; (4) the other scenarios he ran did not involve dry periods as part of the sensitivity; (5) referring to Exhibit 41, Tab 7, Table H.2 scenario 3B used a pumping rate of 185L/min, a pumping rate Dufferin did not apply for; (6) Dufferin applied for a pumping rate of 18,000L/min and was granted a PTTW for 14,000L/min for 3 months and 1,400L/min thereafter; (7) CRA did not do a dry period sensitivity analysis for scenario 4 or 5 (Testimony of February 1, 2017).

517. In cross-examination, Mr. Murphy testified that scenario 3 had the most potential for drawdown and CRA deemed it to be the most sensitive aspect of the water resource changes. However, he agreed that scenario 5, a short-term pumping exercise involving the pumping of 18,000L/min, was CRA's worst of the worst cases. It was a scenario where the water is being pumped and it would be analogous to a municipal water taking where there is no recharge to the groundwater flow system. Scenario 1 was only pumping for 1 day and was not done in a dry period simulation (Testimony of February 1, 2017).

518. In cross-examination, Mr. Murphy agreed that looking at Exhibit 41, Tab 7, page 7, 2nd full paragraph, the settling pond will have a capacity of approximately 66,000 to 131,000 cubic meters. He did not do a scenario, a groundwater flow model run, or simulation for the impact on water levels from trying to fill the settling pond. He testified that it would take less than 9 days to fill the settling pond (Testimony of February 1, 2017).

519. In cross-examination, Mr. Murphy agreed that with respect to Exhibit 45, he did not model any scenarios using the model calibrated to the lowest water levels, or for the EWTLs (Testimony of February 1, 2017).

520. In cross-examination, Mr. Murphy testified that he did not model any of the takings approved in the PTTW of 14,000L/min for 3 months or 1,400L/min for the remainder of the year (Testimony of February 1, 2017).

521. In cross-examination, Mr. Murphy testified that he used the results of simulations of the influence of the water taking and consumption of water out of the system to calculate how much drawdown that would cause and used the results to set trigger levels in the TMCP (Testimony of February 1, 2017).

6. Conclusions

522. The concerns of Mr. Malcolm about the adequacy of the TMCP contrast with the assurances of Mr. Murphy that it is protective and precautionary. Where does the reality lie?

523. Mr. Murphy's groundwater flow model was calibrated to average observed conditions from 2006 to 2012. So all his predictions about impacts derived from that model are based on using average observed conditions of the aquifer. But when it came time to develop the TMCP he through all that information out and what he used instead was the lowest monthly groundwater level measured between the years 1988 to 2016.

524. Mr. Malcolm says this is a problem that will allow water takings to continue at low water levels never before experienced in the area; potentially a trigger that will never trigger. Mr. Murphy says it is not a problem and to use average conditions, as recommended by Mr. Malcolm in Exhibit 21, is to be in trigger mode 50 per cent of the time. As for Mr. Bulman, he agreed with Mr. Malcolm on January 16th and with Mr. Murphy on January 17th, with one minor difference.

525. Mr. Malcolm is also concerned that the sequencing of response measures in the CRA TMCP is potentially too top heavy with more monitoring instead of early actions to reduce pumping, particularly if the TMCP remains geared to the 28-year low approach.

526. However, what may be most significant is that while Mr. Murphy strongly disagreed with Mr. Malcolm's proposals for amending the TMCP, there are some potentially serious problems in the modeling scenarios run by Mr. Murphy and relied on by the Directors to conclude that the aquifer is prolific and resilient enough to absorb the level of water taking from the PTTW even in dry periods. It turns out that: (1) none of Mr. Murphy's modeling scenarios included a sensitivity analysis for a drought condition; (2) his worst case scenario was only conducted for 1 day and was not even done in a dry period simulation; (3) he did not model any scenario using the model calibrated to the lowest water levels, or at the levels for his TMCP EWTLs; and (4) his TMCP trigger levels were based, at least in part, on his modeling simulations.

527. The Appellants ask the question can modelling that ignores drought in the age of climate change really tell us what we need to know about the impact of aggregate water taking on area water levels. Can trigger mechanisms that seem to take us to the edge of low water level brinksmanship really be considered precautionary? The Appellants submit that the answer is "no" and another reason to adopt Mr. Malcolm's proposals in Exhibit 21.

E. Evidence from Participants

1. Concerns Expressed by Residents

528. The residents who lived in close proximity to the Paris Pit Site made presentations at an evening session to the Tribunal. Some of the concerns they raised in their testimony is summarized below.

529. Jeff Broomfield, the current Co-Chair of the Concerned Citizens of Brant (CCOB), lives at 738 Watts Pond Road in Paris, a few hundred metres east of the pit entrance, within the Well Head Protection Area. Mr. Broomfield is married and has two grown children. He lives at his current home and obtains his water supply from a private well on the property. Mr. Broomfield has lived at his current home for 19 years and has lived in the community his entire life. He testified about visiting the Paris Pit Site and hearing frogs in the wetland beside the proposed wash pond and settling pond. He stated that the proponent, Dufferin (also known as CRH), had indicated there was no significant wildlife in the pond. Meanwhile the study, kept from the public, clearly states that there are 5 species at risk. Mr. Broomfield was very concerned about the potential for atrazine to get into the drinking water supply and cause adverse health impacts. In particular he was concerned about the potential for atrazine to cause breast cancer. He stated that many members of his family, neighbours and friends have been stricken with breast cancer. He expressed concern about the lack of science to support Dufferin's claims that the groundwater would not be affected by the proposed operations at the site. Mr. Broomfield also raised concerns about the adequacy and errors in the studies that had been done by Dufferin in support of its application to operate on the site and by the MOECC. He expressed concern that as a citizen he is finds himself forced to take a stand and protect the community and its drinking water supply from the very Ministry tasked with the job of protecting the public's drinking water supply (Testimony of Jeff Broomfield, January 11, 2017; Exhibit 27 and Exhibit 28).

530. Dave Dietrich who operates his own business has lived at 202 West River Road in Paris since 1991 with his wife and two sons who are now adults. Mr. Dietrich's family lives on a severed one and one-eighth acre property surrounded by farms that contain hundreds of natural springs. Mr. Dietrich obtains his water supply from a well on a neighbouring property, and has an agreement with the neighbour that he will have continuous access to the wells. Mr. Dietrich's well is spring fed and the natural flow of the spring water is captured and directed into a bathtub for the cows to drink, and then directed through the land into a pond for agriculture or household use. The water eventually goes back into the aquifer. He stated that the spring water management has established protected areas for sensitive species like salamanders and other critters, and helps avoid swampy conditions in the field. Mr. Dietrich said that the water pressure is consistently good, the spring is always overflowing and the cows love it. It was Mr. Dietrich's understanding that the cold water springs help revitalize the Grand River during the hot summer months. Mr. Dietrich expressed concerns about the well water survey done by the proponent. Dufferin's representatives had noted the well on his

property as “inactive” which was incorrect. Dufferin has also noted that there were only three people living at his home. Mr. Dietrich said this struck him as unreasonable given that size of family could vary in future and this, in turn, would have an impact on the use of the well water. He was very concerned about the MOECC’s decision to issue the PTTW and ECA and did not think that the history of water management in the area, the sensitivity of the springs, and the need to ensure the long-term protection of water resources for the future had been considered (Testimony of Dave Dietrich, January 11, 2016; Exhibit 27 and Exhibit 29).

531. Ms. Anne Ehrlich lives on a farm at 331 Pinehurst Road in Paris, northwest of the Paris Pit Site with her husband Nick Greenacre. They have two sons who grew up on their farm which is located in the Well Head Protection Areas for the Gilbert and Telfer well fields. Ms. Ehrlich is a public health researcher and retired university professor who was also cross-appointed to the Public Health Research and Education Programme in Hamilton. The focus of much of her professional career in Canada as well as internationally has been on evidence-based decision-making for healthier public health. As a wife, mother and caring neighbour she was shocked to learn about the proposed gravel extraction based on a 40-year old license at the Paris Pit Site. Ms. Ehrlich was very concerned about the growing evidence of health risks associated with atrazine use and recent research about breast cancer clusters in South Western Ontario. Having learned about the aquifers contaminated with atrazine in Illinois and Ohio in the United States during drought conditions, she wondered what this might mean with the proposed water taking and gravel extraction for the Paris Pit in her own community. She questioned why atrazine had been banned in the EU and what the Paris Appeal meant for the current standards in Canada and the US. Ms. Ehrlich explained that the Paris Appeal was an international declaration on diseases due to chemical pollution which was signed by numerous international scientists including Nobel laureates and many doctors, nurses and others. She filed a copy of the Paris Appeal with the Tribunal. She also included a copy of The Berlaymount Declaration on Endocrine Disruptors which was released in 2013 built on the Paris Appeal. It called for stronger regulatory structures and processes that would assess and monitor risks of contaminants even with exposure at low doses. Ms. Ehrlich expressed serious concerns about the risk of chemical pollution which could result from the gravel operation on a site where atrazine had been used for decades. Ms. Ehrlich was also concerned about the impacts that climate change would have on water conditions, particularly given the drought conditions that were experienced in the area in 2016. Ms. Ehrlich queried how these risks would be assessed to ensure a safe and sustainable water supply for the growing population in the community. She expressed concerns about the strength and credibility of the evidence which had been used by the government as the basis for making its decisions. These decisions which would affect the lives of people in the community as well as the lives of their children for years to come (Testimony by Anne Ehrlich January 11, 2016; Exhibit 27 and Exhibit 30).

532. Mr. Alex Faux lives at 185 Paris Links Road in Paris, directly south of the proposed quarry with his wife and two sons aged 12 and 16. Mr. Faux said he was not anti-development and believes resource extraction needs to occur responsibly. However, with increasing pressure on fresh water sources, he considered it necessary that extreme

caution be taken to ensure that significant water sources, in very close proximity to the proposed gravel pit extraction, be protected for future generations. He noted that Dufferin had claimed that if a problem occurred it would provide an alternative water supply. Mr. Faux queried where the alternative water supply would come from and how long and to whom it would be provided. He said if the worst case scenario occurred and the aquifer became contaminated there were no assurances that Dufferin would not leave and let the local taxpayers and County resolve the problem at their own expense (Testimony of Alex Faux, January 11, 2017; Exhibit 27 and Exhibit 31).

533. Ms Norma Fueten lives at 501 Blue Lake Road in St. George and is a long time resident in the area. She is retired and has grandchildren. Ms. Fueten's house is on a property with a spring-fed kettle lake and large wetland. She said the movement of water underground in the area is not well understood. She is concerned that the proposed extraction operation could contaminate the aquifer. She said that the proposed holding pond would receive run off from neighbouring fields where corn has been grown for many years, using atrazine as weed control. Since the well fields supplying the town are very close the site, she urged that the precautionary principle be applied to ensure protection of the water resource. She said protecting the water for future generations should be more important than the small financial reward the areas would receive from gravel extraction (Testimony of Nora Fueten Faux, January 11, 2017; Exhibit 27 and Exhibit 32).

534. Ms. Dana Glory lives at 72 West River Road in Paris with her husband and two young children. She is a newer resident of the community having moved to the area five years ago from Toronto. Her house is due south of the Paris Pit Site. She said she was fortunate to be able to move to her husband's childhood home which is located on a four acre property on the Grand River. The property has a naturalized pond and many animals live and travel though the forest on the property. Ms. Glory expressed concerns about the environmental impacts that the proposed gravel extraction would have on the Grand River system and the town's aquifer and water supply. She is concerned that any potential damage would become the responsibility of the local community and that Dufferin would not be held accountable (Testimony of Dana Glory, January 11, 2017; Exhibit 27 and Exhibit 33).

535. Mr. Nick Greenacre lives at 331 Pinehurst Road with his wife, Ms. Anne Ehrlich. He is currently retired but worked the farm from 1995 to 2009. Mr. Greenacre has worked in the area of environmental health for many years at the local, national and international levels including academic appointments and senior level positions with international organizations. He expressed concerns that approximately 183 hectares of the Paris Pit are within the Well Head Protection Areas, and that ten to fifteen metres of overburden will be extracted leaving only one metre of cover above an aquifer already rated as having the highest vulnerability level of 10. He wrote to the MOE about this concern and the Ministry's Director of Source Protection confirmed that aggregate extraction would increase the risk of contamination. He also presented to the MOECC expressing concern that only three sampling sites at the boundary of the pit had been used by Dufferin to be representative of the 249 hectare site. He testified about a number of instances where CCOB's concerns about the proposed gravel extraction were either

disregarded or misinterpreted by MOECC and Dufferin. Mr. Greenacre stated that if the proponent had carried out a valid scientific study at the beginning and the MOECC had taken CCOB's concerns seriously, the issues may have been resolved and a considerable amount of costs, both public and private could have been avoided (Testimony of Nick Greenacre, January 11, 2017; Exhibit 27 and Exhibit 34).

536. Cassie McDaniels lives at 11 Jury Street in Paris about two kilometres southwest of the Paris Pit Site. Ms. McDaniels is a design director for the Mozilla Foundation and her husband runs a design business. They have two young daughters aged three and eight months. Ms. McDaniels and her husband are recent immigrants to Paris and moved to the area because of its natural beauty and charm. Ms. McDaniels expressed concern about the impact that the proposed gravel extraction would have on the water quality. She spoke about how the Town of Paris had done a poor job of preserving its rich heritage of architecture and urged that similar mistakes not be made in relation to protecting the town's water supply (Testimony of Cassie McDaniels, January 11, 2017; Exhibit 27 and Exhibit 35).

537. Ron Norris lives at 272 West River Road which is located northeast of the Paris Pit Site. He is married and has two grown children and has lived in the community for approximately eight years. Mr. Norris served as a spokesperson for CCOB which was formed in response to the Paris Pit Site. He noted that in addition to CCOB's membership of 300, there were two letter writing campaigns which generated about 1,000 letters in the first round, and over 1,400 letters in the second round, when the community responded to the Environmental Registry postings about the proposed gravel extraction operation. Mr. Norris stated that he did not consider himself to be an activist. Four years ago, he said he would have been the last person on the planet to be making a presentation to the ERT. However, the more he learned about the issues, the harder it became to sit on the sidelines. Mr. Norris noted that a second more comprehensive study done by MMM on Dufferin's behalf dated January 30, 2015 designated the sensitivity of the wetland which is located on the site as "very high" due to numerous observations of species at risk. The MMM report states that wetland has the potential qualify as a Significant Wildlife Habitat. However, the second report was not made available to the members of the Community Advisory Panel, nor was it on the list of technical documents relied upon by the MOECC in support of its decision to grant the ECA. He said he was concerned that the proposed operation would be a grave threat to private well owners as well as the town's well water supply due to the vulnerability of the aquifer to atrazine contamination. Mr. Norris stated that he was aware of the efforts since 2009 by the local Source Water Protection Committee (SWPC) to protect drinking water sources. The SWPC had been established following the Walkerton Inquiry which called for threats to drinking water sources to be identified. In particular, the SWPC has called for the practice of digging below the water table thereby increasing the vulnerability of underground aquifers to be identified as a threat to drinking water. However, the Ministry of Natural Resources and Forestry has consistently refused to accept this recommendation even though this proposal had full support of all the chairs of the SWPC in Ontario. He noted that the MOECC's technical expert committee had concluded that the removal of the protective material over the aquifer would make it more vulnerable. At the Paris Pit Site, the

proposed plan is to remove 90% of the protective layer. The Well Head Protection Areas are ranked from one to ten and the Well Head Protection Area in Paris currently is assessed at 10. Mr. Norris expressed concern that removing 90% of the protective layer would make the WHPA even more vulnerable. He stated on behalf of CCOB members he was extremely concerned that the issuance of the ECA and PTTW by the MOECC would result in the contamination of the community's drinking water supply (Testimony of Ron Norris, January 11, 2017; Exhibit 27 and Exhibit 36).

2. Conclusions

538. Many of these residents who live in close proximity to the Paris Pit Site expressed serious concerns about the adverse environmental and health impacts that could result from the proposed operations at the site. In particular, many of them were very concerned that atrazine which is present at the site would contaminate their groundwater which is the source of their drinking water supply, and this could cause serious adverse health impacts. They were concerned that in the event their drinking water supply became contaminated who would bear the costs for remediation and providing an alternative water supply. A number of the residents also expressed concerns about the impact that the proposed gravel operation would have on the long-term water supply in the area.

IV. LAW

A. The Precautionary Principle

539. It is respectfully submitted that this Tribunal should consider and apply the precautionary principle in its determination of the matters at issue in this case.

540. Atrazine is known to cause serious, irreversible impacts on experimental animals and the environment, although there is some scientific uncertainty about the nature of its impacts on human health and the concentrations at which the adverse impacts will occur. However, scientific uncertainty should not preclude intervention by this Tribunal to avoid or diminish the potential harm to human health and the environment.

541. The EU has adopted a precautionary policy with respect to atrazine and banned its use. The EU decision was prompted by a concern that it was virtually impossible to prevent atrazine contamination in water.

542. This Tribunal has previously considered and applied the precautionary principle in a number of its decisions. In *CCCTE v. Ontario (Environment and Climate Change)* the Environmental Review Tribunal (ERT) cited the *McIntosh* decision wherein the Tribunal had discussed the precautionary principle as follows:

A precautionary approach applies when there is scientific uncertainty about the risk of environmental harm from an activity. In essence, the approach provides that scientific uncertainty about environmental harm from an existing activity

should not prevent the adoption of measures to protect the environment. In a situation where there is significant uncertainty about the risk of a future activity, the Tribunal has held that a precautionary approach "presumes the existence of environmental risk in the absence of proof to the contrary. It places the onus of establishing the absence of environmental harm upon the source of the risk" (*Davidson v. Ontario (Director, Ministry of the Environment)* (2006), 24 C.E.L.R. (3d) 165, para. 44) (Tab 1, *CCCTE v Ontario (Environment and Climate Change)* 2015 CanLII 86925 (ON ERT, para 284)).

543. In the *CCCTE* decision the ERT found that the hydrogeological evidence of all the experts, when considered in totality, indicated some uncertainty remained regarding the understanding of the hydrogeology of the site and the extent of the leachate contamination. The expert for the instrument holder had maintained that the plume was well behaved and the contamination attenuation zone could be determined using existing data. However, the Tribunal found that this could not be said with certainty in light of the contrary view of other experts. Under the circumstances, the ERT held that it had to apply the precautionary principle and adopt the recommendations of the other experts in relation to a number of measures, including sampling of groundwater and surface water, contingency plan conditions and public notification (Tab 1, *CCCTE v Ontario (Environment and Climate Change)* 2015 CanLII 86925 (ON ERT, para 285)).

544. In *Prince Edward County Field Naturalists v. Ontario (Environment and Climate Change)* the ERT held that the precautionary principle applies to the decision of the Director and to the Tribunal's choice of the appropriate remedy. In that case, the Tribunal held that not proceeding with the nine wind turbine projects in the proposed location best served the precautionary principle, given the scientific uncertainty of the risks to Blanding's turtles (Tab 2, *Prince Edward County Field Naturalists v Ontario (Environment and Climate Change)* 2016 CanLII 35406 (ON ERT, para 61)).

545. The MOECC's Statement of Environmental Values (SEV) incorporates precaution as an aspect of the Ministry's approach to decision-making. The MOECC's SEV states that the "Ministry uses a precautionary, science-based approach in its decision-making to protect human health and the environment" (Tab 3, *Corporation of the City of Guelph v. Director, Ministry of Environment* (2014), 88 CELR (3d) 298, para 66).

546. The precautionary principle has also been reiterated in the International Declaration on Diseases due to Chemical Pollution (The Paris Appeal). The 2013 Berlaymont Declaration on Endocrine Disruptors built on the principles in the Paris Appeal and called for stronger regulatory structures and processes for assessing and monitoring impacts from endocrine disruptors. The Declaration states that there is plausibility that endocrine disruptors might lead to serious, irreversible human and wildlife health effects. It notes that animal experiments and some human health studies have shown that exposure to endocrine disruptors during developmental periods can cause irreversible harm that becomes apparent long after these exposures occur. Furthermore, it found that certain endocrine disruptors have toxicological properties that

preclude the definition of thresholds below which exposures are deemed safe. Some proposals for regulating endocrine disruptors from EU Member States were not sufficiently protective, did not follow the best available science, and placed commercial interest above the protection of human and wildlife health. The Berlaymont Declaration called for governments to establish regulatory regimes for endocrine disruptors that are based on sound scientific principles. In particular, it urged for establishment of regimes that classify endocrine disruptors by using weight-of-evidence approaches. It cautioned that in the “foreseeable future, endocrine disruptor regulatory activities will have to cope with the tension of serious, irreversible damage and delays in generating data that are indispensable for comprehensive risk assessment.” (Exhibit 30, Witness Statement of Anne Ehrlich attachments, International Declaration on Diseases due to Chemical Pollution; 2013 Berlaymont Declaration on Endocrine Disruptors.)

547. Atrazine has been determined to be an endocrine disrupter by the U.S. EPA based on weight-of-evidence. Scientists have expressed concern that it may have a non-monotonic dose response, making it a challenge to establish a threshold level below which exposure can be deemed safe. Regulatory agencies currently do not take into consideration that many endocrine disruptors lack a traditional dose-response and may have adverse effects at low concentrations well below the threshold levels established in guidelines.

548. Atrazine exposure has resulted in serious adverse impacts on experimental animals, including reproductive, hepatic and endocrine disrupting effects. Atrazine is also known to cause mammary tumours in female Sprague-Dawley rats; however it is uncertain whether it is also a human carcinogen. IARC evaluated the cancer potential of atrazine and found that there is inadequate evidence of carcinogenicity in humans but sufficient evidence in experimental animals. However, the IARC monographs stated that “clear mechanistic data are lacking to show that atrazine does or does not alter the secretion of luteinizing hormone (LH) and prolactin in humans. Thus, further studies are needed to characterize the ability of atrazine to interfere with the hypothalamic-pituitary-ovarian axis in women.” Similarly, a comprehensive Agricultural Health Study on 53,943 atrazine-exposed pesticide applicators found that while there was no clear association between atrazine exposure and any cancer analyzed, further studies were warranted for tumour types in which there was a suggestion of a trend (lung, bladder, non-Hodgkin lymphoma and multiple myeloma).

549. It is respectfully submitted that the scientific literature supports the premise that atrazine has a non-monotonic dose response, in which case it may be causing health impacts well below the maximum allowable concentration established by Health Canada in the Guidelines for Canadian Drinking Water Quality. Moreover, while atrazine is known to be a carcinogen to experimental animals, it has not been established whether it is also a human carcinogen. Health Canada, however, considers atrazine to be possibly carcinogenic to humans.

550. It is respectfully submitted that while there is some scientific uncertainty about the concentrations at which atrazine causes adverse health impacts, the magnitude and

nature of these effects on human health are serious and irreversible. This has led to the ban on atrazine in the EU and more stringent standards in other jurisdictions. Accordingly, it is submitted that this Tribunal should exercise extreme caution and apply the precautionary principle in its determinations regarding the causality, magnitude, probability and the nature of harm to human health from atrazine exposure.

B. Topsoil + Sewage = Sewage

551. The Appellants submit that the above equation represents not only the facts at this site but the law in this province for circumstances like this one. The Respondents have sought to keep the two as separate and apart from each other (the topsoil as the responsibility of the MNR; the sewage as the responsibility of the MOECC; the topsoil as not going through the aggregate washing process; the sediments going through the aggregate washing process). Even ignoring for a minute the potential concentration of atrazine in the topsoil itself, the facts and the law suggest that topsoil and sewage are connected in this case.

552. From the evidence we know that topsoil that has been stripped and stockpiled on-site is to be used for progressive and final rehabilitation of the Paris Pit site. The witnesses for Dufferin suggested that the rehabilitation will come far in the future but the *Aggregate Resources Act* (“ARA”) does not read like that. “Final rehabilitation” is defined in the ARA as rehabilitation performed in accordance with the Act, regulations, the site plan, and licence conditions and is performed “after the excavation of aggregate and the progressive rehabilitation, if any, have been completed” “Progressive rehabilitation” is defined in the ARA as “rehabilitation done sequentially, within a reasonable time...during the period that aggregate is being excavated” (CCOB Book of Authorities, Tab 10, ARA, s. 1(1)). So the Paris Pit site, like every other site in this province, has to engage in progressive rehabilitation within a reasonable time while aggregate extraction is occurring.

553. There is also the evidence from Mr. Adenowo that: (1) a sewage works ECA is required for the aggregate washing system because the water used to wash the aggregate is considered sewage; (2) the sediment in the proposed sewage works is sewage because it will be disposed of on land and would require a groundwater impact assessment; (3) if the sediment has pesticide concentrations that result in it not qualifying as inert fill, the sediment would have to be disposed of off-site as waste rather than be used for on-site rehabilitation; and (4) if the sewage is determined to be waste it would have to be taken off-site. Add to that that as a matter of law “sewage or anything contaminated by sewage” may be the subject of provincial officers’ orders under the *OWRA* (CCOB Book of Authorities, Tab 9, *OWRA*, s. 16(3)(a))

554. The concept of commingling of a “non-waste” with waste making all of it waste is not unknown in our law. The mixture rule under Ontario law and a similar rule in the United States for non-hazardous waste and hazardous waste is analogous to the *OWRA* provision referred to above (CCOB Book of Authorities, Tabs 11-12 – *EPA*; Tab 13 – *BF Goodrich v Betkoski*).

555. Furthermore, the evidence in this case shows that any suggestion that it will be possible to keep separate or disentangle potential residues of atrazine in topsoil from atrazine in washed sediment once both are spread on the site one meter above the water table is wishful thinking at best and at worst constitutes turning a blind eye to a serious environmental problem. The washed sediment will constitute sewage, as the evidence shows. Once the topsoil is placed on top of or comingled with that sediment it will constitute sewage as well. Suggesting at that stage that we should treat the two as irrelevant to each other, the ECA, and the *EPA* is bad law and worse policy.

C. The Leak is a Spill as well as Pollution in Need of Prevention

556. In trying to avoid having the CPPP apply to any atrazine that may exist on site (keeping responsibility for it in the other conditions of the ECA), some witnesses for the Respondents insisted that the CPPP was a spills plan. Other witnesses for the Respondents insisted it was not a spills plan but a pollution prevention plan. However, whatever perspective they came at the question from, none were inclined to tackle head on what the leak from the bottom of the settling pond represented. Some called it a discharge to the environment. Others said it was just the release of water and nothing else. In the submission of the Appellants, the evidence showed that the leak represents a spill and pollution in need of prevention and the CPPP is the ideal vehicle for addressing the leak. Both statute law and case law are clear that a leak is a discharge, and a spill is an abnormal discharge from a structure even if it is a recurring one (Tabs 14 – *EPA*; and Tab 15 – *Mortgage Insurance v Innisfil*). The attempt by the Respondents to distance themselves from that reality in order to avoid having the CPPP apply to potential atrazine leaks from the seal constitutes another example of bad policy making worse law. Potential leaks of atrazine to water through the seal of the settling pond bottom are not planned discharges; they are aquatic fugitive emissions in need of prevention and robust emergency response of the type represented by Mr. Malcolm’s proposals.

D. Instruments Can be Amended to Require Consultation with Named Citizen Groups

557. Finally, there is no restriction as a matter of law in amending an instrument to require consultation with a named citizen group. *Melrose Quarry*, a case Mr. Malcolm’s colleague, Mr. John Pyke, testified in is authority for this proposition in the context of a TMCP in a PTTW (CCOB Book of Authorities, Tab 16, para 194).

V. JURISDICTION

A. Introduction

558. The Directors and the Instrument Holder (collectively the “Respondents”) argue that substantial portions of the evidence called by the Appellants are not within the scope of the appeal granted by the Leave Panel. In letters written to the Tribunal on December 7, 2016, both of the Respondents recited an extensive list of what might be called

“jurisdictional” concerns with the scope of, and the remedies sought arising from, the evidence all three of our witnesses in the areas of toxicology, hydrogeology, and engineering. The Respondents even purported to make the similar claims with respect to evidence from the members of the community with standing as participants in this case. The combined effect of the submissions of the Respondents would leave virtually nothing for the Appellants to call evidence on, or the Tribunal to rule upon, and stems in the submission of the Appellants, from the Respondents disbelief that leave was granted at all. The intent of the Leave Decision was not to make the hearing pointless, but the position of the Respondents would do so. In any event, the Appellants do not agree with the position of the Respondents and submit that the material filed and the remedies sought comport with the decision of the Leave Panel.

559. However, if the Tribunal disagrees with the Appellants, the Appellants make an alternative submission. If any parts of the evidence of, or remedies sought by, the Appellants are deemed by the Tribunal to be outside the scope of the appeal that does not preclude the Tribunal from making findings of fact based on that evidence, even if the Tribunal finds that it cannot make an order amending one or more of the ECA/PTTW conditions that are the subject matter of the appeal.

560. In the following sections the Appellants review the: (1) background to this issue; (2) what we say supports the view that the evidence is within the scope of the appeal; and (3) what we say authorizes the Tribunal to make findings of fact even where it deems certain matters to be beyond the scope of the Tribunal to remedy by way of order.

B. Background

561. The background to the position of the Respondents on the issue of the scope of the appeal begins with the position the Respondents took at the leave stage. This is set out in the Leave Decision as follows:

“[30] The Directors’ key position is that extensive expert research and analysis as well as public consultation have been undertaken, and there is little if any scientific uncertainty. The Directors submit that, nevertheless, both the PTTW and ECA have been changed to reflect and respond to concerns raised, and include first of their kind, state of the art conditions that will ensure that any potential risk is detected and prevented before it can cause any significant environmental harm. The Directors state that:

‘[i]t would be truly extraordinary if leave were granted in the circumstances of this case given the extensive public consultation, supporting information from external experts (retained by Dufferin and the Applicants), extensive and detailed review by Ministry staff, consideration and application of all relevant laws and policies, and first of their kind conditions imposed in the instruments’.

[31] Dufferin agrees with the Directors and also submits there is very little scientific uncertainty in the case. Dufferin submits that there is no evidence that an aggregate operation in Ontario has ever contaminated municipal or local drinking water; all Applicant concerns have been dealt with or are not relevant to this Leave Application; and, the Applicants have not brought sufficient evidence to meet their burden under the s. 41 leave test” (Appendix C to CCOB Final Argument – Leave Decision, paras 30-31).

562. Notwithstanding the position of the Respondents at the leave stage the Leave Panel on March 31, 2016 granted leave with respect to certain aspects of certain conditions in both the PTTW and the ECA (Appendix C to CCOB Final Argument – Leave Decision, para 132).

563. Not content with the decision of the Leave Panel, the Directors brought a motion for reconsideration in mid-April 2016, supported by the Instrument Holder. The argument of the Directors this time was that the Leave Panel made material errors concerning the proper interpretation of certain conditions of the two instruments as well as related fairness arguments and wanted a review of the Leave Panel decision: “Through the review process, they [the Directors and the Instrument Holder] believe that the alleged material errors of fact and law made by the Leave Panel can be corrected, such that the appeal can be narrowed and proceed expeditiously” (Appendix D to the CCOB Final Argument – Decision on the Reconsideration Motion, paras 8-9). This motion was dismissed by another panel of the Tribunal on June 8, 2016 (Appendix D to the CCOB Final Argument – Decision on the Reconsideration Motion, para 179). During the course of doing so this panel of the Tribunal observed that granting such motions can “detract from the access to justice and public participation goals of the Rules and the *EBR*” (Appendix D to the CCOB Final Argument – Decision on the Reconsideration Motion, para 175).

564. There is still more to the chronology of this issue:

- The Appellants served the Respondents and filed with the Tribunal their Notice of Appeal on April 14, 2016, organized to address the matters set out in the Leave Decision with respect to conditions, or aspects of conditions, for which leave was granted; The Respondents raised no concerns with the contents of the Notice of Appeal at that time and brought no motion;
- The Respondents have had the decision on their reconsideration motion since June 8, 2016 but said nothing at that time or for months thereafter about the scope of the Appellants’ Notice of Appeal being allegedly too broad, nor did they bring a motion with respect thereto;
- The Respondents had the opportunity to bring a motion at the time of the preliminary hearing on September 22, 2016 but did not do so then or thereafter;

- The Respondents were served with the Appellants issues list on October 17, 2016, an issues list that is virtually identical to the Notice of Appeal they had had since April 2016 but said nothing about the scope of the appeal and brought no motion;
- On October 25, 2016 the Appellants served and filed their evidence for this case in the areas of toxicology, hydrogeology, and engineering; the evidence was organized to address, and does address, the matters set out in the Notice of Appeal; In the case of Mr. Malcolm's evidence he explicitly states that his review respects the scope of paragraph 119 of the Leave Decision and his evidence is organized around addressing the issues in that paragraph (Exhibit 20, Tab 3, page 4);
- Finally, on October 28, 2016 the Respondents say, several days after receiving our evidence, and seven (7) months since first receiving the Notice of Appeal, that they had an unspecified problem with the scope of the appeal brought by the Appellants;
- At the first teleconference on November 2, 2016 the Appellants indicated that the Respondents should bring a motion if they were of the view that our evidence was beyond the scope of the appeal; they declined to do so and instead asked for and obtained an order that the Appellants provide them with our proposed amendments to the conditions, which we did on November 10, 2016;
- At the teleconference on November 28, 2016 the Appellants again asked that the Respondents bring a motion if they were concerned that our evidence went beyond the scope of the appeal granted; they were reluctant to do so, and did not do so, and so we obtained an order for a list of what the Respondents alleged was beyond the scope of the leave granted;
- On December 7, 2016, the Respondents produced two lists of their concerns the general outlines of which have been referred to above.

565. From this brief chronology, the Appellants submit several things are clear. First, the combined effect of the two lists produced by the Respondents effectively says that the Appellants received leave to appeal essentially nothing, or so little that an appeal would not be warranted. Second, the overall effect of the position of the respondents on the scope of the appeal is strikingly similar to the positions they took at the leave stage and during their motion for reconsideration; there should be no appeal or it should be shrunk further. Third, while there is consistency in their position in seeking to shrink the appeal, and the scope of the appeal, there is no merit to their argument. Fourth, the Respondents failed to initiate on their own, and refused multiple opportunities at our request, to bring a motion if they thought the scope of our case was outside the scope of the appeal. A motion, if successful, could have provided the narrow expeditious hearing they said they wanted. They did not bring such a motion. Fifth, the Respondents, out of an abundance of

caution about their position, called evidence to rebut our evidence including with respect to areas they say are outside the scope of the appeal granted.

566. The Appellants responses to the position of the Respondents as a matter of fact and law are set out below.

C. Case Brought by Appellants is Within Scope of Appeal Granted

567. The fundamental error in the position of the Respondents is to focus on one paragraph in the decision of the Leave Panel (para 119) without also considering the findings the panel made in respect of a particular condition or issue in other parts of a 52 page Leave Decision. For example, in its findings on Condition 4.8, the Leave Panel stated that: “Condition 4.8 provides that after sediment in the settlement pond is analyzed, ‘the Director and Owner shall discuss suitable uses for the sediment for on-site rehabilitation’. Details of the rehabilitation plan therefore remain to be determined, which would make a full assessment of the cumulative effects of the ECA impossible to determine at this time. While it may be reasonable for the ECA to allow the testing of the sediments to be done before determining the appropriate uses for it in the rehabilitation plan, the ECA currently leaves this discretion in the hands of the Director and Owner at the time (which CCOB notes may or may not be Dufferin). It would be more appropriate, for example, to include in the ECA a condition that if the sediment is found to contain unacceptable levels of pesticides, it shall not be used for on-site rehabilitation. This would provide more assurance that cumulative effects of the ECA will not include the possibility of allowing concentrated levels of pesticides, if any are found, to pose a risk to the surface and ground water in the area. Without such assurance, it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have effectively applied a cumulative effects analysis in issuing the ECA when the ultimate use of the sediment in the site rehabilitation remains to be determined decades in the future” (Appendix C to CCOB Final Argument – Leave Decision, para 79).

568. In its findings the Leave Panel also stated that: (1) there are significant information gaps in relation to both instruments; (2) these information gaps are caused by the inadequacy of specific conditions in both instruments; and (3) if the instruments cause negative effects on water quantity or quality of the aquifer in a highly vulnerable wellhead protection area and, as a result, the drinking water supply of the County, the City, and others, “it is clear” that the decision to issue both instruments appears to be one that could result in significant harm to the environment (Appendix C to CCOB Final Argument – Leave Decision, paras 125, 131).

569. As another example, this time taken from the PTTW, on the issue of whether Condition 3.6 has a conservation objective that is outside the scope of what the Leave Panel granting leave considered, the Appellants again note that the findings of the Leave Panel with respect to Condition 3.6 included concerns about whether the water taking would be “sustainable” (Appendix C to CCOB Final Argument – Leave Decision, para

86). By any benchmark, a concern about sustainability includes a concern about conservation.

570. A further example is with respect to the Respondents' position that Dr. Poh-Gek's evidence does not appear to relate to any of the issues over which leave to appeal was granted.

571. In response, CCOB notes that Dr. Forkert, who is qualified as an expert in toxicology, gave evidence on the serious adverse impacts atrazine exposure could have on human health and the environment. CCOB submits that the issue of atrazine was a central issue in its application for leave to appeal the ECA and PTTW. It was also a matter that was extensively addressed by the ERT in the leave to appeal decision as evidenced by the following references:

- In paragraph 3 of the leave decision, the ERT states that CCOB had raised concerns that the ECA does not address the potential for leaching pesticides (e.g. atrazine) from the settling pond into the aquifer;
- In paragraph 18 the ERT states "CCOB obtained a report from one of its members, Nicholas Greenacre, dated June 7, 2013, which raised concerns that excavation of the source pond would create a risk of direct access to the aquifer for any pollutants washed off the aggregate, including atrazine, a known endocrine disruptor banned by the European Union";
- In paragraph 21 of the leave decision, the ERT states "the MOECC asked Dufferin to submit two additional technical reports: a Water Well Survey report (April 24, 2014) and an Assessment of Herbicide and Pesticide Concerns (about herbicides such as glyphosate and atrazine) (July 2014)";
- In paragraph 59 of the leave decision, the ERT states that "CCOB had emphasized that Greenacre's November 2015 report found that the MOECC's conclusion that the aggregate washing was not likely to dissolve or leach atrazine into the water was based on its misinterpretation of a research finding that atrazine remains biologically accessible for 20+ years, and because Dufferin's pesticide study contained few groundwater samples where pesticide residues were detected (only four monitoring wells were used to cover a 600+ acre site, all four wells were near the pit boundary in a mandatory no-spray zone, and, therefore, were unrepresentative, and two of these wells did contain pesticides (one at a level exceeding EU standards)). Finally, Greenacre found that the sewage works will concentrate atrazine in the topsoil and sediment which will be spread only one metre above the water table in planned site remediation";
- In paragraph 103 of the leave decision the ERT states "Dufferin further maintains that, although the concerns were mainly about atrazine, the pesticide evaluation includes many other pesticides;

- In paragraph 120 of the leave decision the ERT states “CCOB is concerned that pesticide residues may enter the aquifer by leaching from the settling and recirculation ponds, or storage and re-use of the sediment in pit rehabilitation. CCOB asserts that significant environmental harms could result from (i) existing geographic conditions in the area (the wetland protection area, drought, and atrazine)’;
- In paragraph 127 of the leave decision, the ERT states “CCOB submits that the location of the sewage works in a WHPA, the potential for drought conditions and the presence of atrazine pose potentially significant risks, noting that the Class I classification of the ECA by definition suggests significant risk to the environment and human health”.

572. The issue of atrazine was a central issue of concern to CCOB on the application for leave to appeal. Furthermore, the issue of atrazine and its impact on human health is directly relevant to Condition 4.8 on which leave to appeal was granted. The ERT observed that Condition 4.8 of the ECA does not specify future uses of sediment for on-site rehabilitation. In her witness statement, Dr. Forkert observed that Dr. Ken Howard had characterized that over time the washing process would produce many metric tonnes of fine-grained waste material that would remain on the site. Because ‘clean’ sand and gravel had been removed, this waste material would host organic chemicals of concern (atrazine and glyphosate) in concentrations that were likely to be orders of magnitude higher than would have been observed in the original sediment.

573. Dr. Forkert's evidence on the adverse effects that would result from atrazine exposure is also relevant to Condition 5 of the ECA as there is no EWTL or trigger level in the CPPP with respect to atrazine.

574. Accordingly, in the submission of the Appellants, it is not appropriate to try to squeeze the scope of this appeal down to what the Respondents want in the face of declarations like these in the findings of the Leave Decision. The context of the whole leave decision must be considered as well.

575. Furthermore, the Respondents had our notice of appeal for seven months before raising a jurisdictional question on the eve of the hearing and then refused on more than one occasion to bring a motion to clarify what they said, or suggested, was an overbroad appeal in light of the appeal granted. They themselves deprived the Tribunal of the opportunity to exercise its authority over the subject matter of the appeal at a point in time when its alleged overbreadth could have been resolved, a fact situation that is not the same as in *Smith v. Ontario* (CCOB Book of Authorities, Tab 6, at paras 6, 10-12) where a motion to quash was brought. In our case, the Respondents chose to not bring a motion. This case is certainly not about lack of notice about the scope of the appeal as in *Lucan* (CCOB Book of Authorities, Tab 4, pages 4-5). It is more like *Hopkinson* (CCOB Book of Authorities, Tab 5, page 18) where notice cured the alleged defect.

D. Findings of Fact and Recommendations Permissible If Order Cannot be Granted

576. In the alternative, should the Tribunal find that there are aspects of the appeal brought by the Appellants that are outside the scope of appeal it is open to the Tribunal to make findings of fact and recommendations based on all the evidence heard even if it finds that it cannot issue an order with respect to certain aspects of the ECA/PTTW Conditions as in *Sloan* (CCOB Book of Authorities, Tab 7, pages 16-17), and *Brown* (CCOB Book of Authorities, Tab 8, pages 20-22).

VI. CONCLUSIONS

577. Based on the above review of the evidence including the (1) toxicological aspects of atrazine; (2) atrazine in soil and water and the impact of aggregate washing; and (3) existing and proposed versions of the ECA and PTTW, the Appellants say that their evidence raises serious doubts about the adequacy of the conditions, or aspects of the conditions, which are the subject matter of the appeal.

VII. ORDER REQUESTED

578. The Appellants request an order:

- (a) revoking Conditions 3.6, 4, and 4.7 of the PTTW and Conditions 4.8, and 5 of the ECA; and
- (b) directing the Director to substitute revised Conditions to the above referred to Conditions reflected in Exhibit 21 with the following exceptions:
 - (i) proposed PTTW Condition 3.6 in Exhibit 21 should be revised to read: “Within 60 days following two full years of operation, the Permit Holder shall submit to the Director a report examining and reporting on whether water taking can be further reduced”, with the remainder of the proposed Condition not being necessary;
 - (ii) proposed PTTW Condition 4.7(e) and (f) in Exhibit 21 that refer to “violation” and “violated”, respectively, should be revised to read “exceedance” and “exceeded” respectively;
 - (iii) proposed PTTW Condition 4.7(f) in Exhibit 21 be revised after the word “halted” to read “halted, except for dust suppression”;
 - (iv) proposed PTTW Condition 4.9 in Exhibit 21 be revised to add the “significant” before the word “deviation”

ALL OF WHICH IS RESPECTFULLY SUBMITTED,

Dated: February 16, 2017



Joseph F. Castrilli
Counsel for the Appellants,
Concerned Citizens of Brant



Ramani Nadarajah
Counsel for the Appellants,
Concerned Citizens of Brant

ENVIRONMENTAL REVIEW TRIBUNAL

IN THE MATTER OF sections 34.1, 100 and 101 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 as amended;

-and-

AND IN THE MATTER OF Part XIII of the *Environmental Protection Act*, R.S.O., c. E.19 as amended;

-and-

AND IN THE MATTER OF sections 38 to 48 of the *Environmental Bill of Rights*, S.O. 1993, c. 28;

-and-

AND IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Belinda Koblik, Director, Ministry of the Environment and Climate Change, under section 34.1 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended, in issuing Permit No. 7115-9VVLJW, dated October 29, 2015, to CRH Canada Group Inc., for the taking of groundwater from the Source Pond at the Paris Pit, located at Part Lot 27, Concession 2, Geographic Township of Dumfries, County of Brant;

-and-

AND IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Fariha Pannu, Director, Ministry of the Environment and Climate Change, under section 20.3 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended, in issuing Environmental Compliance Approval No. 1400-9VNPVY, dated October 29, 2015, to CRH Canada Group Inc., for the establishment, use and operation of sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation at the Dufferin Aggregates - Paris Pit, at Lot 26, 27, 1, 2 & 3, Concession 3, 2, WGR, South Dumfries, County of Brant.

NOTICE OF APPEAL

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ENVIRONMENTAL REVIEW TRIBUNAL

IN THE MATTER OF sections 34.1, 100 and 101 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 as amended;

-and-

IN THE MATTER OF sections 38 to 48 of the *Environmental Bill of Rights*, S.O. 1993, c. 28;

-and-

IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Belinda Koblik, Director, Ministry of the Environment and Climate Change, under section 34.1 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended, to issue Permit to Take Water No. 7115-9VVLJW, dated October 29, 2015, to CRH Canada Group Inc., for the taking of groundwater from the Source Pond at the Paris Pit located at Lot 27, Concession 2, Geographic Township of Dumfries, County of Brant, Ontario.

NOTICE OF APPEAL

TAKE NOTICE that pursuant to sections 100 and 101 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 (“*OWRA*”), and pursuant to the decision of the Environmental Review Tribunal (“Tribunal”) in Case No. 15-140 dated March 31, 2016 granting leave to appeal to the Concerned Citizens of Brant (the “Appellants”), the Appellants require a hearing before the Tribunal in respect of the decision of Belinda Koblik, Director, Ministry of the Environment and Climate Change (“MOECC”), to issue the following Conditions in Permit to Take Water No. 7115-9VVLJW (“PTTW”) (appended to this Notice) dated October 29, 2015 to CRH Canada Group Inc. (“CRH”) under section 34.1 of the *OWRA*:

- Condition 3.3 (whether dust suppression is in addition to maximum water taking amounts in Condition 3.4a);
- Condition 3.4b (frequency that maximum water taking rate in Condition 3.2 may be reverted to for one month);
- Condition 3.6 (permitted water taking for final eight years of PTTW);
- Condition 4 generally (specific objectives for monitoring requirements);
- Condition 4.7 (trigger mechanism and contingency plan).

AND FURTHER TAKE NOTICE that the Appellants hereby appeal the above-noted Conditions, and respectfully request that the Tribunal grant:

- (a) An Order revoking Conditions 3.3, 3.4b, 3.6, 4, and 4.7 in the PTTW;
- (b) An Order directing the Director to substitute revised Conditions in the PTTW in relation to the above-referred to subject-matter of Conditions 3.3, 3.4b, 3.6, 4 and 4.7, as may be specified by the Tribunal; and
- (c) Such further or other Orders as Appellants' counsel may advise and this Tribunal permit.

AND FURTHER TAKE NOTICE that the grounds for the Orders requested by the Appellants are as follows:

1. The above-noted Conditions in the PTTW are inadequate to protect the environment and public health, and do not require appropriate and effective measures to ensure timely identification, assessment, and mitigation of the direct, indirect, and cumulative effects that may be caused by the water taking authorized by the PTTW. In particular, the above-noted Conditions were issued by the Director without:
 - a. adequately considering, applying, incorporating, or reflecting an ecosystem approach, the precautionary principle, cumulative effects analysis, adaptive management, sustainable development, public participation, or other principles mandated by the MOECC's Statement of Environmental Values ("SEV") issued under the *Environmental Bill of Rights* ("EBR");
 - b. adequately considering whether they were otherwise factually or scientifically unreasonable, or in accordance with the *OWRA*, Ontario Regulation 387/04, or the MOECC's 2005 PTTW Manual;
 - c. adequately considering, for example, existing baseline conditions in the area including the close proximity of the Paris Pit to the wellhead protection area for the Paris water supply, or the increasing frequency of drought, or drought-like conditions, in the Grand River watershed that includes the area of the Paris Pit operations.
2. The above-noted Conditions in the PTTW are inadequate in that they do not ensure that the potential environmental risks or adverse impacts from the water taking will be properly investigated, monitored, and reported. Accordingly, these Conditions are contrary to the public interest and not consistent with the purposes and provisions of the *OWRA*, *EBR*, Ontario Regulation 387/04, the MOECC's 2005 PTTW Manual, and the MOECC's *Water Management Policies, Guidelines and Provincial Water Quality Objectives*.

3. Sections 0.1, 1, 2, 34.1, 53, 100, 101, and 107 of the *OWRA* and sections 1, 2, 11, and 38 to 48 of the *EBR*.
4. Such further or other grounds as Appellants' counsel may advise and this Tribunal permit.

AND FURTHER TAKE NOTICE that the material facts and particulars that the Appellants rely upon in relation to the above-noted grounds of appeal include, but are not necessarily limited to, the following:

Background

1. The Paris Pit is located at Part Lot 27, Concession 2, Geographic Township of Dumphries, County of Brant. It was licensed by the province for extraction of aggregates (sand and gravel) in 1974 under the aggregate law in force at the time but since then remained primarily in agricultural use, with aggregate extraction not commencing until the Fall 2014.
2. The Paris Pit was in continuous agricultural use since before the pit licence was granted in 1974, with a principal crop grown there being corn. The most common herbicide used for corn has been atrazine, often in combination with other herbicides. Atrazine is: (1) inherently toxic to humans and non-humans, according to Environment Canada (“EC”); (2) in the top 100 of the most persistent organic pollutants, according to EC; (3) ranked the highest of 83 pesticides in Agriculture Canada’s priority scheme for potential groundwater pollution; (4) rated by the European Union as a Category 1 substance of high concern because of clear evidence of endocrine disrupting activity; (5) documented to have a persistence in soil and sub-soil of 22 years; and (6) banned in Germany since 1994 and, since 2004, in the European Union, including Switzerland, its country of manufacture.
3. The Paris Pit is within, or in close proximity to, the wellhead protection area for the Paris water supply. It is also near private water supply wells, as well as important ecological and surface water resources.
4. In March 2013, CRH applied for a Category 3 PTTW for an excavated source water pond sustained by a closed-loop design system for the purposes of aggregate washing operations. In June 2013, in conjunction with the PTTW application, CRH applied for an environmental compliance approval (“ECA”) of companion industrial sewage works under section 53 of the *OWRA*.
5. Over 500 comments on the proposed PTTW were received from members of the public. On October 29, 2015, the Director issued the PTTW for a period of 10 years to CRH despite objections from the Appellants regarding potential impacts of the proposed water taking to municipal and private wells, and surface water features. On the same date, the ECA also was approved by a MOECC director.

On November 13, 2015, the Appellants sought leave to appeal the decisions to issue the PTTW and the ECA.

6. On March 31, 2016, the Tribunal found that it appeared there was good reason to believe that the Director's decision to issue the above-noted PTTW Conditions was unreasonable and could result in significant environmental harm. Accordingly, the Tribunal granted the Appellants leave to appeal the above-noted PTTW Conditions pursuant to sections 38 to 48 of the *EBR*. A similar decision by the Tribunal also was rendered on this date regarding the ECA, and is the subject of a separate notice of appeal by the Appellants.

Ground 1(a) and 1(b): Failure to Consider or Apply Binding MOECC Principles

MOECC SEV Considerations

7. The MOECC SEV mandates the application of a "precautionary, science-based approach in its decision-making to protect human health and the environment".
8. In relation to the PTTW for the Paris Pit, where both scientific uncertainty and the potential for adverse effects exist, the precautionary approach required the Director to consider the water taking to be as hazardous as it could possibly be.
9. However, the Director issued the above-noted PTTW Conditions in the face of considerable uncertainty about environmental risks from the water taking, and simply required CRH to carry out monitoring without known objectives. Furthermore, the Director required CRH to develop a Trigger Mechanism and a Contingency Plan *after*, not before, the issuance of the PTTW. Accordingly, the Director's approach is not consistent with the precautionary principle, and is not an appropriate application of adaptive management, another SEV principle.
10. While the MOECC SEV entrenches the ecosystem approach as another fundamental principle to guide MOECC decision-making, the Director issued the PTTW Conditions to CRH in the face of significant evidentiary gaps in CRH's supporting documentation. The Director's "study-while-you-operate" approach is fundamentally at odds with the ecosystem approach.
11. The MOECC SEV stipulates that another of its principles is that of considering cumulative effects. However, the Director issued a 10-year PTTW even though the final permitted water taking limits will not be known for two years and with the possibility that they could be increased after that date. Therefore, the Director failed to apply a cumulative effects analysis in issuing the 10-year PTTW to CRH when certain of the PTTW Conditions could allow those limits to be increased after two years.

12. The MOECC SEV also entrenches sustainable development as a fundamental principle. However, the Director's issuance of a 10-year PTTW, with the possibility that permitted water taking levels could be increased after two years, does not ensure the sustainability of water use in order to safeguard the needs of local water users, or natural ecosystem functions.
13. The SEV regards public consultation as "vital to sound environmental decision-making" and states that the MOECC "will provide opportunities" for consultation in respect of "decisions that might significantly affect the environment". The issuance of PTTW is such a decision. However, the PTTW Conditions do not provide for public consultation in the development, review, amendment, or approval of, the Trigger Mechanism and Contingency Plan.
14. Consequently, the approach taken by the Director has meant that neither the Appellants nor the public were offered any opportunity by the Director before the PTTW was issued, or in the PTTW as issued by the Director, to review and comment upon the Trigger Mechanism and Contingency Plan. The PTTW Conditions stipulate that the plan is only required to be produced by CRH prior to construction of the source pond and are silent on any prior scrutiny by the public.

Considerations under OWRA, O. Reg. 387/04 and the MOECC 2005 PTTW Manual

15. To the extent that the OWRA, O. Reg. 387/04, and the MOECC 2005 PTTW Manual similarly require consideration of the above principles, the Appellants repeat and adopt the above-noted statements in paragraphs 7-14.
16. In short, the above-noted PTTW Conditions for the Paris Pit were issued by the Director to CRH without due regard for, or proper consideration of, the aforementioned principles entrenched in the OWRA, O. Reg. 387/04, and the MOECC 2005 PTTW Manual.
17. Furthermore, in light of paragraphs 7-16, the PTTW Conditions issued by the Director are also factually and scientifically unreasonable in the circumstances.

Ground 1(c): Failure to Consider Existing Baseline Environmental Conditions

18. The evidentiary foundation upon which the Director relied to issue the above-noted PTTW Conditions was fundamentally incomplete and plagued by significant uncertainties regarding existing baseline environmental conditions, including the close proximity of the water taking to the wellhead protection area for the Paris drinking water supply, the drought conditions that increasingly impact the geographic area that includes the Paris Pit operations, and related factors.

Ground 2: Inadequate Terms and Conditions

19. The Paris Pit is located in a setting where a water taking has the potential to cause significant adverse effects on groundwater and surface water resources, and interference with nearby municipal and private wells.
20. However, the above-noted PTTW Conditions do not contain sufficient controls to ensure that adverse effects are prevented, minimized, mitigated, properly monitored, or subjected to robust contingency measures. In particular, and as set out more fully below:
 - a. The amount of water permitted to be taken is unclear;
 - b. Clear and specific monitoring objectives and requirements have not been provided, and targeted detection limits are missing; and
 - c. The Trigger Mechanism and Contingency Plan should have been an integral part of the process leading up to issuance of the PTTW and available for public scrutiny before the PTTW was granted.

Water Taking

21. In issuing Condition 3.3, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to, failing to specify whether the water taking permitted for dust suppression is included in the maximum rate set out in Condition 3.4a, or is in addition to the maximum rate set out in Condition 3.4a.
22. In issuing Condition 3.4b, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to:
 - a. failing to clarify how often CRH may revert to the maximum rate of water taking in Condition 3.2 (and Table A thereto) “for a period of one month for the purpose of refilling of the settling and recirculation ponds after the removal of accumulated sediment from these ponds”; and
 - b. failing to describe the sediment removal process and its frequency so as to understand how it will impact water takings.
23. In issuing Condition 3.6, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to:
 - a. failing to recognize that despite a purported reduction in the water taking volume from 14,000 litres per minute (“lpm”) to 1,400 lpm after three

months of operation set out in Condition 3.4a and 3.4b, Condition 3.6 opens the door for CRH to potentially return to greater volumes of water taking two years after commencement of operations under the PTTW;

- b. failing to recognize that the permitted water taking for almost eight years of the PTTW is unknown and will not be known for over two years;
- c. failing to require that the PTTW be evaluated every two years, with a cap on water takings (duration and volume) included in the PTTW, and with a view to examining all reasonable possibilities to reduce both the duration and volume of the water takings in these periods; and
- d. in the alternative, failing to make the PTTW a 2-year, rather than a 10-year PTTW.

Monitoring Objectives

24. In issuing Condition 4 generally, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to:

- a. failing to recognize that while the various sub-clauses of Condition 4 of the PTTW require CRH to comply with monitoring requirements, these sub-clauses impose neither clear nor specific objectives for the various components of the monitoring program to be conducted;
- b. failing to recognize that the lack of objectives for the monitoring program has consequences for the ability of CRH to adaptively manage problems that may arise, hamstrings MOECC in reviewing the impact of operation of the PTTW, and potentially jeopardizes the rights and interests of the Appellants;
- c. failing to require monitoring of groundwater levels before, during, and after construction of the three ponds;
- d. failing to specify the periods for collection of information on groundwater levels, including any periods where modification occurs with respect to, or sediment is removed from, any of the three ponds; and
- e. failing to require monitoring that can detect for leakage, design flaws that cause or fail to minimize leakage, or specify acceptable leakage, if any, with respect to the wastewater settling pond.

Trigger Mechanism and Contingency Plan

25. In issuing Condition 4.7, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to:
- a. failing to recognize that Condition 4.7, which requires CRH to submit to the Director a Trigger Mechanism (“Mechanism”) and Contingency Plan (“Plan”) (or collectively “Mechanism and Plan”) after the issuance of the PTTW (but before construction of the Source Pond), precluded the Appellants and other members of the public from reviewing and commenting on the Mechanism and Plan and is at odds with the approach taken by MOECC directors in other cases where such plans have been the subject of public scrutiny pre-PTTW issuance;
 - b. failing to expressly include meaningful opportunities for public participation in the development, review, or approval of the Mechanism and Plan post-issuance of the PTTW and before construction of the source pond;
 - c. failing to set out a requirement that the Mechanism and Plan be prepared by a qualified person, who has visited the site and is familiar with the works to be constructed and operated;
 - d. failing to set out a requirement that the Mechanism and Plan be reviewed at least annually by a qualified person who has visited the site at least once during the year when the facility was operating;
 - e. failing to require that additional reviews of the Mechanism and Plan, or either of them, be undertaken whenever there are process changes, or when the monitoring program or trigger(s) that form part of the Mechanism indicate unusual elevated readings of any of the monitoring data that could indicate impact to the environment;
 - f. failing to require that any of the aforementioned or other information arising in respect of the Mechanism and Plan, or either of them, during the course of a year should be part of the annual report required as part of Condition 4.4 and include an evaluation of compliance with the PTTW, relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives;
 - g. failing to require that the annual report portion of the Mechanism and Plan should include a summary of any complaints received, an indication of how or whether the complaint relates to the PTTW, and any steps taken to address and resolve the complaint;

- h. failing to require that the Mechanism and Plan should evaluate performance of the PTTW in relation to relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives; and
- i. failing to identify in the Mechanism and Plan that any trigger mechanism established for the PTTW be linked to that established under the ECA and be updated on an on-going basis based upon site operations, monitoring data, and recommendations of the qualified person preparing annual reports.

Ground 3: Inconsistency with MOECC Environmental Statutes, Regulations, Manuals, Policies, Guidelines, or Objectives

26. In respect of Ground 3, the Appellants plead and rely on the facts and particulars set out in the foregoing paragraphs.

DATED at Toronto, this 14th day of April, 2016.



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TO: The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
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AND TO: Isabelle O'Connor/Nicholas Adamson
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and Climate Change

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CRH Canada Group Inc.

AND TO Paula Lombardi
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Counsel for the Corporation of the
County of Brant

AND TO: Environmental Commissioner of Ontario
1075 Bay Street, Suite 605
Toronto, Ontario M5S 2B1

PERMIT TO TAKE WATER
Ground Water
NUMBER 7115-9VVLJW

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

CRH Canada Group Inc.
Suite 400 - 2300 Steeles Avenue W.
Concord, Ontario L4K 5X6

*For the water
taking from:* Source Pond

Located at: Lot 27, Concession 2, Geographic Township of Dumfries
Brant

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

- (a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.
- (b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.
- (c) "Ministry" means Ontario Ministry of the Environment and Climate Change.
- (d) "District Office" means the Guelph District Office.
- (e) "Permit" means this Permit to Take Water No. 7115-9VVLJW including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.
- (f) "Permit Holder" means CRH Canada Group Inc..
- (g) "OWRA " means the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

- 1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated March 11, 2013 and signed by Kevin Mitchell, and all Schedules included in this Permit.
- 1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.
- 1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.
- 1.4 This Permit is not transferable to another person.
- 1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.
- 1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.
- 1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections

The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act*, R.S.O. 1990, the *Pesticides Act*, R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

- (a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act*, and

the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. **Water Takings Authorized by This Permit**

3.1 **Expiry**

This Permit expires on **October 29, 2025**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Source Pond	Pond Dugout	Aggregate Washing	Industrial	14,000	12	10,080,000	180	17 550783 4784696
						Total Taking:	10,080,000		

- 3.3 Notwithstanding the "Taking Specific Purpose" identified in Table A, the water taking may also be used for dust suppression.
- 3.4a Notwithstanding Table A, the rate of taking from the Source Pond shall be reduced to a maximum of 1,400 Litres per minute three months after operational commencement of the wash plant.
- 3.4b The rate and amount of water taking from the Source Pond may revert to that in Table A for a period of one month for the purpose of refilling of the settling and recirculation ponds after the removal of accumulated sediment from these ponds.
- 3.5 Water taking under the authorization of this Permit shall only occur to a maximum of 180 days between February 15 and December 15 of each year from date of issue to October 29, 2025.
- 3.6 Within 60 days following two full years of operation, the Permit Holder shall submit to the Director a report evaluating water taking needs and making recommendations regarding future water needs and potential changes to the permitted rates and volumes.

4. Monitoring

- 4.1 Under section 9 of O. Reg. 387/04 as amended from time to time, the Permit Holder shall, on each day water is taken under the authorization of this Permit, record the date, the volume of water taken on that date and the rate at which it was taken. The daily volume of water taken shall be measured by a flow meter or calculated in accordance with the method described in the application for this Permit, or as otherwise accepted by the Director.

The Permit Holder shall maintain a separate record of the water taking used for dust suppression.

The Permit Holder shall keep all records required by this condition current and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The Permit Holder, unless otherwise required by the Director, shall submit, on or before March 31st in every year, the records required by this condition to the ministry's Water Taking Reporting System. These records shall be included in

the Combined Annual Monitoring Report described in Condition 4.4.

- 4.2 a) The Permit Holder shall monitor groundwater levels at the following monitoring wells:
- i) MW1-12 or replacement well in the same general area,
 - ii) A well located between the Source Pond and the south property boundary,
 - iii) A well, to be installed prior to the construction of the Source Pond, located west of the Source Pond along the west property boundary. Well H-88-5, may be used as this third well.

The wells listed above shall be installed prior to the construction of the Source Pond.

- b) The three (3) groundwater monitoring wells listed in Condition 4.2 a) shall be located at three (3) different distances from the edge of the Source Pond. In addition, these three (3) wells shall be screened within the upper Sand and Gravel Aquifer. These three (3) wells may be used for other monitoring purposes.
- c) The Permit Holder shall ensure that groundwater levels at the three groundwater monitoring wells are collected during the week prior to and during the construction of the Source Pond, at a minimum of hourly intervals using a datalogger.
- d) The Permit Holder shall notify the County of Brant and the owner of PIN #32039-0053 of the commencement of the Source Pond construction at least two days prior to the start date of the excavation of the Source Pond.
- e) The Permit Holder shall ensure that groundwater levels are collected at the three groundwater monitoring wells described in Condition 4.2 a) between February 15 and December 15 of every year for which the Permit is valid. Water levels shall be collected at a minimum of hourly intervals using a datalogger.
- f) The Permit Holder shall ensure that the data loggers used to collect water level measurements have been serviced and/or checked prior to their installation in the three groundwater monitoring wells. These data loggers shall be checked at minimum monthly until the end of the second full year of operation. For the remaining years of the Permit, the data loggers shall be checked at a minimum bimonthly during the year of operation. A year of operation is defined as the period from February 15 and December 15 in the same calendar year.

- 4.3 The Permit Holder shall establish the following surface water monitoring program seasonally during non-freezing conditions:
- a) continuous surface water level monitoring at SW1B (previously referred to as SW1);
 - b) continuous water level monitoring in a multi-level piezometer located in the southern portion of the large pond prior to and one year after the construction of the Source Pond;
 - c) calculation of vertical hydraulic gradient at the multi-level piezometer; and
 - d) continuous water level monitoring shall be logged at 4 hour intervals.
- 4.4 The Permit Holder shall ensure that groundwater levels, surface water levels, and any other data collected from any on site monitoring wells are included in a Combined Annual Monitoring Report. Copies of this Combined Annual Monitoring Report shall be submitted to both the Ministry of the Environment and Climate Change, Section 34.1 Director and the County of Brant by March 31st of each year following the issuance of the Permit to Take Water.

The Combined Annual Monitoring Report shall include a comparison of the annual groundwater elevation contours with the simulated water level changes outlined in the *OWRA s34 Permit-To-Take-Water Application and Supporting Hydrologic and Hydrogeologic Study, Dufferin Paris Pit, County of Brant, Ontario*, prepared by Conestoga-Rovers & Associates, dated March 2013.

- 4.5 The Permit Holder shall make the report required by Condition 4.4 available to the Community Advisory Panel, and publicly by posting it on the Company's website at the time specified in Condition 4.4.
- 4.6 Following three years of groundwater and surface water monitoring, the Permit Holder may request in writing to the Director, modifications to the monitoring program as described in this Permit. Requested changes may be implemented upon written approval by the Section 34.1 Director.
- 4.7 Prior to the construction of the Source Pond, the Permit Holder shall submit a Trigger Mechanism and Contingency Plan for both groundwater and surface water to the Ministry of the Environment and Climate Change Section 34.1 Director for review and approval.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at

1-800-268-6060.

5.2 For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

6. **Director May Amend Permit**

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act*, Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.
2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.
3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, as amended, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

*The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 314-4506
Email: ERTTribunalsecretary@ontario.ca*

AND

*The Director, Section 34.1, Ministry of the
Environment and Climate Change
12th Floor
119 King St W
Hamilton ON L8P 4Y7
Fax: (905) 521-7820*

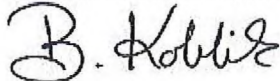
Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by telephone at (416) 314-4600

by fax at (416) 314-4506

by e-mail at www.ert.gov.on.ca

Dated at Hamilton this 29th day of October, 2015.



Belinda Koblik
Director, Section 34.1
Ontario Water Resources Act, R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 7115-9VVLJW, dated October 29, 2015.

OWRA S34 Permit-To-Take-Water Application and Supporting Hydrologic and Hydrogeologic Study, Dufferin Paris Pit, County of Brant, Ontario; prepared by Conestoga-Rovers & Associates, dated March 2013, #078410, Report Number: 1.

CRA. 2014. 2013/2014 Paris Pit Water Well Survey Dufferin Paris Pit, County of Brant, Ontario; signed and stamped by Gary Lagos, P. Geo.

MMM. 2015. Dufferin Aggregates Paris Pit, County of Brant, Ontario Ecological Investigation Results for Quadrant 2 (Q2) and Assessment of Impacts Related to Water Level Fluctuations during Proposed Washing Operations. Letter addressed to Kevin Mitchell of Holcim (Canada) Inc.

The Environmental Review Tribunal (ERT) has recently changed its phone and fax phone numbers, and as such you will need to use the following should you wish to contact the ERT:

New Public Inquiry Telephone Number:

Tel. (416) 212-6349

Toll Free 1(866) 448-2248

New Fax Number:

Fax: (416) 326-5370

Toll Free: 1(844) 213-3474

ENVIRONMENTAL REVIEW TRIBUNAL

IN THE MATTER OF Part XIII of the *Environmental Protection Act*, R.S.O. 1990, c. E.19 as amended;

-and-

IN THE MATTER OF sections 38 to 48 of the *Environmental Bill of Rights*, S.O. 1993, c. 28;

-and-

IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Fariha Pannu, Director, Ministry of the Environment and Climate Change, under section 20.3 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended, to issue Environmental Compliance Approval No. 1400-9VNPVY, dated October 29, 2015, to CRH Canada Group Inc., for the establishment, use and operation of sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation at the Dufferin Aggregates - Paris Pit, at Lot 26, 27, 1, 2 & 3, Concession 3, 2, WGR, South Dumfries, County of Brant.

NOTICE OF APPEAL

TAKE NOTICE that pursuant to sections 139, 142 and 145.2 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19 (“*EPA*”), and pursuant to the decision of the Environmental Review Tribunal (“*Tribunal*”) in Case No. 15-142 dated March 31, 2016 granting leave to appeal to the Concerned Citizens of Brant (the “*Appellants*”), the *Appellants* require a hearing before the *Tribunal* in respect of the decision of Fariha Pannu, Director, Ministry of the Environment and Climate Change (“*MOECC*”), to issue the following Conditions in Environmental Compliance Approval (“*ECA*”) No. 1400-9VNPVY (appended to this Notice) dated October 29, 2015 to CRH Canada Group Inc. (“*CRH*”) under section 20.3 of the *EPA*:

- Condition 4.8 (future uses of sediment for on-site rehabilitation);
- Condition 5 (contingency and pollution prevention plan);
- Condition 5 (lack of a trigger mechanism in the contingency and pollution prevention plan)

AND FURTHER TAKE NOTICE that the *Appellants* hereby appeal the above-noted Conditions, and respectfully request that the *Tribunal* grant:

- (a) An Order revoking Conditions 4.8 and 5 in the ECA;
- (b) An Order directing the Director to substitute further and better Conditions in the ECA in relation to the above-referred to subject-matter of Conditions 4.8 and 5, as may be specified by the Tribunal; and
- (c) Such further or other Orders as Appellants' counsel may advise and this Tribunal permit.

AND FURTHER TAKE NOTICE that the grounds for the Orders requested by the Appellants are as follows:

1. The above-noted Conditions in the ECA are inadequate to protect the environment or public health, and do not establish appropriate and effective measures to ensure timely identification, assessment, and mitigation of the direct, indirect, and cumulative effects that may be caused by the operation of the sewage works at the Paris Pit over its operating and post-closure lifespan. In particular, the above-noted Conditions were issued by the Director without:
 - a. adequately considering, applying, incorporating, or reflecting the precautionary principle, cumulative effects analysis, adaptive management, public participation, or other principles mandated by the MOECC's Statement of Environmental Values ("SEV") issued under the *Environmental Bill of Rights* ("EBR");
 - b. adequately considering whether they were otherwise factually or scientifically unreasonable, or in accordance with the *EPA*, Ontario Regulation 224/07, or MOECC guidelines, policies, or objectives;
 - c. adequately considering existing baseline conditions in the area including the close proximity of the Paris Pit to the wellhead protection area for the Paris water supply, area drought conditions, or past area use of pesticides, such as atrazine.
2. Allowing the environmental risks or impacts of the sewage works at the Paris Pit to be investigated, monitored, and reported upon under the deficient Conditions in the ECA is contrary to the public interest and not consistent with the purposes and provisions of the *EPA*, *EBR*, Ontario Regulation 224/07, Ontario Regulation 153/04 the MOECC's *Guide to Applying for an Environmental Compliance Approval*, and the MOECC's *Water Management Policies, Guidelines and Provincial Water Quality Objectives*.
3. Sections 1, 2.1, 3, 14, 20.2, 20.3, 20.6, 20.7, 20.8, 20.9, 20.13, and Part XIII of the *EPA*, sections 1, 2, 11, and 38 to 48 of the *EBR*, and section 53 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 ("*OWRA*").

4. Such further or other grounds as Appellants' counsel may advise and this Tribunal permit.

AND FURTHER TAKE NOTICE that the material facts and particulars that the Appellants rely upon in relation to the above-noted grounds of appeal include, but are not necessarily limited to, the following:

Background

1. The site location is the Paris Pit located at Lot 26, 27, 1, 2 & 3 Concession 3, 2, WGR, South Dumfries, County of Brant. It was licensed by the province for extraction of aggregates (sand and gravel) in 1974 under the aggregate law in force at the time but since then remained primarily in agricultural use, with aggregate extraction not commencing until the Fall 2014.
2. The Paris Pit was in continuous agricultural use since before the pit licence was granted in 1974, with a principal crop grown there being corn. The most common herbicide used for corn has been atrazine, often in combination with other herbicides. Atrazine is: (1) inherently toxic to humans and non-humans, according to Environment Canada (“EC”); (2) in the top 100 of the most persistent organic pollutants, according to EC; (3) ranked the highest of 83 pesticides in Agriculture Canada’s priority scheme for potential groundwater pollution; (4) rated by the European Union as a Category 1 substance of high concern because of clear evidence of endocrine disrupting activity; (5) documented to have a persistence in soil and sub-soil of 22 years; and (6) banned in Germany since 1994 and, since 2004, in the European Union, including Switzerland, its country of manufacture.
3. The Paris Pit is within, or in close proximity to, the wellhead protection area for the Paris water supply. It is also near private water supply wells, as well as important ecological and surface water resources.
4. In June 2013, CRH applied under section 20.2 of Part II.1 of the *EPA* for an environmental compliance approval (“ECA”) to establish, use, and operate sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation under section 53 of the *OWRA*. In April 2015, CRH proposed modifications to the works for the ECA application. In March 2013, CRH had applied for a companion Category 3 Permit to Take Water (“PTTW”) under section 34.1 of the *OWRA* for an excavated source water pond sustained by a closed-loop design system for the purposes of aggregate washing operations.
5. Over 3000 comments on the proposed ECA were received from members of the public. On October 29, 2015, the Director issued the ECA to CRH despite objections from the Appellants regarding potential impacts of the proposed sewage works to municipal and private wells, and surface water features. On the same date, the PTTW also was approved by an MOECC director. On November

13, 2015, the Appellants sought leave to appeal the decisions to issue the ECA and the PTTW.

6. On March 31, 2016, the Tribunal found that it appeared there was good reason to believe the Director's decision to issue the above-noted ECA Conditions was unreasonable and could result in significant environmental harm. Accordingly, the Tribunal granted the Appellants leave to appeal the above-noted ECA Conditions pursuant to sections 38 to 48 of the *EBR*. A similar decision by the Tribunal also was rendered on this date regarding the PTTW, and is the subject of a separate notice of appeal by the Appellants.

Ground 1(a) and 1(b): Failure to Consider or Apply Binding MOECC Principles

MOECC SEV Considerations

7. The MOECC SEV mandates the application of a "precautionary, science-based approach in its decision-making to protect human health and the environment".
8. In relation to the ECA for the Paris Pit, where both scientific uncertainty and the potential for adverse effects exist, the precautionary approach required the Director to consider the sewage works to be as hazardous as they could possibly be.
9. However, the Director issued the above-noted ECA Conditions in the face of considerable uncertainty about environmental risks from the sewage works, such as those arising from inadequate pesticide soil sampling methods and the potential for pesticide leaching and related problems from contaminated fines, and simply required CRH to carry out monitoring without known objectives, and to develop contingency and pollution prevention plans after, not before, the issuance of the ECA.
10. The Director's approach is not consistent with the precautionary principle, and does not represent an appropriate exercise of adaptive management, another SEV principle. The latter principle requires that in order to allow a project to proceed with uncertain, but potentially adverse environmental impacts, an adequate baseline of information regarding the existing environment, potential impacts, and mitigation measures must first be in place.
11. While the MOECC SEV entrenches the precautionary approach as a fundamental principle to guide MOECC decision-making, the Director issued the ECA Conditions to CRH despite evidentiary gaps in CRH's supporting documentation. For example, CRH did not address the potential for the leaching of pesticide (e.g. atrazine) contaminants from the settling pond into the aquifer, or the fate of some 24,000 tonnes per year of potentially pesticide-contaminated fines that will be

washed from the aggregate, settled in the settling pond, and stored on site for later use in site rehabilitation.

12. The MOECC SEV stipulates that another of its principles is consideration of cumulative effects. However, the Director, before issuing the ECA Conditions, did not require that CRH conduct a cumulative effects analysis of the ECA in conjunction with the removal of aggregate in the area, extractive operations generally, and the rehabilitation plans for the Paris Pit.
13. The MOECC SEV also entrenches pollution prevention as a “priority” for “minimizing the creation of pollutants that can adversely affect the environment”. However, the ECA authorizes the establishment and operation of sewage works that will produce, not prevent, pollution by concentrating on-site pesticides in the aggregate wash water and generating many metric tonnes of pesticide-contaminated fines that will be washed from the aggregate, settled in the settling pond, and stored on-site for later use in site rehabilitation.
14. The SEV states that public consultation is “vital to sound environmental decision-making” and that the MOECC “will provide opportunities” for consultation in respect of “decisions that might significantly affect the environment”. The issuance of an ECA is such a decision. However, the Director did not require CRH to undertake public consultation in respect of the Contingency or Pollution Prevention Plan, which the ECA Conditions require be produced prior to commencement of the sewage work operations at the Paris Pit.
15. To the contrary, neither the Appellants nor other members of the public were provided any opportunity by the Director pre-approval, or post-approval in the above-noted ECA Conditions, to review and comment upon the Contingency and Pollution Prevention Plan that is only required to be produced by CRH post issuance of the ECA.

Considerations under EPA, O. Reg. 224/07, and MOECC Guidelines, Policies, and Objectives

16. To the extent that the *EPA*, O. Reg. 224/07, O. Reg. 153/04, and the MOECC’s guidelines, policies, and objectives similarly require consideration of the above principles, the Appellants repeat and adopt the above-noted statements in paragraphs 7-15.
17. In short, the above-noted ECA Conditions for the Paris Pit were issued by the Director to CRH without due regard for, or proper consideration of, the aforementioned principles entrenched in the *EPA*, O. Reg. 224/07, O. Reg. 153/04, and the MOECC guidelines, policies, and objectives.

18. Furthermore, in light of paragraphs 7-17, the above-noted ECA Conditions issued by the Director are also factually and scientifically unreasonable in the circumstances.

Ground 1(c): Failure to Consider Existing Baseline Environmental Conditions

19. The evidentiary foundation upon which the Director relied to issue the above-noted ECA Conditions was fundamentally incomplete and plagued by significant uncertainties regarding existing baseline environmental conditions, including the close proximity of the water taking to the wellhead protection area for the Paris drinking water supply, area groundwater and surface water resources, and the past agricultural use of pesticides, such as atrazine, on the lands that will be excavated, as well as on the aggregate, which will be washed at the site.

Ground 2: Inadequate Terms and Conditions

20. The Paris Pit is located in a setting where sewage works have the potential to cause significant adverse effects on groundwater and surface water resources, and contaminate nearby municipal and private wells.
21. However, the above-noted ECA Conditions do not contain sufficient controls to ensure that adverse effects are prevented, minimized, mitigated, properly monitored, or subjected to robust contingency measures. In particular, and as set out more fully below:
 - a. The use of sediment on-site is not clear;
 - b. The Contingency and Pollution Prevention Plan authorized to be produced by the ECA should have been an integral part of the process leading up to issuance of the ECA and available for public scrutiny before the ECA was granted;
 - c. The provision authorizing production of a Contingency and Pollution Prevention Plan is silent on the need for including a trigger mechanism therein.

Sediment Use

22. In issuing Condition 4.8, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the ECA Condition including, but not limited to:
 - a. failing to recognize that sediment should be adequately characterized to assess its suitability for various on-site uses;

- b. failing to recognize flaws in the sediment standards chosen to evaluate sediment samples from the site;
- c. failing to employ appropriate risk assessment principles to set standards that could be used in proper development of risk management measures with respect to sediments at the site, including use of robust laboratory detection limits; and
- d. failing to include in ECA Condition 4.8 a requirement that if sediment is found to contain unacceptable levels of atrazine, or other pesticides, it cannot be used for on-site rehabilitation.

Contingency and Pollution Prevention Plan

23. In issuing Condition 5, respecting preparation of a Contingency and Pollution Prevention Plan prior to the commencement of operation of the sewage works, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the ECA Condition including, but not limited to:

- a. failing to include in the list of parameters lighter hydrocarbon fractions (gas/diesel range) to account for their anticipated use as part of site operations;
- b. failing to delineate, or better delineate, the sediment sampling methodology to be employed, which is key to understanding how on-site sediment will be assessed for contamination from atrazine, or other pesticides;
- c. failing to delineate, or better delineate, a testing methodology to determine on an on-going basis, when the recirculation cell bottom for the wash plant is sealed;
- d. failing to set out a requirement that the Contingency and Pollution Prevention Plan include water sampling in the closed-loop system that addresses pre-washing and worst case conditions so as to adequately assess the impact of washing conditions to the recirculated water and be included in the trigger mechanism assessment;
- e. failing to set out a requirement that the Contingency and Pollution Prevention Plan be prepared by a qualified person who has visited the site and is familiar with the works to be constructed and operated;
- f. failing to integrate the Operations Manual (authorized under Condition 3) with the Contingency and Pollution Prevention Plan, including definitions for normal operations, abnormal operations, and contingency measures for

mitigating upset conditions or other problems in respect of both equipment operations and resulting environmental impacts from wastewater handling;

- g. failing to set out a requirement that the Contingency and Pollution Prevention Plan be reviewed at least annually by a qualified person who has visited the site at least once during the year when the facility was operating;
- h. failing to require that additional reviews of the Contingency and Pollution Prevention Plan be undertaken whenever there are process changes, or when the monitoring program or trigger(s) that should form part of said Plan indicate unusual elevated readings of any of the monitoring data that could indicate impact to the environment;
- i. failing to require that any of the aforementioned or other information arising in respect of the Contingency and Pollution Prevention Plan, during the course of a year should be part of the annual report required as part of Condition 6.3 and include an evaluation of compliance with the ECA, relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives;
- j. failing to require that the annual report portion of the Contingency and Pollution Prevention Plan should include a summary of any complaints received, an indication of how or whether said complaints relate to the ECA, and any steps taken to address and resolve such complaints; and
- k. failing to require that the Contingency and Pollution Prevention Plan should evaluate performance of the ECA in relation to relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives.

Trigger Mechanism

24. In issuing Condition 5, respecting preparation of a Contingency and Pollution Prevention Plan prior to the commencement of operation of the sewage works, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the ECA Condition including, but not limited to:

- a. requiring a trigger mechanism for the Plan. The lack of such a trigger mechanism has consequences for the ability of CRH to adaptively manage problems that may arise in future, hamstrings MOECC in reviewing the impact of operation of the ECA, and potentially jeopardizes the rights and interests of the Appellants;
- b. relying on sampling methods and detection limits contained in a report appended to Schedule "A" of the ECA, for which there are numerous

concerns about their adequacy and which, if not corrected, would defeat any trigger mechanism developed for the Plan;

- c. failing to require production of, or public scrutiny with respect to, a trigger mechanism before issuance of the ECA, or failing to make the trigger mechanism subject to public scrutiny before approval by the Director post-ECA approval;
- d. failing to link the trigger mechanism for the Contingency Plan in the companion PTTW with the need for similar mechanisms in the management of sediment and the Contingency and Pollution Prevention Plan under the ECA when monitoring, observations, or sampling identify a threshold exceedance; and
- e. failing to identify in the Contingency and Pollution Prevention Plan that any trigger mechanism established be updated on an on-going basis based upon site operations, monitoring data, and recommendations of the qualified person preparing annual reports.

Ground 3: Inconsistency with MOECC Environmental Statutes, Regulations, Policies, Guidelines, or Objectives

25. In respect of Ground 3, the Appellants plead and rely on the facts and particulars set out in the foregoing paragraphs.

DATED at Toronto, this 14th day of April, 2016.



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ENVIRONMENTAL COMPLIANCE APPROVALNUMBER 1400-9VNPVY
Issue Date: October 29, 2015

CRH Canada Group Inc.
2300 Steeles Avenue West, 4th Floor
Concord, Ontario
L4K 5X6

Site Location: Dufferin Aggregates - Paris Pit
Lot 26, 27, 1, 2 & 3, Concession 3,2,WGR,
South Dumfries
County of Brant

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

the establishment, use and operation of sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation, consisting of the following:

- one (1) ***settling pond*** (comprised of the settling cell(s) and the recirculation cell) constructed above the ground-water table receiving wash water from the Processing Wash Plant and make-up water from the source water pond, and returning settled water back to the Processing Wash Plant.

all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage Works.

all in accordance with the supporting documents listed in Schedule 'A' to this environmental compliance approval.

For the purpose of this environmental compliance approval, the following definitions apply:

"Application" means the application for an environmental compliance approval submitted to the Ministry for approval by or on behalf of the Owner and dated June 03, 2013.

"Approval" means this environmental compliance approval, any schedules attached to it, and the Application;

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

"District Manager" means the District Manager of the Guelph District Office of the Ministry;

"EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"Owner" means CRH Canada Group Inc., and includes its successors and assignees;

"OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended; and

"Works" means the sewage works described in the Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITION

- 1.1 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
- 1.2 Except as otherwise provided by these terms and conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with this Approval.
- 1.3 Where there is a conflict between a provision of this environmental compliance approval and any document submitted by the Owner, the conditions in this environmental compliance approval shall take precedence. Where there is a conflict between one or more of the documents submitted by the Owner, the Application shall take precedence unless it is clear that the purpose of the document was to amend the Application
- 1.4 Where there is a conflict between the documents listed in the Schedule A, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

1.5 The terms and conditions of this Approval are severable. If any term and condition of this environmental compliance approval, or the application of any requirement of this environmental compliance approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

2. CHANGE OF OWNER

2.1 The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:

- (a) change of address of Owner or operating authority;
- (b) change of Owner or operating authority or both, including address of new Owner or operating authority, or both;
- (c) change of partners where the Owner or operating authority is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17* ; and
- (d) change of name of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the "Initial Return" or "Notice of Change" filed under the *Corporations Information Act, R.S.O. 1990, c. C.39* , shall be included in the notification to the District Manager.

2.2 In the event of any change in ownership of the Works, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager.

2.3 The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this environmental compliance approval.

3. OPERATIONS MANUAL

3.1 The Owner shall prepare an operations manual prior to the construction, use and operation of the Works that includes, but is not limited to, the following information:

- (a) operating procedures for routine operation of the Works;
- (b) inspection programs, including frequency of inspection, for the Works and the methods or tests to be employed to detect when maintenance is necessary;

- (c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;
- (d) contingency plans and procedures for dealing with a potential spill, bypasses or any other abnormal situations, including notifying the District Manager of the situation; and
- (e) procedures for receiving and responding to public complaints.

3.2 The Owner shall review and update the operations manual from time to time and shall retain a copy of the updated manual onsite at the Works. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.

3.3 The Owner shall make all reasonable efforts to promptly develop a seal at the bottom of the settling pond (comprised of the settling cell(s) and the recirculation cell) and to maintain the integrity of the seal when removing excess sediment from the bottom of the settling pond.

4. MONITORING AND RECORDING

4.1 The Owner shall monitor the groundwater through seven (7) groundwater monitoring wells. Existing wells may be used or new wells installed. The groundwater monitoring wells shall meet the following requirements:

- (a) the wells shall be screened within the upper sand and gravel aquifer;
- (b) three (3) groundwater monitoring wells shall be located along the northern boundary of the Paris South Pit, one (1) of these wells may be located at the south boundary of the Paris North Pit;
- (c) three (3) groundwater monitoring wells shall be located along the southern boundary of the Paris South Pit, with one of these monitoring wells located up gradient of the County of Brant's Telfer wells P31 and P32 and another located immediately down gradient of the source water pond; and
- (d) existing groundwater monitoring well MW1-12 or a suitable replacement shall be included in the monitoring.

4.2 Within **three (3) months** of the issuance of this Approval, the owner shall submit to the Director and the District Manager a document for approval indicating the location and screened depth intervals for the seven (7) groundwater wells proposed to be used.

4.3 Groundwater samples shall be collected from the seven (7) wells required by Condition 4.1 above in **May, August and December** of each year and sent for analysis in accordance with the table below:

General Chemistry	Metals (1)
Conductivity, pH, Hardness (as CaCO ₃), Total Suspended Solids (TSS), Total Dissolved Solids, Alkalinity - Bicarbonate (as CaCO ₃), Alkalinity - Carbonate (as CaCO ₃), Alkalinity - Hydroxide (as CaCO ₃), Total - Alkalinity (as CaCO ₃), Unionized Ammonia, Total Ammonia (as N), Nitrate-N, Nitrite-N, Nitrate & Nitrite (as N), Phosphate-P (ortho), Sulphate, Anion Sum, Cation Sum, Cation - Anion Balance, Dissolved Organic Carbon, Total Organic Carbon, Turbidity.	Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Chloride, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon (total and dissolved silicon), Silver, Sodium, Strontium, Thallium, Tin, Titanium, Tungsten, Uranium, Vanadium, Zinc, Zirconium.

(1) - Groundwater samples are analyzed for dissolved metals. Surface water samples are analyzed for total metals.

4.4 Groundwater samples shall also be analysed for pesticides, including organochlorine pesticides and herbicides, as listed in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014) (see Schedule A), at detection limits equal to or lower than those listed. In the event of any analytical issue (e.g. matrix interference), reasonably achievable laboratory detection limits will apply.

4.5 Surface water samples shall be collected from SW1B (previously referred to as SW1; see OWRA S53 Environmental Compliance Approval (ECA) Application and Supporting Information, Dufferin Paris Pit, County of Brant, CRA, 2013, See Schedule A) and analysed as follows:

- (a) Samples shall be collected three (3) times per year in **May, August and December**; and,
- (b) Samples shall be analysed for: Field Parameters General Chemistry, Metals and Oil and Grease in accordance with the table below:

Field Parameters	General Chemistry, Metals (1) and Oil & Grease
pH, temperature, conductivity, dissolved oxygen, turbidity	Total Suspended Solids, hardness, alkalinity, nutrients (total phosphorous, total ammonia, total nitrate, total nitrite and calculated unionized ammonia), major ions, metals (unfiltered samples except for aluminium which should be from a clay free sample), Oil and Grease.

- (c) Surface water samples shall also be analysed for the suite of pesticides, including organochlorine pesticides and herbicides, listed in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014) (see Schedule A).

For pesticides, the analytical detection limits shall be equal to or lower than those listed in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014). In the event of any analytical issue (e.g. matrix interference), reasonably achievable laboratory detection limits will apply.

- 4.6 Within **three (3) months** of the issuance of this Approval, the Owner shall prepare and submit to the Director for approval a sediment sampling plan for sediment accumulated within the settling cell(s). The purpose of the sediment sampling plan is to determine the distribution and concentration of pesticides within the settling cell(s).
- 4.7 The sediment shall be sampled for: atrazine, atrazine plus atrazine desethyl, glyphosate and aminomethylphosphonic acid (AMPA) and the pesticides listed in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014) (see Schedule A). For pesticides, the analytical detection limits shall be equal to or lower than those listed in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014). In the event of any analytical issue (e.g. matrix interference), reasonably achievable laboratory detection limits will apply.
- 4.8 The results of the sediment samples shall be compared to the lower of the standards for each of the parameters in Condition 4.7 above to those set out in Alberta Tier 1 Soil Remediation Guideline and Nova Scotia Environmental Quality Standards (as updated or replaced), and shall be provided to the Director and the District Manager, future Ontario or Federal guidelines developed for the parameters set out in Condition 4.7 above shall also be used for comparison. Based on the results of the sediment samples, the Director and Owner shall discuss suitable uses for the sediment for on-site rehabilitation.
- 4.9 Water samples shall be collected from the recirculation cell as follows:
- (a) In the first year after operational commencement of the processing wash plant, one (1) sample shall be collected within **one (1) week** of the recirculation cell bottom being sealed and two (2) times thereafter until cessation of aggregate washing for the calendar year. Samples shall be collected at least **thirty (30) days** apart.
 - (b) In the second year after operational commencement of the processing wash plant, water samples shall be collected three (3) times during the calendar year between **February 15th** and **December 15th** at approximately equally spaced intervals.
 - (c) For each subsequent year, water samples shall be collected two (2) times during the calendar year, between **February 15th** and **December 15th**, with the first sample taken prior to the start of aggregate washing season and the second taken at the end, with the following exception:
 - i. if sediment is to be removed from the recirculation cell, the sediment shall be removed prior to the start of the aggregate washing season. A water sample shall be collected **one (1) week** after the bottom of the cell has been sealed and two (2)

times thereafter at approximately equally spaced intervals between the first sample date and December 15th.

- 4.10 The water samples collected from the recirculation cell shall be sent for analysis of general chemistry, including nutrients, metals and pesticides, including Glyphosate, Atrazine, Atrazine Desethyl and Aminomethylphosphonic Acid (AMPA). The sampling methods shall have detection limits at levels identical to or lower than those described in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014) (see Schedule 1). In the event of any analytical issues (e.g. matrix interference), reasonably achievable laboratory detection limits will apply.
- 4.11 After **three (3) years** of continuous data collection, application may be made to the Director to have the monitoring conditions amended.

5. CONTINGENCY AND POLLUTION PREVENTION PLAN

- 5.1 The Owner shall prepare a Contingency and Pollution Prevention Plan prior to the commencement of operation of the Works that includes, but is not necessarily limited to, the following information:
- (a) the name, job title and address of the Owner, person in charge, management or control of the facility.
 - (b) the name, job title and 24-hour telephone number of the person(s) responsible for activating the Contingency Plan.
 - (c) a site plan drawn to scale showing the facility, nearby buildings, streets, maintenance access and the Works (including direction(s) of flow in storm events) and any features which need to be taken into account in terms of potential impacts on access and response (including physical obstructions and location of response and clean-up equipment).
 - (d) a listing of telephone numbers for: local clean-up company(ies) who may be called upon to assist in responding to spills; local emergency responders including health institution(s); and MOECC Spills Action Centre 1-800-268-6060.
 - (e) Materials Safety Data Sheets (MSDS) for each hazardous material which may be transported or stored within the area serviced by the Works.
 - (f) the written procedures by which the Contingency and Pollution Prevention Plan is activated.
 - (g) a description of the spill response and pollution prevention training provided to employees assigned to work in the area serviced by the Works, the date(s) on which the training was provided and to whom.

- (h) the date on which the Contingency and Pollution Prevention Plan was prepared and subsequently, amended.
 - (i) any other information the District Manager requires from time to time.
- 5.2 The Contingency and Pollution Prevention Plan shall be kept in a conspicuous place inside the office building. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.
- 5.3 The Contingency and Pollution Prevention Plan shall be reviewed and amended from time to time, as needed by changes in the operation of the facility.

6. **REPORTING**

- 6.1 **One (1) week** prior to the start-up of the operation of the Works, the Owner shall notify the District Manager (in writing) of the pending start-up date.
- 6.2 In addition to the obligations under Part X of the *Environmental Protection Act*, the Owner shall, within **ten (10) working days** of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.
- 6.3 The Owner shall prepare and submit a report to the District Manager on an annual basis within **ninety (90) days** following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:
- (a) a summary and interpretation of all monitoring data with a comparison to applicable objectives, guidelines, standards, and modelled predictions;
 - (b) an overview of the success and adequacy of the Works;
 - (c) a description of any operating problems encountered and corrective actions taken;
 - (d) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works; and
 - (e) any other information the District Manager requires from time to time.

7. **SPECIAL CONDITION – PUBLIC ACCESSIBILITY TO REPORT**

The Owner shall, make the report required by Condition 6.3 available to the community advisory panel and publicly by posting it on the Company's website at the time specified in Condition 6.3.

SCHEDULE 'A'

This Schedule contains a list of supporting documentation / information received, reviewed and relied upon in the issuance of this Approval.

1. Environmental Compliance Approval Application for Industrial Sewage Works submitted by J. Richard Murphy, P.Eng., of Conestoga-Rovers & Associates Ltd., and signed by Kevin Mitchell, Manager Environment and Properties, of Holcim (Canada) Inc., dated June 03, 2013; and all supporting documentation and information.
2. CRA. 2013. OWRA S53 Environmental Compliance Approval (ECA) Application and Supporting Information, Dufferin Paris Pit, County of Brant, Ontario, signed and stamped by Michael R. Tomka, P. Eng., signed and stamped by Gary Lagos, P. Geo. and signed by J. Richard Murphy, P. Eng. of Conestoga-Rovers & Associates, June 2013, #078410, Report Number: 3.
3. CRA (2014). Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario; signed and stamped by Gary Lagos, P. Geo. and signed by J. Richard Murphy, P. Eng. of Conestoga-Rovers & Associates, July 2014, #078410, Report Number: 5.
4. CRA. 2015. Re: Modifications to Works for Existing ECA Application Dufferin Paris Pit, Paris, Ontario; letter addressed to Mr. Adedoyin Adenowo, Senior Wastewater Engineer, Ministry of Environment and Climate Change from Michael Tomka, P. Eng. of Conestoga-Rovers & Associates, April 16, 2015, Reference No. 078410.
5. AE. 2010. Alberta Tier 1 Soil and Groundwater Remediation Guidelines, Alberta Environment, December 2010, ISBN: 978-0-7785-9015-6 (Printed Edition) ISBN: 978-0-7785-9947-0 (On-line Edition), Retrieved May 6, 2015 from:
<http://environment.gov.ab.ca/info/library/7751.pdf>
6. NSE. 2014. Environmental Quality Standards for Contaminated Sites Rationale and Guidance, Nova Scotia Environment, Environmental Quality Standards for Contaminated Sites, April 2014, retrieved May 6, 2015 from:
<https://novascotia.ca/nse/contaminatedsites/docs/EQS-Contaminated%20Sites-Rationale-and-Guidance-NSE-2014.pdf>

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.
2. Condition 2 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the works in compliance with it.
3. Condition 3 is included to ensure that a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner and made available to the Ministry. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.
4. Condition 4 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained and so that the Works do not cause any impairment to the environment. The Condition is also included for the following purposes:
 - a) To determine the chemistry of groundwater flowing onto and from that part of the Paris Pit property located south of Watts Pond Road. This area is known as the Paris South Pit.
 - b) To determine whether the sedimentation, recirculation and source ponds have an effect on groundwater chemistry.
5. Condition 5 is included to ensure that the Owner will implement the spill contingency plan, such that the environment is protected and deterioration, loss, injury or damage to any person(s) or property is prevented.
6. Condition 6 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.
7. Condition 7 is included to provide the general public with the report required in Condition 6.3.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

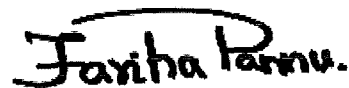
AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment and
Climate Change
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 29th day of October, 2015



Fariha Pannu, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

AA/

c: District Manager, MOECC Guelph District Office
J. Richard Murphy, P.Eng., Conestoga-Rovers & Associates Ltd.

ENVIRONMENTAL REVIEW TRIBUNAL

IN THE MATTER OF sections 34.1, 100 and 101 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 as amended;

-and-

AND IN THE MATTER OF Part XIII of the *Environmental Protection Act*, R.S.O., c. E.19 as amended;

-and-

AND IN THE MATTER OF sections 38 to 48 of the *Environmental Bill of Rights*, S.O. 1993, c. 28;

-and-

AND IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Belinda Koblik, Director, Ministry of the Environment and Climate Change, under section 34.1 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended, in issuing Permit No. 7115-9VVLJW, dated October 29, 2015, to CRH Canada Group Inc., for the taking of groundwater from the Source Pond at the Paris Pit, located at Part Lot 27, Concession 2, Geographic Township of Dumfries, County of Brant;

-and-

AND IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Fariha Pannu, Director, Ministry of the Environment and Climate Change, under section 20.3 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended, in issuing Environmental Compliance Approval No. 1400-9VNPVY, dated October 29, 2015, to CRH Canada Group Inc., for the establishment, use and operation of sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation at the Dufferin Aggregates - Paris Pit, at Lot 26, 27, 1, 2 & 3, Concession 3, 2, WGR, South Dumfries, County of Brant.

ISSUES LIST

**CANADIAN ENVIRONMENTAL LAW
ASSOCIATION**

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Appellants

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Legal Services Branch
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Counsel for the Directors, Ministry of the Environment
and Climate Change

AND TO: Jonathan W. Kahn/Ravi Amarnath
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Counsel for the Instrument Holder
CRH Canada Group Inc.

AND TO Paula Lombardi
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Counsel for the Corporation of the
County of Brant

ENVIRONMENTAL REVIEW TRIBUNAL

IN THE MATTER OF sections 34.1, 100 and 101 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 as amended;

-and-

AND IN THE MATTER OF Part XIII of the *Environmental Protection Act*, R.S.O., c. E.19 as amended;

-and-

AND IN THE MATTER OF sections 38 to 48 of the *Environmental Bill of Rights*, S.O. 1993, c. 28;

-and-

AND IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Belinda Koblik, Director, Ministry of the Environment and Climate Change, under section 34.1 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended, in issuing Permit No. 7115-9VVLJW, dated October 29, 2015, to CRH Canada Group Inc., for the taking of groundwater from the Source Pond at the Paris Pit, located at Part Lot 27, Concession 2, Geographic Township of Dumfries, County of Brant;

-and-

AND IN THE MATTER OF an appeal by the Concerned Citizens of Brant against the decision of Fariha Pannu, Director, Ministry of the Environment and Climate Change, under section 20.3 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended, in issuing Environmental Compliance Approval No. 1400-9VNPVY, dated October 29, 2015, to CRH Canada Group Inc., for the establishment, use and operation of sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation at the Dufferin Aggregates - Paris Pit, at Lot 26, 27, 1, 2 & 3, Concession 3, 2, WGR, South Dumfries, County of Brant.

ISSUES LIST

PERMIT TO TAKE WATER

1. The following Permit to Take Water (“PTTW”) conditions are the subject of this appeal:

- Condition 3.3 (whether dust suppression is in addition to maximum water taking amounts in Condition 3.4a);
- Condition 3.4b (frequency that maximum water taking rate in Condition 3.2 may be reverted to for one month);
- Condition 3.6 (permitted water taking for final eight years of PTTW);
- Condition 4 generally (specific objectives for monitoring requirements);

- Condition 4.7 (trigger mechanism and contingency plan).

2. The PTTW conditions under appeal fail to consider or apply binding Ministry of the Environment and Climate Change (“MOECC”) principles including the Statement of Environmental Values (“SEV”), and various statutory, regulatory, and/or policy, manual, guideline, objective, or other measures particularized in the Notice of Appeal for the PTTW and are also factually and scientifically unreasonable, including with respect to the issue of atrazine.

3. The PTTW conditions fail to consider existing baseline environmental conditions particularized in the Notice of Appeal for the PTTW.

4. The PTTW Conditions do not contain sufficient controls to ensure that adverse effects are prevented, minimized, mitigated, properly monitored, or subjected to robust contingency measures. In particular, and as set out more fully below:

- a. The amount of water permitted to be taken is unclear;
- b. Clear and specific monitoring objectives and requirements have not been provided, and targeted detection limits are missing; and
- c. The Trigger Mechanism and Contingency Plan should have been an integral part of the process leading up to issuance of the PTTW and available for public scrutiny before the PTTW was granted.

Water Taking

5. In issuing Condition 3.3, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to, failing to specify whether the water taking permitted for dust suppression is included in the maximum rate set out in Condition 3.4a, or is in addition to the maximum rate set out in Condition 3.4a.

6. In issuing Condition 3.4b, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to:

- a. failing to clarify how often CRH may revert to the maximum rate of water taking in Condition 3.2 (and Table A thereto) “for a period of one month for the purpose of refilling of the settling and recirculation ponds after the removal of accumulated sediment from these ponds”; and
- b. failing to describe the sediment removal process and its frequency so as to understand how it will impact water takings.

7. In issuing Condition 3.6, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to:

- a. failing to recognize that despite a purported reduction in the water taking volume from 14,000 litres per minute (“lpm”) to 1,400 lpm after three months of operation set out in Condition 3.4a and 3.4b, Condition 3.6 opens the door for CRH to potentially return to greater volumes of water taking two years after commencement of operations under the PTTW;
- b. failing to recognize that the permitted water taking for almost eight years of the PTTW is unknown and will not be known for over two years;
- c. failing to require that the PTTW be evaluated every two years, with a cap on water takings (duration and volume) included in the PTTW, and with a view to examining all reasonable possibilities to reduce both the duration and volume of the water takings in these periods; and
- d. in the alternative, failing to make the PTTW a 2-year, rather than a 10-year PTTW.

Monitoring Objectives

8. In issuing Condition 4 generally, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to:

- a. failing to recognize that while the various sub-clauses of Condition 4 of the PTTW require CRH to comply with monitoring requirements, these sub-clauses impose neither clear nor specific objectives for the various components of the monitoring program to be conducted;
- b. failing to recognize that the lack of objectives for the monitoring program has consequences for the ability of CRH to adaptively manage problems that may arise, hamstrings MOECC in reviewing the impact of operation of the PTTW, and potentially jeopardizes the rights and interests of the Appellants;
- c. failing to require monitoring of groundwater levels before, during, and after construction of the three ponds;
- d. failing to specify the periods for collection of information on groundwater levels, including any periods where modification occurs with respect to, or sediment is removed from, any of the three ponds; and
- e. failing to require monitoring that can detect for leakage, design flaws that cause or fail to minimize leakage, or specify acceptable leakage, if any, with respect to the wastewater settling pond.

Trigger Mechanism and Contingency Plan

9. In issuing Condition 4.7, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the PTTW including, but not necessarily limited to:

- a. failing to recognize that Condition 4.7, which requires CRH to submit to the Director a Trigger Mechanism (“Mechanism”) and Contingency Plan (“Plan”) (or collectively “Mechanism and Plan”) after the issuance of the PTTW (but before construction of the Source Pond), precluded the Appellants and other members of the public from reviewing and commenting on the Mechanism and Plan and is at odds with the approach taken by MOECC directors in other cases where such plans have been the subject of public scrutiny pre-PTTW issuance;
- b. failing to expressly include meaningful opportunities for public participation in the development, review, or approval of the Mechanism and Plan post-issuance of the PTTW and before construction of the source pond;
- c. failing to set out a requirement that the Mechanism and Plan be prepared by a qualified person, who has visited the site and is familiar with the works to be constructed and operated;
- d. failing to set out a requirement that the Mechanism and Plan be reviewed at least annually by a qualified person who has visited the site at least once during the year when the facility was operating;
- e. failing to require that additional reviews of the Mechanism and Plan, or either of them, be undertaken whenever there are process changes, or when the monitoring program or trigger(s) that form part of the Mechanism indicate unusual elevated readings of any of the monitoring data that could indicate impact to the environment;
- f. failing to require that any of the aforementioned or other information arising in respect of the Mechanism and Plan, or either of them, during the course of a year should be part of the annual report required as part of Condition 4.4 and include an evaluation of compliance with the PTTW, relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives;
- g. failing to require that the annual report portion of the Mechanism and Plan should include a summary of any complaints received, an indication of how or whether the complaint relates to the PTTW, and any steps taken to address and resolve the complaint;

- h. failing to require that the Mechanism and Plan should evaluate performance of the PTTW in relation to relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives; and
- i. failing to identify in the Mechanism and Plan that any trigger mechanism established for the PTTW be linked to that established under the ECA and be updated on an on-going basis based upon site operations, monitoring data, and recommendations of the qualified person preparing annual reports.

ENVIRONMENTAL COMPLIANCE APPROVAL

10. The following Environmental Compliance Approval (“ECA”) conditions are the subject of this appeal:

- Condition 4.8 (future uses of sediment for on-site rehabilitation);
- Condition 5 (contingency and pollution prevention plan);
- Condition 5 (lack of a trigger mechanism in the contingency and pollution prevention plan).

11. The ECA conditions under appeal fail to consider or apply binding MOECC principles including the SEV, and various statutory, regulatory, and/or policy, manual, guideline, objective, or other measures particularized in the Notice of Appeal for the ECA and are also factually and scientifically unreasonable, including with respect to the issue of atrazine.

12. The ECA conditions fail to consider existing baseline environmental conditions particularized in the Notice of Appeal for the ECA.

13. The ECA Conditions do not contain sufficient controls to ensure that adverse effects are prevented, minimized, mitigated, properly monitored, or subjected to robust contingency measures. In particular, and as set out more fully below:

- a. The use of sediment on-site is not clear;
- b. The Contingency and Pollution Prevention Plan authorized to be produced by the ECA should have been an integral part of the process leading up to issuance of the ECA and available for public scrutiny before the ECA was granted;
- c. The provision authorizing production of a Contingency and Pollution Prevention Plan is silent on the need for including a trigger mechanism therein.

Sediment Use

14. In issuing Condition 4.8, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the ECA Condition including, but not limited to:

- a. failing to recognize that sediment should be adequately characterized to assess its suitability for various on-site uses;
- b. failing to recognize flaws in the sediment standards chosen to evaluate sediment samples from the site;
- c. failing to employ appropriate risk assessment principles to set standards that could be used in proper development of risk management measures with respect to sediments at the site, including use of robust laboratory detection limits; and
- d. failing to include in ECA Condition 4.8 a requirement that if sediment is found to contain unacceptable levels of atrazine, or other pesticides, it cannot be used for on-site rehabilitation.

Contingency and Pollution Prevention Plan

15. In issuing Condition 5, respecting preparation of a Contingency and Pollution Prevention Plan prior to the commencement of operation of the sewage works, the Director failed or refused to address a number of substantive deficiencies and procedural flaws in the ECA Condition including, but not limited to:

- a. failing to include in the list of parameters lighter hydrocarbon fractions (gas/diesel range) to account for their anticipated use as part of site operations;
- b. failing to delineate, or better delineate, the sediment sampling methodology to be employed, which is key to understanding how on-site sediment will be assessed for contamination from atrazine, or other pesticides;
- c. failing to delineate, or better delineate, a testing methodology to determine on an on-going basis, when the recirculation cell bottom for the wash plant is sealed;
- d. failing to set out a requirement that the Contingency and Pollution Prevention Plan include water sampling in the closed-loop system that addresses pre-washing and worst case conditions so as to adequately

assess the impact of washing conditions to the recirculated water and be included in the trigger mechanism assessment;

- e. failing to set out a requirement that the Contingency and Pollution Prevention Plan be prepared by a qualified person who has visited the site and is familiar with the works to be constructed and operated;
- f. failing to integrate the Operations Manual (authorized under Condition 3) with the Contingency and Pollution Prevention Plan, including definitions for normal operations, abnormal operations, and contingency measures for mitigating upset conditions or other problems in respect of both equipment operations and resulting environmental impacts from wastewater handling;
- g. failing to set out a requirement that the Contingency and Pollution Prevention Plan be reviewed at least annually by a qualified person who has visited the site at least once during the year when the facility was operating;
- h. failing to require that additional reviews of the Contingency and Pollution Prevention Plan be undertaken whenever there are process changes, or when the monitoring program or trigger(s) that should form part of said Plan indicate unusual elevated readings of any of the monitoring data that could indicate impact to the environment;
- i. failing to require that any of the aforementioned or other information arising in respect of the Contingency and Pollution Prevention Plan, during the course of a year should be part of the annual report required as part of Condition 6.3 and include an evaluation of compliance with the ECA, relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives;
- j. failing to require that the annual report portion of the Contingency and Pollution Prevention Plan should include a summary of any complaints received, an indication of how or whether said complaints relate to the ECA, and any steps taken to address and resolve such complaints; and
- k. failing to require that the Contingency and Pollution Prevention Plan should evaluate performance of the ECA in relation to relevant or applicable environmental legislation, regulations, manuals, guidelines, or objectives.

Trigger Mechanism

16. In issuing Condition 5, respecting preparation of a Contingency and Pollution Prevention Plan prior to the commencement of operation of the sewage works, the

Director failed or refused to address a number of substantive deficiencies and procedural flaws in the ECA Condition including, but not limited to:

- a. requiring a trigger mechanism for the Plan. The lack of such a trigger mechanism has consequences for the ability of CRH to adaptively manage problems that may arise in future, hamstrings MOECC in reviewing the impact of operation of the ECA, and potentially jeopardizes the rights and interests of the Appellants;
- b. relying on sampling methods and detection limits contained in a report appended to Schedule "A" of the ECA, for which there are numerous concerns about their adequacy and which, if not corrected, would defeat any trigger mechanism developed for the Plan;
- c. failing to require production of, or public scrutiny with respect to, a trigger mechanism before issuance of the ECA, or failing to make the trigger mechanism subject to public scrutiny before approval by the Director post-ECA approval;
- d. failing to link the trigger mechanism for the Contingency Plan in the companion PTTW with the need for similar mechanisms in the management of sediment and the Contingency and Pollution Prevention Plan under the ECA when monitoring, observations, or sampling identify a threshold exceedance; and
- e. failing to identify in the Contingency and Pollution Prevention Plan that any trigger mechanism established be updated on an on-going basis based upon site operations, monitoring data, and recommendations of the qualified person preparing annual reports.

DATED at Toronto, this 17th day of October, 2016.



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Lawyer for the Appellants

¹ Concerned Citizens of Brant, 272 West River Road, R.R. 2, Paris, Ontario, N3L 3E2

Environmental Review Tribunal
Tribunal de l'environnement



ISSUE DATE: March 31, 2016

CASE NO(S): 15-140 and
15-142

PROCEEDING COMMENCED UNDER section 38 of the *Environmental Bill of Rights, 1993*, S.O. 1993, c. 28, as amended

Applicant: Concerned Citizens of Brant (File No. 15-140)
Applicant: County of Brant (File No. 15-141)
Instrument Holder: CRH Canada Group Inc.
Respondent: Director, Ministry of the Environment and Climate Change
Subject of leave to appeal: Permit to Take Water from Paris Pit issued under section 34.1 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended
Reference No.: 7115-9VVLJW
Property Address/Description: Lot 27, Concession 2
Municipality: Township of South Dumfries
Upper Tier: County of Brant
ERT Case No.: 15-140
ERT Case Name: Concerned Citizens of Brant v. Ontario (Environment and Climate Change)

PROCEEDING COMMENCED UNDER section 38 of the *Environmental Bill of Rights, 1993*, S.O. 1993, c. 28, as amended

Applicant: Concerned Citizens of Brant (File No. 15-142)
Applicant: County of Brant (File No. 15-143)
Instrument Holder: CRH Canada Group Inc.
Respondent: Director, Ministry of the Environment and Climate Change
Subject of leave to appeal: Environmental Compliance Approval issued under section 20.3 of Part II.1 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19 for the establishment, use and operation of

Reference No.: 1400-9VNPVY
 Property Address/Description: Lot 26, 27, 1, 2 & 3, Concession 3, 2, WGR
 Municipality: Township of South Dumfries
 Upper Tier: County of Brant
 ERT Case No.: 15-142
 ERT Case Name: Concerned Citizens of Brant v. Ontario
 (Environment and Climate Change)

Heard: In writing

APPEARANCES:

Parties

Concerned Citizens of Brant

Corporation of the County of Brant

Director, Ministry of the
Environment and Climate Change

CRH Canada Group Inc.

Counsel

Joseph F. Castrilli and Ramani Nadarajah

Paula Lombardi

Isabelle O'Connor and Nicholas Adamson

Jonathan W. Kahn and Sarah Emery

DECISION DELIVERED BY HEATHER McLEOD-KILMURRAY

REASONS

Background

[1] On October 29, 2015, Belinda Koblik, Director, Ministry of the Environment and Climate Change (“MOECC”), issued Permit to Take Water No. 7115-9VVLJW (“the PTTW”) to CRH Canada Group Inc. (“CRH”, or its division Dufferin Aggregates (“Dufferin”)). Also on October 29, 2015, Fariha Pannu, Director, MOECC issued Environmental Compliance Approval No. 1400-9VNPVY (“ECA”) to CRH. Both the

PTTW and the ECA relate to a proposed aggregate washing operation and sewage works at the Dufferin Aggregates Paris Pit in Dumfries, County of Brant.

[2] On November 13, 2015, under the *Environmental Bill of Rights, 1993* (“*EBR*”), the Concerned Citizens of Brant (“*CCOB*”) and the Corporation of the County of Brant (“the County”) (the “Leave Applicants”), filed with the Environmental Review Tribunal (the “Tribunal”) applications for leave to appeal Director Koblik’s decision to approve the PTTW. In summary, the concerns cited in their PTTW-related application are that the proposed water taking:

- may interfere with the water quality/quantity in the neighbouring municipal wells and domestic wells;
- may impact the on-site ponds, Gilbert Creek [“the Creek”] and Grand River [“the River”];
- may cause accumulation of pesticides in the sediment pond and leach through to the groundwater impacting the Grand River and potential drinking water sources downstream.

[3] On November 13, 2015, under the *EBR*, *CCOB* and the County also filed applications for leave to appeal Director Pannu’s decision to approve the ECA. In summary, the concerns cited in their ECA-related application are:

- The location of the sewage works abuts the Paris Gilbert Well Head Protection Area (“*WHPA*”), in a zone designated as a highly vulnerable aquifer and is immediately upstream from the City of Brantford water intake protection zone
- The ECA does not address the potential for leaching pesticides (e.g. atrazine) from the settling pond into the aquifer
- The ECA does not address the fate of some 24,000 tonnes per year of potentially pesticide-contaminated fines to be washed from the aggregate,

settled in the settling pond and stored on site for later use in site rehabilitation

- The alleged failure of the Director to take into account the SEV and its principles

[4] For the reasons that follow, the Leave to Appeal applications of the PTTW and ECA are granted in part.

Relevant Legislation

[5] *EBR*

38. (1) Any person resident in Ontario may seek leave to appeal from a decision whether or not to implement a proposal for a Class I or II instrument of which notice is required to be given under section 22, if the following two conditions are met:

1. The person seeking leave to appeal has an interest in the decision.
2. Another person has a right under another Act to appeal from a decision whether or not to implement the proposal.

...

41. Leave to appeal a decision shall not be granted unless it appears to the appellate body that,

- (a) there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have made the decision; and
- (b) the decision in respect of which an appeal is sought could result in significant harm to the environment.

Issues

[6] The two issues on these applications for leave to appeal are:

- 1) whether the Applicants have standing under s. 38(1) of the *EBR* to bring the applications for leave to appeal; and

- 2) whether the Applicants meet the two-part test for leave to appeal under s. 41 of the *EBR* (the “Leave Test”).

Discussion, Analysis and Findings

Introduction

[7] The Tribunal will combine its analysis of the PTTW and ECA Leave to Appeal applications, since they are so intricately linked and the parties have in most places made similar arguments in relation to both instruments. Where the arguments relate to only one of the instruments, this will be clearly indicated. Although the Tribunal has considered all of the parties’ submissions in detail, only the more salient submissions have been summarized in this Decision.

Overview and summary of evidence filed

[8] In 1974 the Province granted a licence to Dufferin under the *Pits and Quarries Act, 1971* to extract aggregate at the Paris Pit. Until August 2014, no extraction took place, and the site was mainly used for agriculture such as the growing of corn, including use of pesticides. The site covers 249 hectares, has relatively flat to rolling topography and is surrounded by agricultural fields to the north, the Gilbert municipal wellfield to the west, the Telfer municipal wellfield to the east, residential areas to the west, a golf course to the south and residences and agricultural land to the east.

[9] Dufferin began extraction operations in the fall of 2014, pursuant to an updated 1990 Licence No. 5601 under the *Aggregate Resources Act* (“the ARA Licence”), and an Operational Site Plan from 1991, both approved by the Ministry of Natural Resources (now the Ministry of Natural Resources and Forests, “MNR”), and appropriate municipal land use planning and zoning approvals. The original site plans, and all site plans since, have permitted aggregate washing and settling ponds. In September 2014 the MNR granted permission to Dufferin to remove

aggregate from the Paris Pit to be washed at the Butler Pit located in North Dumfries until a PTTW is obtained for the Paris Pit. Dufferin began shipping aggregate to the Butler Pit in May 2015.

[10] On January 3, 2013, CCOB, in conjunction with the Canadian Environmental Law Association (“CELA”), submitted a request to the Environmental Commissioner of Ontario (“ECO”) under the *EBR* for review of the ARA Licence. The ECO sent this request to the MNRF which, on March 12, 2013, issued a Notice of Decision stating that the public interest did not warrant a review of the licence because the MNRF was satisfied that the conditions in the licence and applicable regulatory measures would be enough to appropriately regulate the operation and protect the environment.

[11] On March 12, 2013, Dufferin submitted an application to the MOECC for a Category 3 Permit to Take Water for proposed aggregate washing operations involving an excavated source water pond sustained by a closed loop design system. Once the source pond has been created through excavation, water will be made up from groundwater flow and direct precipitation.

[12] On June 18, 2013, as a companion to the PTTW, Dufferin submitted an application for an Environmental Compliance Approval proposing the closed-loop aggregate washing system under s. 53 of the *Ontario Water Resources Act* (“OWRA”).

[13] The following are details of the sewage works and water taking:

- (1) Preliminary monitoring began in 1988 both on site and in the surrounding area as required by the ARA Licence, providing some baseline understanding of existing conditions at the site.
- (2) The aquifer underlying the Pit supplies water for the Town of Paris. Paris was included in the amalgamation of Brant County local municipalities

(except Brantford) on January 1, 1999, and Brant supplies Paris' municipal water system which services approximately 10,000 people and commercial establishments and industry. The municipal water system relies on groundwater from three wells – the Telfer, Gilbert and Bethel wellfields. The Bethel field is remote from the Pit, the Telfer is just to the east of the Pit, and the Gilbert just to the west.

- (3) The Pit is mainly above the water table. Limited extraction below the table would create the source pond; and two areas would be designated for extraction below the water table during final aggregate extraction but only if it can be demonstrated in advance that this can be done without adverse impacts to groundwater receptors.
- (4) The source pond will be constructed below the water table, by removing aggregate material from above and below the water table and will contain approximately 40,000 to 80,000 cubic metres (m³) of water.
- (5) The PTTW is effective for a term of 10 years, and allows Dufferin to initially take up to a maximum of 14,000 litres per minute (“LPM”) or 10,080,000 litres per day (“LPD”) for a period of up to three months for the initial drilling of the source pond. The rate of the water taking will then be reduced to 1,400 LPM, and can only revert to 14,000 LPM for a period of one month (however the Tribunal notes that it is not clear whether this means one month per year, one month in total over the operation of the 10 year PTTW, once at the Pit reclamation stage, or other).
- (6) Within sixty days following two full years of operation Dufferin must submit a report evaluating water taking needs and making recommendations regarding future water needs and any potential changes to the permitted rates and volumes.
- (7) Water taking can only occur to a maximum of 180 days between February 15 and December 15 of each year.
- (8) The water taking permitted by the PTTW may also be used for dust suppression.

- (9) The ECA is for the establishment, use and operation of a sewage works, i.e. a settling pond (consisting of a settling cell(s) and a recirculation cell) for the collection, transmission, treatment and reuse of wash water from aggregate washing operations.
- (10) The source pond will be located between the Grand River (about 1.3 km to the east and 600 m to the south) and Gilbert Creek (about 400 m to the west), The source, settling and recirculation ponds will be located outside the Gilbert Municipal Wellfield WHPA.
- (11) The closed loop washing system will re-circulate water through a settling pond to remove particulates and return the water to a recirculation cell. As some water will remain on the sand and gravel and some will evaporate, a small amount of “make-up” water will be taken from the source pond. Once the fine particles have settled, the wash water will be re-circulated through the system. The use of water for aggregate washing and re-circulation is estimated to be approximately 160 L/min (or less than 2% of the maximum permitted withdrawal rate of 18,185 L/min).
- (12) The settling pond will be created by constructing one or more cells above the pit floor using excavated and aggregate material, with berms, and will be above the water table. The settling pond will have a maximum overall capacity of 5 to 10 days (12 hours/day) of the maximum volume of water used for washing (approximately 66,000 to 131,000 m³). It will be sealed by the accumulation of fine materials. Settled fines would periodically be excavated from the settling pond.
- (13) A schedule for water conservation measures is included in the PTTW Application as Appendix F. The PTTW Application is included in Schedule A of the PTTW, and the PTTW expressly states that Schedule A forms part of the PTTW.
- (14) The wash plant will be used to wash approximately 60% of the Pit’s output. No aggregate washing is expected to occur between December and February annually.

- (15) The source and settling ponds are outside the municipal well capture zones and projected WHPAs.
- (16) There will be no surface discharge connection from the source or settling ponds to other water bodies in the area, because of the closed-loop system.

[14] In November 2011, Dufferin began pre-consultation with the County about the ECA and PTTW. In February and July 2012, Dufferin conducted two public information sessions about groundwater concerns and the proposed water taking and washing operations. It established a Community Advisory Panel (“CAP”) in early 2012, comprised of three CCOB members, two County councilors, a representative of Grand River Conservation Authority (“GRCA”) and several local residents. CAP held various meetings where there were lengthy discussions of PTTW and ECA issues. Dufferin attended several of these meetings to explain the applications, studies and related information.

[15] On March 26, 2013, the Notice of the PTTW proposal was e-mailed to the County, the Township of North Dumfries and GRCA. It was also e-mailed to the Six Nations First Nation, the New Credit First Nation and the City of Brantford, although no comments were received from these three parties. On March 30, 2013, the PTTW Proposal was posted on the Environmental Registry for 90 days, instead of the usual 30 days, to increase opportunities for public comment.

[16] The PTTW application was supported by several documents, including:

- 2013 CRA Report on the proposed PTTW : a March 2013 report prepared for Dufferin by Conestoga-Rovers & Associates [“CRA”]. Based on the water use during the operation of the Pit and the nature of the proposed works, the report noted three receptors which might be impacted – the Gilbert and Telfer municipal wellfields, private water supply wells and ecological surface water resources. CRA concluded that “[o]peration of the

proposed water taking is not anticipated to have any appreciable or unacceptable effect on the Paris North municipal water supply system, private water supply wells, or surface water features”, but that “[t]he actual versus anticipated conditions will be evaluated through an ongoing monitoring and evaluation program and, in the event of any unanticipated impacts, the water taking conditions can be adjusted.” (section 8.0, page 47).

- 2012/13 MMM ecological assessment: This included a review of the background/historical data from the MNRF and the GRCA on sampling of fish community, wildlife inventory of birds, mammals, herptiles/amphibians Lepidoptera/odonata and species at risk by the MMM Group Limited [“MMM”]. The report found that a small impact to local on-site ponds may occur but water fluctuations would be within current seasonal water level reductions already experienced, therefore MOECC found that further ecological work was not required.

[17] The ECA application was supported by several documents, including:

- 2013 CRA Report on the proposed ECA: a June 2013 report prepared for Dufferin by CRA.
- 2014 CRA Assessment of Herbicide and Pesticide Concerns (July 2014)
- 2015 CRA letter re Modification to Works for Existing ECA Application (April 16, 2015)

[18] CCOB also obtained technical reports:

- 2013 ARL Report – The June 2013 ARL Groundwater Resources Ltd. (“ARL”) Report was a “review of the Permit to Take Water (PTTW) application and supporting hydrologic and hydrogeologic study report for the proposed water taking ... prepared by Conestoga Rovers Associates (CRA, March 2013)” and focused on “the potential impacts of the proposed

water taking on groundwater and surface water users and resources in the area". The 2013 ARL Report raised the following concerns (this was undertaken *prior to* the changes to the design of the aggregate washing system proposed in the companion ECA):

- potential expansion of the source pit and/or potential changes to, or exceedances of, the water consumption rate presented in the CRA 2013 report might increase the risk of an adverse effect on the municipal well fields, and therefore the water quantity/quality available from them;
 - potential impact of the permitted water taking on any private water supply wells if they are located downgradient of the proposed source pond;
 - potential effect of the proposed water taking on the water regime supporting the onsite pond/wetland;
 - "a moderate to high level of risk that the proposed water taking will have an adverse effect on the water regime supporting the existing pond/wetland near the proposed Source Pond and Settling Pond";
 - the absence of site specific analysis of conditions at the Creek and south of the source pond;
 - absence of specific objectives for the monitoring programme;
 - absence of trigger mechanisms and contingency plans
- 2013 Greenacre Report – CCOB obtained a report from one of its members, Nicholas Greenacre, dated June 7, 2013, which raised concerns that excavation of the source pond would create a risk of direct access to the aquifer for any pollutants washed off the aggregate, including atrazine, a known endocrine disruptor banned by the European Union. [Respecting this Report, Dufferin notes that the County's consultant, Stantec Consulting Ltd. ["Stantec"], had an expert toxicologist review Mr. Greenacre's paper who concluded that Mr. Greenacre's sources did not support the position

that the washing process will release agrochemicals into the wash water or aquifer.]

- 2014 Howard letter– In a letter to CELA dated August 28, 2014, Dr. Howard (a university professor and groundwater consultant) analyzed Dufferin’s 2014 pesticides assessment at the request of Mr. Greenacre of CCOB. Dr. Howard had many criticisms of the methodologies used in this assessment and as well as its conclusions. Dr. Howard concluded that “[u]ntil such time [as] an appropriate, comprehensive investigation is carried out (with adequate detection limits), I believe that, contrary to the assertions made by CRA, there remains a credible threat to public or private water supply quality from past use of pesticides at the Paris Pit Site.”

[19] The County expressed concerns as well. Stantec prepared a report for the County dated March 14, 2014 (“2014 Stantec Report”) which provided 11 recommendations for the PTTW and six for the aggregate extraction operations. For the PTTW, Stantec recommended that the County should receive a copy of the Combined Annual Monitoring and PTTW Report. Stantec further recommended the following additional requirements:

- new monitoring wells and monitoring, with improved use of data loggers;
- additional water flow recording;
- the development of water quality parameters for groundwater monitoring;
- additional soil sampling for pesticides before extraction;
- some additional surface quality monitoring;
- analysis of sediment removed from the settling pond: and
- additional assessment of ecological features and an upgraded well inventory.

[20] The Directors note that the 2013 ARL report, the 2014 Stantec report and the 2013 Greenacre letter all predate the amendment to the design in the revised ECA Application.

[21] As a result of comments and concerns raised, the MOECC asked Dufferin to submit two additional technical reports: a Water Well Survey report (April 24, 2014) and an Assessment of Herbicide and Pesticide Concerns (about herbicides such as glyphosate and atrazine) (July 2014). The MOECC's hydrogeologist Vincent Bulman commented on these reports for the Director. In January 2015, Dufferin submitted a report on additional ecological investigations from MMM to address issues raised by the Applicants and their consultants.

[22] On February 5, 2015 a Technical Stakeholders meeting was held to provide a final opportunity to hear additional stakeholder concerns. Attendees included representatives of Dufferin, the County, the Brant County Health Unit, CCOB and Six Nations. The 2014 Howard Letter was also presented at this technical stakeholder's meeting.

[23] On March 24, 2015, the County passed a resolution acknowledging Dr. Howard's opinion on the inadequacy of the study provided by the proponents. This resolution also states that the County "... reaffirms its resolution of May 27, 2014 that no approvals be given or progress be made to open Watts Pond Road, Paris Pit site until the applicants are able to demonstrate through scientific methods that the proposed pit and its activities will not adversely affect the local water supply and aquifer." The resolution expressly referred to the PTTW and the ECA.

[24] Based on the MOECC's technical review of Dufferin's application for the ECA, the MOECC asked Dufferin to modify the aggregate washing works design. The new design was submitted on April 15, 2015, which provided that, after washing, water would be pumped back into the wash plant from a new recirculation pond, to achieve significant water conservation and greater protection for groundwater quality. In May 2015, MOECC staff met separately with County staff and the County's Medical

Officer of Health [“MOH”] to review the draft PTTW and the MOH supported the new design.

[25] On May 11, 2015, the new ECA Instrument Proposal Notice was posted on the EBR Registry for 45 days, again instead of the usual 30 days. A total of 3,018 written comments and 23 electronic comments were received. Most focused on the potential impacts of the sewage works on ground and/or surface water. The Director incorporated specific terms and conditions in the ECA in response to these comments. A total of 515 comments on the proposed PTTW were received from the public, some during the EBR posting period and others up to the time the PTTW was issued.

[26] The PTTW was issued October 29, 2015 for a 10 year period. The ECA was issued the same day, and Decision Notices were posted to the Registry that day.

Issue No. 1: Whether the Applicants have standing under s. 38(1) of the EBR to bring the applications for leave to appeal

[27] The Respondents acknowledge and the Tribunal agrees that both Applicants meet the test for standing to seek Leave to Appeal in s. 38 of the *EBR*.

Issue No. 2: Whether the Applicants meet the two-part test for leave to appeal under s. 41 of the EBR (the “Leave Test”)

Summary of Positions of the Parties

[28] Overall, the CCOB essentially argues that “allowing an operation for the settling and storing of 24,000 tonnes per year of potentially pesticide-contaminated silt, clay and sediments and its subsequent use in site rehabilitation one meter above the water table within or in close proximity to the highly vulnerable wellhead protection areas for the Paris water supply, appears inconsistent with SEV principles” and would “appear to be anything but factually and scientifically

reasonable". It creates the appearance of potentially causing significant environmental harm.

[29] The County's overall argument is that it is unreasonable "to put at risk the water supply for the community of Paris, for the City of Brantford and for the Six Nations without insisting on comprehensive and conclusive studies and with all possible precautions to avoid that risk", including obtaining adequate information and putting in place adequate contingency plans for any potential significant harm to the environment.

[30] The Directors' key position is that extensive expert research and analysis as well as public consultation have been undertaken, and there is little if any scientific uncertainty. The Directors submit that, nevertheless, both the PTTW and ECA have been changed to reflect and respond to concerns raised, and include first of their kind, state of the art conditions that will ensure that any potential risk is detected and prevented before it can cause any significant environmental harm. The Directors state that:

[i]t would be truly extraordinary if leave were granted in the circumstances of this case given the extensive public consultation, supporting information from external experts (retained by Dufferin and the Applicants), extensive and detailed review by Ministry staff, consideration and application of all relevant laws and policies, and first of their kind conditions imposed in the instruments.

[31] Dufferin agrees with the Directors and also submits there is very little scientific uncertainty in the case. Dufferin submits that there is no evidence that an aggregate operation in Ontario has ever contaminated municipal or local drinking water; all Applicant concerns have been dealt with or are not relevant to this Leave Application; and, the Applicants have not brought sufficient evidence to meet their burden under the s. 41 leave test.

[32] The Applicants raise the following specific arguments in respect of the first part of the Leave Test (Reasonableness) in relation to both the PTTW and the ECA:

- Ground 1: Failure to Consider, Incorporate, Reflect or Apply the Statement of Environmental Values (“SEV”)
 - Ground 1(a) – Ecosystem Approach
 - Ground 1(b) – Cumulative Effects Concerns
 - Ground 1(c) – Sustainable Development Principles
 - Ground 1(d) – Precautionary Approach
 - Ground 1(e) – Adaptive Management Principles

- Ground 2 - The Common Law Rights of the Applicants

[33] The Applicants raise the following arguments in respect of the second part of the Leave Test (Potential Environmental Effects):

- Ground 1: Potentially Significant Environmental Harm from Existing Conditions and Arising from Operation of the PTTW and ECA

[34] The analysis that follows is organized according to the above categories. Sub-issue 2(a) will address the first part of the Leave test while sub-issue 2(b) will address the second.

The Leave Test

[35] The s. 41 test has been well-elucidated by the Tribunal and courts in cases such as *Guelph v. Director (Ministry of the Environment)*, [2014] O.E.R.T.D. No. 25 (“*Guelph*”), paragraph 14, citing *Lafarge Canada Inc. v. Ontario (Environmental Review Tribunal)* (2008), 36 C.E.L.R. (3d) 191 (Ont. Div. Ct.) (“*Lafarge*”) at para. 45:

At the leave to appeal stage, the standard of proof is an evidentiary one, i.e., leading sufficient evidence to establish a prima facie case, or showing that the appeal has "preliminary merit", or that a good arguable case has been made out, or that there is a serious issue to be tried. Although worded differently, all of these phrases point to a uniform standard which is less than the balance of probabilities, but amount to satisfying the Tribunal that there is a real foundation, sufficient to give the parties a right to pursue the matter through the appeal process. This lesser standard is embodied in the words of s. 41, namely "appears" and "there is good reason to believe". It is not the function of the Tribunal member who is giving leave to determine the actual merits of the appeal; rather, the member must determine whether the stringent threshold in s. 41 has been passed.

[36] The parties provided submissions on the appropriate application of the leave test. Each has its own gloss on the test, emphasizing some words rather than others and some passages of the applicable case law and not others. There are allegations from one party that another has misapprehended the standard of proof. The Tribunal does not see any utility in canvassing these submissions in detail. Sufficient guidance on the test is found in the wording of the *EBR* and the applicable case law and there is no need here to reanalyze many of the statutory interpretation issues that were conclusively addressed in *Lafarge*. The Tribunal simply follows the approach set out in *Lafarge* in assessing this application for leave to appeal.

[37] The Director argues that this PTTW has "set the bar for this industry". The Director maintains that "[n]ever before has an aggregate operation been required to test for pesticides and compare the results to another jurisdiction." The Tribunal notes that, simply because an instrument creates new or additional burdens as compared to other similar instruments, this does not automatically mean that there cannot be a conclusion that it appears that there good reason to believe that no reasonable person could have made the decision, and/or that there cannot be a conclusion that it appears that the decision could result in significant harm to the environment. If, for example, there was insufficient awareness or evidence, in the past, of the need to test for pesticides in aggregate operations, this does not mean that requiring this testing is sufficient to make the instrument reasonable.

[38] A somewhat similar issue was addressed by the Tribunal in *Concerned Citizens Committee of Tyendinaga and Environs v. Ontario (Ministry of the Environment)*, [2012] O.E.R.T.D. No. 17 (“CCCTE”):

44. That the decision taken might be preferable to approvals that existed previously does not establish the reasonableness of the decision. ...

54. In effect, the proposition argued [...] is that, where an existing activity poses environmental risk, any decision of the Director to impose conditions on that activity must necessarily improve the situation, since in the absence of the decision, the situation would remain as it was. Therefore, the argument goes, a decision to impose new conditions cannot by definition pose a risk of environmental harm, and therefore cannot be subject to the second branch of the section 41 test.

55. The Tribunal disagrees. Whether a decision poses risk of environmental harm is not determined by comparing the effect of the decision with the effect of taking no action at all. That interpretation would effectively exclude from review under the EBR any Director's decision with respect to any established facility or site that contains new requirements or conditions. That result would be contrary to the EBR's purposes, as reflected in section 2(3) of the statute, of providing the means by which residents of Ontario may participate in the making of environmentally significant decisions and increased accountability for government decision-making. Instead, the proper comparison is between the effect of the decision actually taken and the effect of alternative decisions available to the Director under relevant laws and policies. The issuance of an ECA could be said to pose a risk of environmental harm if relevant laws and policies require, prescribe or suggest more stringent conditions or more urgent preventative or remedial action than the ECA provides.

[39] The Tribunal adopts the same approach, even though, in this case, the Director is comparing the instruments to others in the industry as opposed to previous ones for an established facility.

[40] In addition, the Tribunal follows the approach, taken in *Guelph* at paras. 16-17, of limiting its analysis to those aspects of the evidence and argument directly relevant to the s. 41 test:

A leave to appeal hearing is not meant to be a written version of the ultimate hearing of the merits. While there is inevitably some overlap between the matters that may be raised at the leave stage and those at an appeal hearing, it remains important that the focus remains on the former. For the purposes of this decision, which turns on key threshold

issues such as the proper scope of the decision under review, the Tribunal has declined to descend into the merits of the appeal..

Sub-issue No. 2(a): The First Branch of the s. 41 Test - Reasonableness

Ground 1: Failure to Consider, Incorporate, Reflect or Apply the Statement of Environmental Values (“SEV”)

Ground 1(a) - The Ecosystem Approach

The Ecosystem Approach and the PTTW

[41] CCOB relies on the 2013 ARL concerns that an ecosystem approach cannot be applied to insufficient data, such as on: (i) existing conditions in the onsite pond/wetland and potential effects of water taking on its water levels; (ii) the potential for adverse impacts on fish habitat in Gilbert Creek; and (iii) the potential impact of the proposed taking on the Creek (assessment was based only on Dufferin’s experience at other sites and in published studies, not on a site-specific assessment). CCOB submits that these information gaps create scientific uncertainty about the potential results of the water taking, which cannot be corrected by collecting, monitoring and reporting after the instrument is issued. CCOB maintains that this amounts to a “study-while-you-operate” approach which, it asserts, is neither precautionary nor sound environmental decision-making. In support of its position CCOB cites *Dillon v. Ontario (Director, Ministry of the Environment)* (2000), 36 C.E.L.R. (N.S.) 141 (Ont. Env. App. Bd.) and *MacIntosh v. Ontario (Ministry of the Environment)* (2010), 50 C.E.L.R. (3d) 161 (Ont. Env. Rev. Trib.).

[42] CCOB also relies on the ECO’s criticisms of how the MOECC implements its PTTW Program in general, identified in ECO documents (such as “Ontario’s Permit to Take Water Program and the Protection of Ontario’s Water Resources”, Brief to the Walkerton Inquiry (Toronto: ECO, 2001 at 25 & 30), and the ECO’s 2004-2005 Annual Report, at 119). CCOB argues that these weaknesses are also found in the

present case. For example, the Director has discretion to limit analysis of ecosystem function “to the extent information is available”; the Ministry has limited ecological expertise; evidence of applying the SEV is often limited to cursory assertions of the fact by the MOECC; the lack of water budgeting tools and data; minimal data exchanges between the MOECC and Conservation Authorities [“CAs”]; lack of real-time water-taking data for this operation; lack of monitoring data on stream flow and the condition of fish and invertebrates; and the use of simplistic one-size-fits-all threshold limits for in-stream flow protection and management. CCOB asserts that this results in an inability to properly apply an ecosystem approach.

[43] The County agrees with CCOB’s submission that the Director does not appear to have considered the ecological features near the source pond, including the pond/wetland, Creek and the Grand River from which the City of Brantford and Six Nations draw water downstream.

[44] The Directors submit that since most of CCOB’s concerns about the ecosystem approach are based on the ECO’s criticisms of the PTTW Program in general, not the specific PTTW in question, they are not relevant considerations in this proceeding. The Directors submit that they are only bound by, and permitted to act upon, applicable laws and policies, not a “higher standard of environmental protection” that the ECO and CCOB may desire.

[45] The Directors respond to CCOB’s specific criticisms as follows:

- The Director did not limit herself to the available material, but obtained extensive additional information (e.g. updated well survey, herbicide and pesticide report, updated contours for surface water drawdown, etc.).
- The Director relied on experts in hydrology, hydrogeology and pesticides, who relied on others where warranted, such as the MNRF, the Grand River CA, and external experts.

- The Ministry's hydrogeologist's and hydrologist's reports detailed how the SEV was considered, and the Director also provided a detailed explanation.
- Water budget tools and data are not necessary for an informed decision because this is a closed-loop system with minimal water taking in relation to other users.
- CCOB's concern about lack of real-time water-taking data is dealt with by Condition 4.1 requiring Dufferin to record water takings each day, and keep a separate record of taking for aggregate washing and for dust suppression.
- Since the water is only being taken from groundwater, there is no need to monitor stream flow, the condition of fish and invertebrates, or complex threshold limits for in-stream flow protection and management.

[46] Dufferin agrees with the Directors' submission that the general concerns of CCOB and the ECO in relation to the PTTW Regulation and the PTTW Manual (April 2005) (the "Manual") are not relevant considerations in this proceeding. Dufferin argues that CCOB's concerns about inadequate scientific information are mainly based on concerns in the 2013 ARL Report, but this report assessed the original Application. The Directors emphasize that Dufferin supplied any "missing" information to the MOECC between 2013 and 2015. Director Koblik submits that she considered the potential impact of the water taking on the pond/wetland, Creek and River, as well as the Stantec report and the MOECC staff review, which found that the water taking posed no water quality or quantity threats to the pond/wetland, Creek or River. Finally, Director Koblik emphasizes that Conditions 3 through 6 of the PTTW were expressly included "to protect the quality of the natural environment so as to safeguard the ecosystem..."

Findings on Sub-Issue No. 2(a), Ground 1(a) – The Ecosystem Approach and the PTTW

[47] The parties agree that the SEV is relevant to the analyses of the PTTW and ECA to be undertaken under s. 41(1) of the *EBR*, as are the Regulations and all other relevant laws and policies governing the PTTW and ECA.

[48] CCOB and the respondents disagree over the role that ECO Reports can play in Leave to Appeal applications. As this Tribunal found in *Citizens Against Melrose Quarry v. Ontario (Ministry of the Environment)*, [2014] O.E.R.T.D. No. 57 (“*Melrose*”) at para. 68:

ECO Reports have been cited in previous Tribunal decisions on applications for leave to appeal, such as *Dawber v. Ontario* (2007), 28 C.E.L.R. (3d) 238 (Ont. Env. Rev. Trib.) (“*Dawber*”) at paras. 41-42. While these Reports alone are insufficient to determine whether the s. 41 test has been met on the facts of a particular case, the findings of the ECO in relation to the PTTW program in Ontario are relevant and useful to the assessment of best practices and reasonableness in determining applications for PTTWs and, as CAMQ argues, they “provide important context and valuable insight into systemic problems and implementation difficulties in the PTTW program, many of which have manifested themselves in this very case”. The Tribunal has, therefore, considered the ECO Reports in this case.

[49] While the Tribunal has placed more emphasis on the arguments of the parties relating to the specific PTTW in question in this case, it has also considered the submissions based on ECO reports, for the reasons set out in para. 68 of *Melrose*.

[50] The Tribunal finds that many of the concerns in the 2013 ARL Report pre-date the changes to the proposed PTTW and the changed design of the ECA with the new recirculation pond. The Director obtained and considered considerable additional information (such as the updated well survey, the pesticides report, etc.) in response to concerns raised about the PTTW, and added many conditions to each instrument in response to these concerns.

[51] The Tribunal notes that in reply to the concerns about real-time water-taking data, Condition 4.1 was included, requiring Dufferin to record actual water takings and report these. In addition, Condition 3.6 states that “[w]ithin 60 days following two full years of operation, the Permit Holder shall submit to the Director a report evaluating water taking needs and making recommendations regarding future water needs and potential changes to the permitted rates and volumes.” These two conditions seem to support CCOB’s view that this may constitute a “study-while-you-operate” approach.

[52] If two years of water taking information is needed to determine final water taking permit levels, an approach more reflective of the ecosystem approach would be to issue the PTTW for two years, and require an application for renewal when this information is available, along with any other up to date information relevant to applying the ecosystem approach. While s. 3.6 may have been intended to allow that permitted rates and volumes may only be *reduced* but not increased as a result of the analysis of two years of water taking data, this is not stated expressly in the PTTW.

[53] In addition, it would appear to be more reflective of the ecosystem approach to make the Amounts of Taking Permitted in Table A of the PTTW the much smaller amount of a maximum of 1,400 Litres per minute for the duration of the Permit, and make it a condition (for example Condition 3.4a) that the rate of taking shall be *increased* to a maximum of 14,000 Litres per minute for the creation of the source pond and for the first three months of operation of the wash plant (in other words, limit the bulk of the PTTW to the predicted smaller rate of water taking necessary and make the maximum amount of water taking needed for the short initial period the exception to that rule).

[54] The Tribunal further notes that Condition 3.4b states that “[t]he rate and amount of water taking from the Source Pond may revert to that in Table A for a period of one month for the purpose of refilling of the settling and recirculation ponds

after the removal of accumulated sediment from these ponds”. However, this Condition does not specify how often this may occur – annually, whenever necessary, only at the end of use of the ponds? These alternatives would allow for very different amounts of water takings, therefore creating uncertainty about the overall permitted levels.

[55] In addition, while the PTTW states in Condition 3.3 that “notwithstanding the ‘taking Specific Purpose’ identified in Table A [namely aggregate washing], the water taking may also be used for dust suppression.” The PTTW does not appear to include a limit on the amount of water permitted to be taken for dust suppression activities. Condition 3.3 could be interpreted to mean that the maximum amount of water permitted in Table A of the PTTW includes *both* washing and dust suppression. In other words, if for some reason a very large amount of water needs to be taken for dust suppression on a particular day or week, the amount that may be taken for aggregate washing will be correspondingly reduced. Alternatively, Condition 3.3 could be interpreted to mean that water taking for dust suppression is in addition to that permitted for washing.

[56] The Tribunal therefore finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind (in particular, the ecosystem approach), could have issued a 10 year PTTW with the possibility that the permitted water taking levels could be increased after two years based on two years of water taking reporting, and other uncertainties in the PTTW regarding the actual water takings that are likely to occur.

The Ecosystem Approach and the ECA

[57] Since the parties rely on many of their submissions about the PTTW in relation to the ECA, the Tribunal will only summarize the additional issues that they have raised.

[58] CCOB argues that the MOECC guidance requires a groundwater impact assessment for sewage operations. CCOB has the following concerns about groundwater effects: (which CCOB and Greenacre & Erlich expressed to the MOECC in June 2015):

- the sewage works abut the Paris Gilbert WHPA, a designated highly vulnerable aquifer, immediately upstream from the City water intake zone; and
- the potential leaching of pesticide contaminants from the settling pond into the aquifer, and the fate of 24,000 tonnes per year of potentially pesticide-contaminated fines stored on site and potentially used for site rehabilitation, were not addressed.

[59] CCOB emphasizes that Greenacre's November 2015 report found that the MOECC's conclusion that the aggregate washing was not likely to dissolve or leach atrazine into the water was based on its misinterpretation of a research finding that atrazine remains biologically accessible for 20+ years, and because Dufferin's pesticide study contained few groundwater samples where pesticide residues were detected (only four monitoring wells were used to cover a 600+ acre site, all four wells were near the pit boundary in a mandatory no-spray zone, and, therefore, were unrepresentative, and two of these wells did contain pesticides (one at a level exceeding EU standards)). Finally, Greenacre found that the sewage works will concentrate atrazine in the topsoil and sediment which will be spread only one metre above the water table in planned site remediation.

[60] CCOB submits that, despite its concerns about lack of study and monitoring of the Creek ground- and surface water conditions, the Director did not require Dufferin to undertake such study because the County already monitors the Creek.

[61] The County submits that the ECA application did not address the potential leaching of pesticides into the aquifer and the use of potentially contaminated sediment in site rehabilitation. The County further submits that the decision also does not appear to have considered ecological features such as the pond/wetland, Creek or River.

[62] The Director submits that potential harm from pesticides was carefully considered, pointing out that testing showed low pesticide levels in the “overburden” to be washed. The Director maintains that careful technical evaluation (based on conservative and precautionary assumptions about pesticide concentrations in fines and the capacity to leach into wash water) found that any pesticides in groundwater would not reach levels of concern. The Director emphasizes that, nevertheless, Condition 3.3 was added, requiring Dufferin to “promptly” develop a seal at the bottom of the settling pond and to maintain the seal’s integrity when removing excess pond sediment, to reduce the potential for migration of settling pond water into groundwater. The Directors submit that the ECA conditions require an “extensive, first of its kind monitoring program” including periodic sampling for pesticides in the water in the recirculation cell and seven groundwater wells. The Directors note that the MOECC and Stantec reviews concluded that the settling fines would not likely be contaminated with pesticides, however Conditions 4.6 to 4.8 were added, requiring Dufferin to develop and implement a testing program for the settling fines, and discuss suitable uses for sediment in site rehabilitation with the Director.

[63] The Director submits that, even though Mr. Bulman found Mr. Greenacre’s concerns to be invalid, extensive monitoring conditions were nonetheless included to address these concerns. The Director submits that the mere fact that Mr. Greenacre does not agree with Mr. Bulman is not sufficient to meet the s. 41 test.

[64] The Director emphasizes that the County’s own consultant, Stantec, concluded that washing operations posed no water quality or quantity threats to the Creek or River. The Director further emphasizes that analysis of the ECA and PTTW

were done at the same time, including a detailed review of ecological features, and submits that this demonstrates that an ecosystem approach was taken.

Findings on Sub-Issue No. 2(a) Ground 1(a) – The Ecosystem Approach and the ECA

[65] The Tribunal finds that it appears that the Director appropriately applied an ecosystem approach in relation to the ECA, and was responsive to the concerns of the Applicants. The Director required Dufferin to undertake an assessment of herbicides and pesticides and an updated well survey and considered the criticism of other experts in relation to these assessments prior to making the decision to issue the ECA. The Tribunal is also satisfied that it appears reasonable for the Director to rely on the monitoring of the Creek by the County as a reason not to require Dufferin to duplicate this monitoring.

[66] While the Greenacre report does challenge the methodology of Dufferin's pesticide report, the Tribunal finds that the Ministry's technical evaluations applied conservative assumptions about the potential concentrations of pesticides in the wash fines and their ability to leach into the water, and despite very limited evidence of pesticides in the information gathered, the ECA contains a pesticides monitoring program that will sample water in the recirculation cell and several groundwater wells for herbicides. The Tribunal finds that the Applicants have not met the burden of proving that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have issued the ECA based on a failure to apply the ecosystem approach.

Ground 1(b) – Cumulative Effects

Cumulative Effects and the PTTW

[67] CCOB relies on the 2011-12 ECO Annual Report, which specifically identified the Grand River watershed as a location where cumulative effects may be problematic: “the Grand River watershed has over 700 active PTTWs, with permits constantly being issued, renewed and expiring, including significant municipal water takings” (at page 110). CCOB notes that the ECO questioned how the Ministry would assess the new water-taking database and water budgets to reveal cumulative effects.

[68] CCOB argues that Dufferin has not provided adequate information on cumulative effects. CCOB relies both on the Stantec Report, and the fact that the MOECC noted that the removal of aggregate makes sources of drinking water more vulnerable to contamination by removing some protective material over these sources. CCOB submits that the Director’s failure to assess the potential cumulative impacts to water quantity or quality from the aggregate extraction and post-extraction activities and the water taking is unreasonable, particularly given that the Director expects ‘increased numbers of proposals to be submitted to [the MOECC] in the next few years as a result of a new tier of aggregate availability in the Paris Pit area.’”

[69] CCOB submits that, since this PTTW introduces a major new water taking source into an already vulnerable area, it is unreasonable to allow Dufferin to submit a report 60 days after two full years of operation evaluating water taking needs and potential changes to the permitted rates and volumes. CCOB argues that this means that

the alleged conservation success story is in reality an experiment. If [Dufferin] ends up reverting to the default amount of water taking two years after operations under the Permit commence, the opportunity for Applicants to contest a return to the default amount of water taking for the remaining eight years of the Permit could prove legally difficult if not impossible.

[70] The County agrees with CCOB's submission that there has been no study on the cumulative effects of the proposal, including the aggregate extraction operations generally, the taking of groundwater, the aggregate washing operation and the sewage works.

[71] The Director submits that, in relying on ECO reports, the Applicants are trying to impose cumulative impact assessment on the Director in circumstances beyond those set out in the Manual. The Director asserts that the SEV is silent on how to do cumulative impact analysis, but the Manual indicates that if relevant information about watershed/aquifer conditions is available, it will be taken into account in reviewing individual PTTW applications. The Director submits that, where necessary, the Ministry may initiate a watershed scale assessment.

[72] Despite this, the Director submits that cumulative effects *were* considered. In support of this position the Director emphasizes that: MOECC geoscientist Mr. Bulman outlined in detail how he considered cumulative impacts and concluded that the water taking will have no effect on up- or down-gradient users; MOECC surface water scientist Sarah Day outlined how she considered cumulative effects on surface water (she noted that there were no other PTTWs for this site and no surface water features under the zone of influence, considered the potential impacts in drought conditions, and concluded that no significant surface impacts will occur due to the water taking or the operation of the pit - in fact, she opined that the water quality of on-site ponds will improve with cessation of agricultural practices); and Director Koblik outlined her cumulative effects analysis in her affidavit and the SEV Consideration form (she considered the taking of water for washing and dust suppression together and concluded that negative impacts are unlikely).

[73] Dufferin submits that the Director considered the location of the water taking in relation to the WHPAs and associated capture zones and examined the viability of the proposed taking in light of the total water consumption in the WHPA. Dufferin further submits that the alleged failure to consider Stantec's concerns about the potential environmental impact of the aggregate extraction and rehabilitation plans

permitted under the Paris Pit licence are not relevant to the PTTW itself, but the MOECC carefully considered them anyway and reasonably responded to these concerns. Dufferin also argues that the Director conducted concurrent reviews of both the PTTW and ECA applications with both hydrogeology reviews led by the same the MOECC hydrogeologist.

Cumulative Effects and the ECA

[74] CCOB emphasizes that the ECO has noted that when the MOECC modernized its approvals process which created the ECA program, it did not address cumulative effects, further noting that the ECO and non-government organizations call this a “glaring omission” and a “fundamental flaw”. The County repeats its assertion that no study has assessed the cumulative effects of this ECA, including its effects in conjunction with the PTTW, removal of aggregate in the area and extraction operations generally.

[75] The Director argues that ECO’s general concerns about the modernization of the MOECC’s approvals program are not pertinent to this Leave application, and maintains that the CCOB has provided no specifics as to how any defects in that program have impacted this ECA decision. Dufferin argues that since aggregate extraction will preclude agricultural activity, it will result in a net reduction in pesticides in the area’s environment.

Findings on Sub – Issue 2(a) Ground 1(b) - Cumulative Effects and the PTTW

[76] The Tribunal finds that the evidence shows that the Director made significant efforts to consider cumulative effects. However, based on the Tribunal’s finding above in relation to ecosystem analysis and the PTTW that there is no guarantee that after two full years of operation, the permitted rates and volumes of water will not be increased, and CCOB, the County, water users and other affected stakeholders may not be consulted or have the opportunity to submit concerns about any new permitted water taking levels, it appears that it is not possible to fully

assess the cumulative impacts of the water takings until the final permitted water taking limits are determined, which will not be for more than two years. Therefore, the Tribunal finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have effectively applied a cumulative effects analysis in issuing a 10 year PTTW with the possibility that the permitted water taking levels could be increased after two years.

Findings on Sub – Issue 2(a) Ground 1(b) - Cumulative Effects and the ECA

[77] The Tribunal finds that in relation to the ECA, it is clear that the Director and the MOECC scientists on whose reviews of the ECA the Director relied considered the cumulative effects arising from the interactions of the PTTW and the ECA themselves.

[78] However, it is less clear that the cumulative effects analysis of the ECA included its effects in conjunction with the removal of aggregate in the area and extraction operations generally, and the rehabilitation plans for the Pit. While the aggregate extraction licence and rehabilitation plan are outside the scope of these Leave to Appeal applications, to assess the cumulative effects of the ECA, the effects of the aggregate extraction and site rehabilitation are clearly relevant.

[79] Condition 4.8 of the ECA provides that after sediment in the settlement pond is analyzed, “the Director and Owner shall discuss suitable uses for the sediment for on-site rehabilitation.” Details of the rehabilitation plan therefore remain to be determined, which would make a full assessment of the cumulative effects of the ECA impossible to determine at this time. While it may be reasonable for the ECA to allow the testing of the sediment to be done before determining the appropriate uses for it in the rehabilitation plan, the ECA currently leaves this discretion in the hands of the Director and Owner at the time (which CCOB notes may or may not be Dufferin). It would be more appropriate, for example, to include in the ECA a

condition that if the sediment is found to contain unacceptable levels of pesticides, it shall not be used for on-site rehabilitation. This would provide more assurance that cumulative effects of the ECA will not include the possibility of allowing concentrated levels of pesticides, if any are found, to pose a risk to the surface and ground water in the area. Without such assurance, it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have effectively applied a cumulative effects analysis in issuing the ECA when the ultimate use of the sediment in the site rehabilitation plan remains to be determined decades in the future.

Ground 1(c) – Sustainable Development Principles

Sustainable Development and the PTTW

[80] CCOB submits that water conservation is one indication of sustainable development. CCOB asserts that conflicting opinions in the CRA and ARL reports arose because the CRA report was based on inadequate data (in the opinion of ARL). CCOB points out that, while CRA concluded that pit operations and PTTW water taking will not impact water quality or quantity at the Gilbert wellfield, ARL found that firm conclusions about the influence of municipal pumping near the source pond were impossible due to lack of data (e.g. no continuous groundwater level monitoring records on more than a monthly basis to detect peak water demand periods; scale used in water level hydrographs made differentiating effects of water pumping versus seasonal variations difficult; and the municipal wellfields appeared to be pumping below the forecast demand rate or permitted rate).

[81] CCOB also emphasizes that ARL also found that risk to municipal wellfields would increase if the source pond was expanded due to insufficient water supply during prolonged dry periods, yet low water conditions, requiring reduced user consumption, have already occurred in the Grand River watershed (e.g. in 2012). CCOB relies on ARL's conclusion that, given climate change, new development and

other pressures, it is reasonable to expect such conditions to recur or intensify in the future. COOB therefore submits that granting a PTTW that “effectively provides no margin for error with respect to potential impacts to area water quantity” (paragraph 93, Application for Leave to Appeal PTTW, CCOB) is inconsistent with sustainable development principles.

[82] CCOB relies on the ECO’s recommendation in the 2011-12 Annual Report that conditions, such as the imposition of a mandatory water conservation plan, are needed (as required by amendments to the *OWRA* passed in 2007 but never proclaimed into force.) CCOB emphasizes that the Director has failed to impose a mandatory water conservation plan as a condition of the PTTW, which is inconsistent with the *OWRA* and sustainable development principles. The County submits there is no evidence that a water conservation plan was proposed or considered, contrary to the conservation, protection and sustainable use purposes of the *OWRA*.

[83] The Directors define sustainable development as “economic development without depletion of natural resources” (para 94). They state that “[w]ater conservation is a hallmark of this PTTW and ECA.” The Directors maintain that, as the aggregate washing will be in a closed loop system, the approved maximum takings are substantially less than originally requested. The Directors emphasize that the PTTW only allows Dufferin to take water for aggregate washing and dust control (and that the benefits of dust control to air quality outweigh the minimal consumptive impacts on water) and Dufferin must also monitor daily takings for washing and dust suppression separately. The Directors assert that permitted net water use will not negatively impact current or future municipal and local water users, noting that aquifer and surface water levels will be monitored so the Ministry can detect any long term trends to aquifer sustainability and determine potential long-term impacts. For these reasons, the Directors assert that this PTTW has “set a precedent for the aggregate sector”.

[84] Dufferin submits that the permitted water taking is a tiny fraction of the overall permitted water taking. Dufferin emphasizes that, despite the minimal risks, many aspects of the PTTW reflect concern for water conservation, specifically: (i) inclusion of Appendix F “Schedule for Water Conservation Measures”; (ii) reduction of the permitted taking from 18,175 LPM for 200 days/yr to 14,000 LPM for 180 days/yr; (iii) drastic reduction of the permitted water taking rate for the majority of life of the PTTW (three months after wash operations start, the rate drops from 14,000 LPM to 1,400 LPM) (Condition 3.4(a); (iv) creation of a water level monitoring program including reporting requirements to the MOECC, the County, Community Advisory Panel and public (Conditions 4.1 to 4.7); and (v) inclusion of conditions to “foster efficient use and conservation of waters” and “allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of waters in Ontario” (Conditions 3 to 6). Dufferin further notes that the Watershed already has a low water response plan which would apply to the Pit in the event of drought. For these reasons, Dufferin submits that there is no evidence that further mandatory water conservation plans are reasonable or necessary.

Findings on Sub-Issue 2(a) Ground 1(c) - Sustainable Development and the PTTW

[85] The SEV refers to both “sustainability” and “sustainable development”. The Director defines sustainable development as “economic development without depletion of natural resources”. However, this is quite different from the well-known definition from the World Commission on Environment and Development (Brundtland Commission) report *Our Common Future* (Oxford: Oxford University Press, 1987), p. 43): “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” A similar definition is found in the *Federal Sustainable Development Act*, S.C. 2008, c. 33. Two statutes directly implicated in these Leave to Appeal applications, the *EBR* and the *OWRA*, refer to sustainability. The purposes of the *EBR*, set out in section 2(1), are to “(a) to protect, conserve and, where reasonable, restore the integrity of the environment by the means provided in this Act; (b) to provide *sustainability of the*

environment by the means provided in this Act; and (c) to protect the right to a healthful environment by the means provided in this Act.” [emphasis added] The purpose of the *OWRA*, set out in section 0.1, is “to provide for the conservation, protection and management of Ontario’s waters and for their efficient and *sustainable use*, in order to promote Ontario’s long-term environmental, social and economic well-being.” Based on these definitions, the Tribunal finds that the Directors’ definition of sustainable development is too limited: “economic development without depletion of natural resources” places more emphasis on economic development than sustainability *of the environment* as required by the *EBR* and the sustainable use of Ontario’s waters, as required by the *OWRA*. In the analysis that follows, the Tribunal focuses on environmental sustainability, whether viewed as a separate principle of its own or an approach to implementing sustainable development principles that emphasizes the importance of environmental sustainability.

[86] It is clear that the Director made significant attempts to respond to concerns about the sustainability of the water taking permitted by the PTTW, for example by including Condition 3.4a to significantly reduce the amount of water permitted to be taken after the first three months and to add monitoring and reporting conditions. However once again, the possibility that the water taking permitted may increase after the two year report is submitted, with no indication of maximum levels that could be permitted, makes it very difficult to conclude that the water taking from the PTTW, and the aquifer and community water supply, will remain sustainable. Again, a two year PTTW, for example, which might be renewed once the data on two years of operation has been obtained and assessed, would be reasonable while a 10 year PTTW appears to be unreasonable. Therefore, the Tribunal finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have effectively applied sustainable development and/or sustainability principles in issuing a 10 year PTTW with the possibility that the permitted water taking levels could be increased after two years.

Sustainable Development and the ECA

[87] The parties' arguments about sustainable development principles in relation to the ECA focus on environmental assessment ("EA"). CCOB argues that the Director's failure to require an EA of the ECA despite the request of the local Member of Provincial Parliament is another indicator of unreasonableness. The County submits that an EA is a key indicator of sustainable development and should have been required. By contrast, the Directors state that, when the Applicants requested an EA, Dufferin already held a valid aggregate extraction licence. They submit, therefore, that it was reasonable for the Minister to choose not to ask Cabinet to order an EA of the PTTW and ECA, as this would duplicate the full review of the environmental concerns respecting these instruments which had already been done by the MOECC technical staff. Dufferin also argues that the PTTW and ECA are not subject to EA requirements and that the Tribunal lacks jurisdiction on a Leave to Appeal application to question the adequacy of applicable laws and policies.

Findings on Sub-Issue 2(a) Ground 1(c) - Sustainable Development and the ECA

[88] The Tribunal finds that whether or not the PTTW and ECA trigger an EA is outside the scope of these leave to appeal applications and therefore declines to address this issue.

Grounds 1(d) and (e) – The Precautionary Approach and Adaptive Management

Definition and Interaction of the Precautionary and Adaptive Management Principles

[89] The parties dispute the relative importance of, and the relationship between, the precautionary principle and the principle of adaptive management.

[90] CCOB cites *Davidson v. Ontario (Director, Ministry of the Environment)* (2006), 24 C.E.L.R. (3d) 165 (“*Davidson*”) at para 44 (Ont. Env. Rev. Trib.), another case involving a 10-year PTTW:

A precautionary approach presumes the existence of environmental risk in the absence of proof to the contrary. It places the onus of establishing the absence of environmental harm upon the source of the risk. In situations where scientific uncertainty exists as to whether an activity could have an adverse effect, precaution requires that it should be considered to be as hazardous as it could possibly be.

[91] This approach was also adopted in *CCCTE* at para 45.

[92] By contrast, the Directors rely on *Spellman v. Director*, [2007] O.E.R.T.D. No. 67 (“*Spellman*”) at para 73:

[t]he precautionary principle does not require that an application for a PTTW be refused because risks of environmental harm have been raised. Rather, it requires, in the face of threats of environmental harm and in the presence of some degree of uncertainty, that the Director take appropriate measures to prevent harm.

[93] Dufferin relies on another case, *Greenspace Alliance v. Ontario* (2009), 44 C.E.L.R. (3d) 216 (Ont. Env. Rev. Trib.) (“*Greenspace*”) at para. 139 to submit that where environmental risk is not likely, uncertainty is reduced and “it is consistent with the precautionary approach for the Director to approve the activity and include measures to prevent harm or confirm the predictions.”

[94] The Director submits that the SEV provides no hierarchal ordering of the precautionary and adaptive management principles. However, CCOB argues that reliance on adaptive management should not be used to “trump” the precautionary principle. In *Pembina Institute v. Canada*, 2008 FC 302 (“*Pembina Institute*”) at para. 32, the Federal Court held that:

adaptive management permits projects with uncertain, yet potentially adverse environmental impacts, to proceed based on flexible management strategies capable of adjusting to new information regarding adverse environmental impacts *where there is sufficient*

information regarding those impacts and potential mitigation measures already exist (emphasis added).

[95] CCOB submits that since the information is insufficient in this case, adaptive management should not be relied upon to justify not applying the precautionary principle (citing *Melrose*, at paras. 95-97). The County echoes these concerns, adding, for example, that “since Dufferin denies that any of the concerns about the Creek, pond/wetland and private supply wells are a problem”, there is no contingency plan or trigger for implementing one.

[96] The Tribunal finds that the above Tribunal and court cases are not contradictory, yet each party puts the emphasis on the aspects most favourable to their position. Where scientific uncertainty exists as to whether an activity could have an adverse effect, precaution requires that it should be considered to be as hazardous as it could possibly be (*Davidson* and *CCCTE*), and the Director must take appropriate measures to prevent possible harm (*Spellman*). This may include refusing approvals until scientific uncertainty can be eliminated. *Greenspace* applies to a different situation where environmental risk is unlikely and, therefore, there is little scientific uncertainty. In such cases, precaution may permit the Director to approve the activity while including measures to prevent harm or confirm the predictions. This is when adaptive management approaches are applied, as clarified in *Pembina Institute*.

[97] The question, therefore, is how much scientific uncertainty exists in relation to the PTTW and ECA.

Precaution, Adaptive Management and the PTTW

[98] In relation to the PTTW, CCOB relies on the ECO’s finding that the Manual’s requirement to consider various ecological factors “to the extent that information was available” is contrary to a precautionary approach, which puts the burden of proof on proponents to provide lacking data. CCOB submits that the Directors’ failure to acknowledge information gaps in key areas of concern about PTTW Application

documents is not precautionary. The County submits that the experts engaged by itself and CCOB found the additional well water survey and pesticides report from Dufferin to be inadequate. The County submits that proceeding without an adequate scientific basis in the face of a serious threat to the environment including the wellfields surrounding the Paris Pit was not precautionary and was, therefore, unreasonable.

[99] CCOB submits that there are also significant problems with the proposed monitoring program, such as: (i) a lack of specific objectives for the various components of the monitoring program; (ii) no monitoring of groundwater and surface water conditions in the Creek; and (iii) no trigger levels or contingency measures to protect the existing pond/wetland, Creek and private water supply wells. CCOB relies on the ARL's observation in its 2013 report that no triggers or contingency measures were in the application documents, and "we are no closer to having such a mechanism and plan than we were in 2013, when the concern was first identified." CCOB maintains that adaptive management requires robust monitoring to enable appropriate adjustments to PTTW conditions over time. CCOB submits that the significant gaps in baseline, remedial response and other elements undermine the position that the PTTW is granted based on the ability to adaptively manage future changes in environmental conditions.

[100] Dufferin submits that the 2013 ARL report addressed the originally proposed monitoring program, but the actual PTTW addresses these concerns. The Director states that Dufferin responded to concerns about the adequacy of the information in the original PTTW and ECA by providing additional documentation and in consultations, and also in some cases by the County's expert, before the instruments were issued, so that information about the Creek, River and on-site ecology informed the analysis of the MOECC experts. Dufferin relies on Stantec's conclusion (the County's own consultant) which anticipated no impact on water quantity or quality on the Gilbert or Telfer wellfields, private water supplies, Creek or River from water taking at the source pond, leaving little scientific uncertainty.

[101] The redesign of the sewage works to use a recirculation pond – resulting in significant water conservation and additional aquifer protection – is precautionary. Despite all experts finding adverse effects unlikely, conditions were added in both the PTTW and ECA to ensure protection of the ecosystem and water users, including robust monitoring and reporting programmes, which allows for adaptive management. The PTTW also requires a detailed trigger and contingency plan be approved by the Director *prior to* construction of the ponds.

[102] Dufferin maintains that the evidence shows that pesticides are not present in the overburden “in any sufficient quantity to cause concern”: it is therefore unlikely they would be found in the sediment or wash water in concentrations significant enough to impact downgradient users. Dufferin submits that the Applicants’ concerns about methodologies and analysis are merely concerns, and Stantec itself does not agree that aggregate washing will release pesticides into the wash water. Dufferin re-iterates that, despite this, conditions have been included in the ECA, which are the first of their kind, conditions which require Dufferin to monitor and sample for pesticides in ground- and surface water and sediment accumulated in the settling pond. Dufferin points out that If “concentrations of pesticides of concern” are found, Dufferin must “discuss with the Director the appropriate measures to be taken.”

[103] Dufferin submits that ARL’s concerns have been addressed by the supplementary information produced during the lengthy consultation process, maintaining that the Applicants could have sampled the soil but did not. Dufferin again emphasizes that, despite findings of minimal risk (as agreed by consultants for the County, Dufferin and the MOECC), the ECA was amended to further eliminate pesticides concerns in relation to the source pond. Dufferin further maintains that, although the concerns were mainly about atrazine, the pesticide evaluation includes many other pesticides. Dufferin submits that, since the evidence shows that harm is unlikely, it is precautionary to address any remaining risk of harm through conditions, which both instruments contain.

[104] Dufferin agrees that CCOB's concerns pertain to the originally proposed monitoring program, but submits that these concerns (lack of trigger and contingency plan; monitoring of the Creek) have been addressed in the PTTW. Dufferin submits that the conditions imposed clearly demonstrate an adaptive management approach. In support of this submission, Dufferin points to the following features:

- a monitoring program for ground- and surface water whose results must be posted to the MOECC, County, and on Dufferin's website;
- a reassessment of future taking after two years of operation;
- the Director can suspend or reduce permitted water taking;
- a Trigger Mechanism and Contingency Plan for both groundwater and surface water must be approved and in place before constructing the source pond;
- the County monitors the Creek as a condition of its own PTTW, while Dufferin must monitor groundwater levels between the west boundary of its property and the Creek;

Precaution, Adaptive Management and the ECA

[105] CCOB submits that, given that the ECA regime is two tiered and this ECA was not assigned to the simplified process for lower risk activities, it must be a higher risk activity. CCOB asserts that the Director failed to address concerns about Dufferin's pesticide soil sampling methods and potential for pesticides leaching, and submits that this indicates that the MOECC's July 2015 review only partially examined and/or misunderstood Dr. Howard's analysis. The County submits that Dr. Howard's evidence shows that the information the MOECC relied on was inadequate. The County submits that granting the ECA without adequate information in the face of a serious environmental threat is neither precautionary nor reasonable. The County maintains that, if the problems with the pesticide assessment are not corrected, there will be an inadequate information base to apply adaptive

management, and therefore a precautionary approach must be taken. The County supports this position, noting that the ECA conditions do not require monitoring of the pond/wetland, Creek or private supply wells, or a contingency plan with trigger.

[106] The Director submits that the ECA conditions require robust monitoring and reporting to detect potential impacts before they can cause harm and the Annual Monitoring Report will enable an adaptive management approach. Dufferin adds that Condition 5 requires that a contingency plan be approved before operating the sewage works, and Condition 4 requires water monitoring, while the County is already required to monitor the Creek.

[107] The Director submits that the Applicants' concerns about the pesticide study methodology are neither substantiated nor shared by the County's expert. The Director emphasizes that the ECA contains first of kind precautionary measures for monitoring for pesticides, and if any are detected, Dufferin must discuss appropriate measures with the Director.

[108] Dufferin argues that it took the precautionary approach of placing the sewage works outside the WPHAs and associated capture zones, and that the Director was precautionary in responding to Dr. Howard's concerns. Dufferin submits that this is not a case of scientific uncertainty, but the Director, nonetheless, included conditions requiring stringent sampling and monitoring to prevent harm from pesticides. Dufferin emphasizes that these programs use analytical detection limits for ground and surface water well below Ontario Drinking Water Standards and normal municipal water quality testing standards in the County, and incorporate sediment decision limits at the lowest achievable levels currently in use in accredited labs. Dufferin submits that these conditions are very precautionary given that harm was found unlikely by multiple technical assessments and there is no factual evidence to support allegations of potential harm.

Findings on Sub-Issue 2(a), Grounds 1(d) and (e) - The Precautionary Principle, Adaptive Management, the PTTW, and the ECA

[109] The Tribunal again finds that the Directors made significant and laudable efforts to apply both precaution and adaptive management as seemed appropriate in the circumstances. The sewage system was redesigned and many new conditions were added to the instruments. It seems clear that the new design will result in significant water conservation and additional aquifer protection and that it is innovative in that these are the first of their kind conditions to deal with concerns expressed by interested parties.

[110] However, two elements of the PTTW and ECA do raise concerns. The Directors and Dufferin repeat in several places in their submissions that significant monitoring requirements have been added and that, if any of the possible risks do materialize, they can be dealt with by a Trigger Mechanism and Contingency Plan (PTTW) or Contingency and Pollution Prevention Plan (ECA). However, there are no specific objectives for the various components of the monitoring program. Dufferin's argument that the overall context of the instruments creates the objective of environmental protection is too vague to provide the kind of information required for adaptive management.

[111] Of greater concern is the fact that these contingency plans have not yet been received or reviewed by MOECC even though several years of analysis and consultation have occurred since these instruments were first applied for. The Trigger Mechanism and Contingency Plan in the PTTW must be reviewed and approved by the MOECC before construction of the Source Pond begins (PTTW Condition 4.7). The Contingency and Pollution Prevention Plan in the ECA must be prepared (but not reviewed or approved by the MOECC) prior to commencement of operation of the sewage works (ECA Condition 5). The ECA does not include a trigger mechanism for the Contingency and Pollution Prevention Plan. Neither the PTTW nor the ECA Plan will be subjected to consideration, analysis and comment

by CCOB, the County or other interested stakeholders. Without knowing what is in the Contingency Plans, for example, it is not clear whether it will be possible to take appropriate measures in the event the kinds of environmental risks of concern to the parties do materialize. As found in *Guelph* at para 49, this appears to be “contrary to the purposes of the *EBR* (especially those that permit public comments to be made regarding proposed instruments) and the *OWRA* if the Director could insulate his decision from scrutiny”. In *Guelph* it was by mistakenly limiting the scope of his decision, while in this case it is by leaving crucial elements of the approval for later debate and discussion between only the MOECC and the Proponent. The Tribunal notes that the reasonableness of the Directors' decisions to leave elements of an instrument to be addressed in the future should be assessed on a case-by-case basis in light of the Leave Test. In so doing, the Tribunal considers such factors as: the importance of the element of an approval to be addressed in the future, how that element will be addressed (e.g., only between the MOECC and the instrument holder, or also with other affected parties) and whether it appears unreasonable to take that course of action in comparison to other available options.

[112] In this case, the Tribunal finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have granted:

- the PTTW (i) without objectives for its monitoring programmes and (ii) without seeing, assessing, making available for public comment as part of the consultation, and approving the PTTW Trigger Mechanisms and Contingency Plan;
- the ECA without seeing, assessing, making available for public comment as part of the consultation, and approving the Contingency and Pollution Prevention Plan, and requiring a trigger mechanism for that Plan.

Ground 2 – Common Law Rights of the Applicants

Common Law Rights and the PTTW

[113] CCOB argues that the PTTW could affect common law rights and interests of CCOB members (e.g. creating causes of action in negligence, private nuisance, riparian rights and strict liability). Instruments such as the PTTW can diminish common law rights because approvals may (1) protect facilities from liability or (2) influence the standard of conduct considered to be negligent, and (3) potentially cause courts to defer to regulatory officials' assessment of environmental dangers.

[114] CCOB relies on the 2014 CRA analysis of the 2013-14 well water survey. The survey found that of 61 property owners surveyed, two properties with downgradient wells (residential, with no historic water quality or quantity issues) could be affected by the water taking. CCOB submits that when a Director considers approving activities that may constitute a tort, more stringent conditions may be necessary. CCOB asserts that the Director's failure "to aver to the common law interests of the Applicants" before making her decision appears unreasonable. (The County makes no submissions on this sub-issue.)

[115] The Directors note that CCOB does not identify which common law rights could be affected by the PTTW. They rely on *Tomagatick v. Ontario (Ministry of the Environment)*, [2009] O.E.R.T.D. No. 15, to argue that concerns about interference with common law rights, which do not contradict the Director's statements about potential off-site impacts, are not an adequate evidentiary foundation to meet the s. 41 test. Furthermore, they rely on the PTTW conditions that will ensure that significant adverse impacts do not occur in neighbouring municipal or domestic wells or on site ponds, the Creek or the River, as well as Condition 2.4 which also preserves all legal claims or rights of action against Dufferin.

[116] Dufferin also submits that the PTTW conditions protect against unreasonable interference with common law rights. Dufferin maintains that only two properties with residential wells could potentially be affected and though the Ministry found both were outside the expected zone of influence, Dufferin spoke with both owners, offered to connect them to the municipal water supply and has committed to ongoing water quality monitoring at their homes. Dufferin asserts that no evidence suggests they are owned by CCOB members, and CCOB submitted no further technical or expert evidence after the updated well survey to dispute its conclusions. Dufferin notes that Conditions 4.2 and 5.2 require monitoring in the direction of the two private wells (and other areas) and require Dufferin to provide them a safe alternative water supply, or cover the costs of obtaining one, if existing water supply is adversely impacted. Dufferin submits that there is no evidence in the record to indicate that CCOB members may have rights respecting the municipal wellfields and Creek affected.

Common Law Rights and the ECA

[117] CCOB submits that since the Director did not aver to common law interests in relation to the ECA, it cannot be said to have considered them, which is unreasonable. The Director submits that although the MOECC technical and engineering experts found that the sewage works were unlikely to have adverse impacts on ground or surface water quality, conditions were included to ensure that if pesticides do accumulate in the wash water or sediment, appropriate steps can be taken to prevent adverse effects. The Director asserts that the monitoring and reporting programme and contingency and pollution prevention plan will also prevent adverse effects on municipal or domestic wells, the onsite pond/wetland, Creek and River. Neither the County nor Dufferin made submissions on this issue.

Findings on Sub-Issue 2(a) Ground 2 - Common Law Rights, the PTTW, and the ECA

[118] The Tribunal has found above that the Applicants have met the first part of the Leave Test in respect of specific aspects of the decisions to issue the PTTW and ECA. To the extent that those aspects could also affect common law rights, it is not necessary for the Tribunal to conduct another level of analysis as the Leave Test has been otherwise met for those aspects. To the extent that common law rights could be affected by other aspects of the Directors' decisions, the Tribunal finds that the Applicants have not brought sufficiently precise and detailed evidence in relation to potential infringements of common law rights, and therefore in relation to those other aspects, finds that there does not appear to be good reason to believe that no reasonable person, having regard to the potential common law rights of action of the affected water users, could have made the decisions to issue the PTTW and ECA.

Overall Conclusion on Issue 2(a) - Reasonableness

[119] The Tribunal finds that it appears that there is good reason to believe that no reasonable person could have issued the PTTW and ECA in regard to the following specific aspects of the decisions:

- Condition 3.3 of the PTTW, which does not specify whether the water taking permitted for dust suppression is *in addition to* the maximum amounts set out in condition 3.4a.
- Condition 3.4b of the PTTW, which does not clarify *how often* Dufferin may revert to the maximum rate of water taking in Condition 3.2 “for one month following removal of sediment from the settling pond”.
- Condition 3.6 of the PTTW, which states that “[w]ithin 60 days following two full years of operation, the Permit Holder shall submit to the Director a report evaluating water taking needs and making recommendations regarding future water needs and potential changes to the permitted rates and volumes.” This means that the permitted water taking for almost eight years of the PTTW is unknown and will not be known for over two years.

- The lack of clear and specific objectives for the monitoring requirements in the PTTW.
- Condition 4.7 of the PTTW (Trigger Mechanism and Contingency Plan) and Condition 5 of the ECA (Contingency and Pollution Prevention Plan). These Plans are not available and will only be subjected to scrutiny by the MOECC and the Proponent, after the instruments have been granted.
- The ECA Contingency and Pollution Prevention Plan, which does not contain a trigger mechanism.
- Condition 4.8 of the ECA, which does not specify future uses of sediment for on-site rehabilitation.

Sub-issue 2(b): The Second Branch of the s. 41 Test – Potentially Significant Environmental Harm

Potentially Significant Environmental Harm from Existing Conditions and Arising from Operation of the PTTW and ECA

Environmental Harm and the PTTW

[120] CCOB is concerned that pesticide residues may enter the aquifer by leaching from the settling and recirculation ponds, or storage and re-use of the sediment in pit rehabilitation. CCOB asserts that significant environmental harms could result from (i) existing geographic conditions in the area (the wetland protection area, drought, and atrazine); (ii) the fact that it is a Category 3 PTTW, and a Class I Instrument; (iii) potential environmental impacts; (iv) inadequate permit terms and conditions; and (v) the MOECC enforcement limitations. CCOB submits that the conditions do not require financial assurances (contrary to the MOECC financial assurance guidelines on PTTWs whose permitted activities could interfere with municipal or private wells or increase health or environmental risk), or clear water conservation measures.

[121] The County submits that if the water quality or quantity of the aquifer is compromised, there will be devastating consequences for the public and private users of aquifer drinking water. The County maintains that: (i) the long term extraction process will increase the existing vulnerability of the aquifer; (ii) there is uncertainty about net water taking from the aquifer; and (iii) potentially contaminated sediment for site rehabilitation may leach agrochemicals to the aquifer, placing the Creek and its wetlands, the heritage Grand River, and the City and the Six Nations who take water from it downstream from the Pit, at significant risk.

[122] The Director's submissions on the second branch of the test are brief. First, the Directors note that the aggregate extraction licence is not in issue. Secondly, the Directors submit that, even if permanent drought-like conditions exist in the Watershed (asserting that there is no evidence of this before the Tribunal), this is irrelevant to the second arm of the s. 41 test, which asks whether the decision to issue these instruments could cause environmental harm. Thirdly, the Director maintains that the evidence shows that the water taking and closed loop sewage works will have no impacts on any of the up- or downgradient users, on-site ponds, Creek or River. The Director asserts that the PTTW and ECA conditions: (i) are designed to eliminate any risk of harm from the instruments; (ii) are protective, preventative, rectify any unanticipated impacts that may occur; and (iii) are unique and precedent setting. Finally, the Director notes that the MOECC's compliance objectives and enforcement capacity are "of no relevance to the analysis of the potential for significant harm".

[123] Dufferin submits that the Applicants have not provided the required information base to meet the s. 41(b) test. Dufferin further submits that the classification of an instrument does not create presumptions about its risk, but rather the Applicant must prove "the potential for environmental harm posed by the particular decision in question" (*Lafarge* para 18). Dufferin maintains that the County's six concerns with the PTTW are either already resolved, unrelated to the

PTTW or unsupported by the record. Dufferin also submits that the MOECC enforcement limitations are not within the scope of the s. 41 test (*Melrose*).

Findings on Sub-Issue No. 2(b) in relation to the PTTW

[124] The two branches of the Leave Test are separate and both must be satisfied in order for leave to be granted. However, the evidence and arguments that may be relevant to the first branch are not necessarily mutually exclusive from those relating to the second branch. Allegations about apparent failures to reflect the ecosystem approach or cumulative effects, for example, may be relevant to both branches. Such failures may ground a finding of apparent unreasonableness while the effect of the failures could also result in environmental harm.

[125] In this case, the Applicants' successful arguments relating to unreasonableness under the first branch include some aspects that also relate to environmental harm under the second branch. Given its findings in relation to the first branch of the test, the Tribunal finds that there are significant informational gaps in relation to both instruments, caused by the inadequacy of specific conditions in the PTTW. If the PTTW does affect the water quality or quantity of this aquifer in a highly vulnerable wellhead protection area, and, as a result, the drinking water supply of the County, City and others, it is clear that the decision to issue the PTTW appears to be a decision that could result in significant harm to the environment.

Environmental Harm and the ECA

[126] The Directors combined their submissions on the PTTW and ECA (listed above). The following summarizes only the additional arguments particular to the ECA made by the other parties.

[127] CCOB submits that the location of the sewage works in a WHPA, the potential for drought conditions and the presence of atrazine pose potentially significant risks, noting that the Class I classification of the ECA by definition suggests significant risk to the environment and human health.

[128] CCOB further submits that the ECA's terms and conditions are inadequate, as detailed above, for example: (i) the operations manual and a contingency and pollution prevention plan required by Conditions 3 and 5 should have been demanded and subjected to public scrutiny before granting approval; (ii) the monitoring program should contain specific objectives, and be based on adequate sampling methods and detection limits; (iii) financial assurance should be a condition; and (iv) clear decisions, triggers, protocols or requirements for reducing or ceasing operations where, e.g., pesticides are detected should be included.

[129] CCOB reiterates its concerns about the MOECC inspection capacity, arguing that a Condition should be added to require Dufferin to hire an inspector who would be on-site daily (but not a CRH employee) to report to the MOECC on compliance (as done in previous instruments such as permits for landfills).

[130] The County supports the submission that the ECA's classification creates a presumption of potential significant environmental harm. The County submits that devastating harm to local users could result if the quality or quantity aquifer water is compromised. The County maintains that it has eight concerns about the ECA that have not been addressed.

Findings on Sub-Issue No. 2(b) in relation to the ECA

[131] As with the PTTW, some of the grounds relating to the ECA are relevant to both the first and second branches of the Leave Test. The Tribunal finds that, given its findings in relation to the first branch of the test, there are informational gaps in relation to the ECA, caused by the inadequacy of specific conditions. If as a result of the ECA there are negative effects on the water quality or quantity of this aquifer in a

highly vulnerable wellhead protection area, and as a result on the drinking water supply of the County, City and others, it is clear that the decision to issue the ECA appears to be a decision that could result in significant harm to the environment.

DECISION

[132] The Tribunal finds that the Applicant has satisfied the two-part test for leave to appeal found in s. 41 of the EBR, in relation to the PTTW and ECA. Leave to appeal is granted in part. The grounds for appeal shall be limited to only those aspects of the instruments set out in paragraph 119 above.

Applications for Leave to Appeal Granted in Part

“Heather McLeod-Kilmurray”

HEATHER McLEOD-KILMURRAY
MEMBER

If there is an attachment referred to in this document,
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Environmental Review Tribunal

A constituent tribunal of Environment and Land Tribunals Ontario

Website: www.elto.gov.on.ca

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Environmental Review Tribunal
Tribunal de l'environnement



ISSUE DATE: June 08, 2016

CASE NO(S): 15-140 and
15-142

PROCEEDING COMMENCED UNDER section 38 of the *Environmental Bill of Rights, 1993*, S.O. 1993, c. 28, as amended

Applicant: Concerned Citizens of Brant (File No. 15-140)
Applicant: County of Brant (File No. 15-141)
Instrument Holder: CRH Canada Group Inc.
Respondent: Director, Ministry of the Environment and Climate Change
Subject of leave to appeal: Permit to Take Water from Paris Pit issued under section 34.1 of the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended
Reference No.: 7115-9VVLJW
Property Address/Description: Lot 27, Concession 2
Municipality: Township of South Dumfries
Upper Tier: County of Brant
ERT Case No.: 15-140
ERT Case Name: Concerned Citizens of Brant v. Ontario (Environment and Climate Change)

PROCEEDING COMMENCED UNDER section 38 of the *Environmental Bill of Rights, 1993*, S.O. 1993, c. 28, as amended

Applicant: Concerned Citizens of Brant (File No. 15-142)
Applicant: County of Brant (File No. 15-143)
Instrument Holder: CRH Canada Group Inc.
Respondent: Director, Ministry of the Environment and Climate Change
Subject of leave to appeal: Environmental Compliance Approval issued under section 20.3 of Part II.1 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19 for the establishment, use and operation of sewage works for the collection, transmission,

Reference No.:	treatment and reuse of wash water effluent from an aggregate washing operation 1400-9VNPVY
Property Address/Description:	Lot 26, 27, 1, 2 & 3, Concession 3, 2, WGR
Municipality:	Township of South Dumfries
Upper Tier:	County of Brant
ERT Case No.:	15-142
ERT Case Name:	Concerned Citizens of Brant v. Ontario (Environment and Climate Change)

Heard: In writing

APPEARANCES:

Parties

Counsel

Concerned Citizens of Brant	Joseph F. Castrilli and Ramani Nadarajah
Corporation of the County of Brant	Paula Lombardi and Kirsten Mikadze
Director, Ministry of the Environment and Climate Change	Isabelle O'Connor and Nicholas Adamson
CRH Canada Group Inc.	Jonathan W. Kahn

ORDER DELIVERED BY JERRY V. DEMARCO

REASONS

Background

[1] This Order of the Environmental Review Tribunal (the "Tribunal") addresses a motion to review (reconsider) an earlier decision of the Tribunal. The motion is brought by two Directors of the Ministry of the Environment and Climate Change ("MOECC"), Belinda Koblik and Fariha Pannu, in respect of certain parts of a Tribunal decision dated March 31, 2016 (*Concerned Citizens of Brant v. Ontario (Environment and Climate Change)*, 2016 CanLII 17291 (the "Decision")). The Decision granted leave to appeal

seven aspects of the Directors' decisions. Director Koblik's decision was to issue Permit to Take Water No. 7115-9VVLJW (the "PTTW") under the *Ontario Water Resources Act* ("OWRA"). Director Pannu's decision was to issue Environmental Compliance Approval No. 1400-9VNPVY (the "ECA") under the *Environmental Protection Act* ("EPA"). Both of the instruments issued by the Directors relate to a proposed aggregate washing operation and sewage works at the Dufferin Aggregates Paris Pit in Dumfries, County of Brant.

[2] The Decision was rendered by a Member of the Tribunal (the "Leave Panel") following a written hearing pursuant to s. 38-41 of the *Environmental Bill of Rights, 1993* ("EBR"), s. 17 of Ontario Regulation 73/94, and Rules 46-60 of the Tribunal's *Rules of Practice* (the "Rules"). The Decision granted the applicants, the Concerned Citizens of Brant ("CCOB") and the Corporation of the County of Brant (the "County"), leave to appeal certain aspects of the Directors' decisions to issue the PTTW and ECA to CRH Canada Group Inc./Dufferin Aggregates ("CRH" or "Dufferin").

[3] In assessing this motion, the Tribunal has reviewed all of the materials provided on the motion to review. It has not read all of the voluminous materials that were before the Leave Panel, but has simply examined those aspects of the leave record that are relevant to this motion. The Tribunal has adopted this approach in light of the fact that its role on this motion is only to determine whether it is "advisable" that a review hearing take place.

[4] These reasons are structured according to the six considerations set out in Rule 238, which applies to motions that seek to review decisions of the Tribunal. Before analyzing those specific considerations, the Tribunal sets out the relevant legislation and rules, the issue to be decided, a summary of the parties' submissions, and a general analysis of the review Rules.

[5] For the reasons set out below, the Tribunal concludes that it is not advisable to review the Leave Panel's Decision.

Relevant Legislation and Rules

[6] *Statutory Powers Procedure Act*, R.S.O. 1990, c. S.22 ("SPPA")

Power to review

21.2(1) A tribunal may, if it considers it advisable and if its rules made under section 25.1 deal with the matter, review all or part of its own decision or order, and may confirm, vary, suspend or cancel the decision or order.

Tribunal Rules

REVIEW OF ORDERS AND DECISIONS (RECONSIDERATION)

235. A Party may request a review of an order or decision.

236. Notwithstanding Rule 98, a Party making a request under Rule 235 shall serve and file a Notice of Motion and all supporting material within 30 days of the date of the making of the order or decision that is the subject of the request, except in the case of orders and decisions made under the *Environmental Bill of Rights, 1993*, in which case the request must be made within ten days.

237. Notwithstanding Rule 99, a Party who wishes to respond to a motion to review shall serve and file its submissions and all supporting material within ten days of the serving of the Notice of Motion and all supporting material under Rule 236.

238. In deciding whether it is advisable to review all or part of its order or decision, the Tribunal may consider any relevant circumstances including:

- (a) whether the Tribunal acted outside its jurisdiction;
- (b) whether there is a material error of law or fact such that the Tribunal would likely have reached a different decision but for that error;
- (c) whether there is new evidence admissible under the conditions of Rule 234;
- (d) the extent to which any person or any other Party has relied on the order or decision;
- (e) whether the order or decision is under appeal or is the subject of a judicial review application; and

- (f) whether the public interest in finality of orders and decisions is outweighed by the prejudice to the requester.

239. The Tribunal may grant the motion in whole or in part, based on the material filed and/or the record from the original Hearing, and may make procedural directions for the review.

240. The panel who issued the original order or decision shall not hear the motion to review, but may hear the review itself if so designated by the Chair.

241. The panel who heard the motion to review shall not conduct the review.

242. Following the review Hearing, the Tribunal may confirm, vary, suspend, or cancel the order or decision under review in whole or in part.

Issue

[7] The issue is whether it is advisable to grant the Directors' motion to review certain aspects of the Leave Panel's decision.

Discussion

Overview of the Parties' Submissions

[8] As set out below, the Directors' approach to this motion largely involved focusing on alleged material errors concerning the proper interpretation of certain conditions of the two instruments as well as related fairness arguments. Dufferin supported the Directors' argument in brief written submissions. In response, CCOB and the County brought forward the Tribunal's relevant jurisprudence and tied their submissions to the wording of Rule 238. CCOB also provided extensive responding submissions regarding each of the conditions to which the Directors referred. In reply, the Directors again focused on interpretation and fairness issues while providing some commentary on which threshold for review should apply.

Submissions of the Directors

[9] The Directors seek reconsideration of the aspects of the Decision that deal only with the following: conditions 3.3, 3.4b and 3.6 of the PTTW, the alleged lack of clear objectives for the monitoring requirements of the PTTW, and conditions 4.8 and 5 of the ECA. They seek an order granting their motion and request a teleconference to discuss the procedure for the review hearing. Through the review process, they believe that the alleged material errors of fact and law made by the Leave Panel can be corrected, such that the appeal can be narrowed and proceed expeditiously.

Directors' Submissions on Condition 3.3 of the PTTW

[10] In contesting the Decision's findings on condition 3.3 of the PTTW, the Directors first submit that they were not provided an opportunity to respond to this issue as it was not raised in the application materials. Second, they argue that the Leave Panel's interpretation of the condition amounts to a material error that is contrary to the purposes of imposing water taking limits in a PTTW.

[11] For context, the Directors point to condition 3.2, which prohibits water taking from sources other than those authorized in Table A of the PTTW. Therefore, the Directors submit that condition 3.3 only modifies the purpose for which water can be taken but not the maximum rate and amount as specified. They submit that condition 3.4a also applies to condition 3.3, in that it stipulates that any water taken must be permitted by Table A. They argue that a plain and ordinary reading of these conditions means that no water takings above the maxima specified in Table A are authorized. They submit that the Leave Panel relied on an "entirely implausible interpretation of conditions of the PTTW."

[12] The Directors also submit that the Leave Panel "pointedly declined to discuss" the legal test for granting leave to appeal under the *EBR*.

Directors' Submissions on Condition 3.4b of the PTTW

[13] With respect to condition 3.4b, the Directors submit that they were denied procedural fairness in that they were not afforded an opportunity to make submissions. Second, they argue that there was no evidence before the Leave Panel that would give any ground to believe that no reasonable person could have made the decision relating to condition 3.4b.

[14] The Directors point to the uncontested evidence of Director Koblik, who estimated the sediments would have to be removed every three to five years. Furthermore, the expense of removing sediment acts as a disincentive for CRH to remove sediment more frequently than is necessary.

[15] The Directors suggest that the Tribunal may be more comfortable receiving additional expert evidence on this issue as part of a review hearing.

Directors' Submissions on Condition 3.6 of the PTTW

[16] First, the Directors state that they were not afforded an opportunity to make submissions or submit evidence on this issue. Second, they state that the Leave Panel's findings on condition 3.6 of the PTTW are based on material errors of fact and law.

[17] The Directors submit that condition 3.6 is an added layer of protection to encourage the consideration of further limiting water taking and is a good example of adaptive management. The Directors state that the only way for a limit to be increased is through the normal statutory amendment process in the *OWRA*.

[18] They state that the Leave Panel committed an error of law at para. 76 of the Decision by stating that affected stakeholders may not have an opportunity to submit

concerns about new water taking levels. The Directors state that, should an amendment of the water taking limit be made, the *EBR* rights to notice and to seek leave to appeal would be triggered.

[19] They state that condition 3.6 does not create any new legal avenue for changing the permitted amounts of water taking without an amendment to the PTTW and *EBR* posting. They state that the only changes permitted in the PTTW are those in condition 6, which allows the Director to suspend or reduce the amount of water, but not to increase it.

Directors' Submissions on Objectives for Monitoring Requirements in the PTTW

[20] The Decision, at para. 119 (see also, para. 112), refers to the "lack of clear and specific objectives for the monitoring requirements in the PTTW". Nevertheless, the Directors provide submissions on the monitoring requirements for both the PTTW and the ECA. The Directors state that they are puzzled by the Leave Panel's finding that there is a lack of clear and specific objectives for monitoring requirements. The Directors state that both the PTTW and ECA contain extensive and precisely articulated monitoring parameters.

[21] The Directors state that the overarching purpose of the PTTW monitoring program is to ensure that if, contrary to all expectation, the water taking does have an adverse impact on groundwater levels, the monitoring program will reveal this impact at an early stage. With regards to the ECA, should aggregate washing operations cause contaminants to accumulate, this will be revealed by the monitoring program. Furthermore, they argue that the purpose of the ECA monitoring program is clearly stated on p. 11 of the ECA.

Directors' Submissions on Condition 5 of the ECA

[22] The Directors submit the Leave Panel made a material error based on a misunderstanding of the Contingency and Pollution Prevention Plan, specifically that it did not include a trigger mechanism. The Directors state that the very nature of a plan dictates that it has a trigger. For instance, any spill is a trigger for implementing the contingency plan. Furthermore, the type of plan which should be implemented based on the types of fluids to be contained on this site is well understood and not controversial. The Directors also submit that there is no evidence that significant environmental harm could result from the current drafting of condition 5.

Directors' Submissions on Condition 4.8 of the ECA

[23] The Directors submit that the Leave Panel based its conclusions on condition 4.8 of the ECA on a material error of law. The Leave Panel found that condition 4.8 of the ECA did not specify the future uses of sediment for on-site rehabilitation. The Directors submit that the ECA Director does not have jurisdiction to regulate the ultimate disposition of accumulated sediment within an ECA but can only impose conditions related to the operation of sewage works.

[24] The Directors point to note 3 in the Operational Plan (approved under the *Aggregate Resources Act*, R.S.O. 1990, c. A.8), which requires that the sediments from the ponds be used as fill as part of the rehabilitation plan for the pit. The rehabilitation of the quarry site, they submit, is evidently outside the jurisdiction of the sewage works ECA. Therefore, the Directors state that condition 4.8 provides the most sensible way of addressing pesticide loading within the jurisdictional confines of the ECA.

Submissions of Dufferin

[25] Dufferin supports the relief sought by the Directors and their request for a review of the Decision with respect to conditions 3.3, 3.4b, 3.6, and the monitoring requirements of the PTTW and conditions 5 and 4.8 of the ECA. Dufferin agrees with the Directors and states that Dufferin was not provided the opportunity to make submissions or submit evidence on the grounds upon which leave was granted.

[26] Dufferin submits that condition 3.3 is clearly only an exception to the purpose set out in condition 3.2, not the volume. It states that the interpretation of the condition in the Decision is not supported by the instrument or the evidence.

[27] Dufferin states that the County's hydrologist explained that the sediment would be removed "on occasion as the sediment accumulates in the settling pond." Dufferin states that no concern was raised about the frequency of this removal by the applicants. However, to clarify, Dufferin points to condition 4.9(c)(i) of the ECA, which provides that sediment must be removed from the settling pond prior to the commencement of the washing season. Dufferin also makes submissions in support of the Directors' interpretation of condition 3.6 of the PTTW. Dufferin states that no increase can be contemplated without a further amendment to the PTTW and its concomitant public process.

Submissions of the County

[28] The County requests that the Directors' motion requesting a review of the Leave Panel's Decision to grant leave to appeal be dismissed in its entirety. In making this request, it reviews the test to be met for granting a motion to review, responds to the Directors' assertion that the Leave Panel breached procedural fairness, and highlights the impact of revoking the leave decision on the County and the public interest.

County's Submissions on the Test for a Review Motion

[29] The County analyzes what the Tribunal is to consider in order to grant a review. It submits that the threshold for a review has not been met. First, the County notes that, per Rule 238, the Tribunal must determine if it is “advisable” to grant a review. When making this determination, the issue for the Tribunal to determine is not whether the impugned decision is “correct”. The County submits that the Tribunal’s task is to determine whether the impugned decision is “reasonable” in light of the criteria set out in Rule 238.

[30] Second, the County notes that the review process is not an opportunity to re-argue the merits of a decision (*Miller v. Ontario (Director, Ministry of the Environment)* (2008), 37 C.E.L.R. (3d) 214 at para. 18 (Ont. Env. Rev. Trib.) (“*Miller*”). Simply because a different outcome by a different decision-maker was possible, this does not necessitate the granting of a review.

[31] Last, the County notes that the threshold test must be applied stringently and exercised only when exceptional circumstances warrant a review (*Trent Talbot River Property Owners Assn. v. Ontario (Director, Ministry of Environment)* (2006), 22 C.E.L.R. (3d) 159 at para. 44 (Ont. Env. Rev. Trib.) (“*Trent Talbot*”).

County's Submissions on Alleged Errors of Law and Fact

[32] The County submits that there is no evidence to support the Directors’ assertion that the Leave Panel’s interpretations of the conditions are materially in error.

[33] First, for an error of fact or law to exist, it must be “material” to the extent that the Leave Panel that initially heard the matter “would likely have reached a different decision but for the error.” The Leave Panel’s weighing and consideration of the evidence is not a sufficient basis to necessitate a review (*Baker v. Ontario (Director,*

Ministry of the Environment) (2009), 47. C.E.L.R. (3d) 118 at para. 18 (Ont. Env. Rev. Trib.) (“*Baker*”). The County submits that the Directors appear to disagree with the approach taken by the Leave Panel in coming to the Decision. This does not constitute a material error.

[34] The County submits that the Leave Panel took a principled approach to its Decision, reviewing the evidence and argument in light of the MOECC’s Statement of Environmental Values (“SEV”) issued under the *EBR*. It was neither unreasonable nor a material error of any kind, submits the County, for the Leave Panel to find that the SEV factors were intrinsically important to its analysis of the leave applications and the PTTW and ECA conditions. The County states that the bulk of the Directors’ motion submissions focus on detailed technical merits. It states that it is premature for that type of analysis and that the Directors will have ample opportunity at the main hearing of the merits.

County’s Submissions on New Evidence

[35] The County submits that the Directors cannot now seek to introduce new evidence in support of a review request, as suggested in their motion, as the Directors did not address how the test under Rule 234 for the introduction of new evidence had been met.

County’s Submissions on Fairness

[36] The County does not agree with the Directors that the Leave Panel was procedurally unfair. The County submits that the Decision was based on the arguments and information before the Leave Panel. While the precise arguments from either side may not have been adopted, they were not ignored. Nor, the County submits, did the Leave Panel rely on evidence which was not before it. The Leave Panel analyzed the instruments and their conditions in light of the SEV, “which was precisely the task that

the County and CCOB in their leave applications had placed before it". The review process is not an opportunity for the Directors to cure defects in their leave submissions. Furthermore, the County submits that the Directors will have the opportunity to make their arguments at the more appropriate forum of the hearing on the merits of the appeal.

County's Submissions on Reliance on the Decision

[37] The County points to Rule 238(d), which involves considering whether any other party or person has relied upon the Decision. The County submits that it has incurred costs by proceeding with an appeal of the PTTW and ECA conditions specified in the Decision.

County's Submissions on Finality and Public Interest

[38] The County argues that the finality of decisions ought to be presumptively preserved, and that it is in the public interest to do so barring prejudice to the requester. The County submits that that the Directors face no prejudice should the Tribunal refuse to grant the motion for reconsideration. The Directors will still have an ability to defend their decisions to issue the PTTW and ECA and their respective conditions. Refusing the Directors' request, the County submits, would serve the public interest by facilitating public participation in environmental decisions whose outcomes affect a wide range of communities.

Submissions of CCOB

[39] CCOB submits that the motion seeking reconsideration by the Directors is neither cogent nor compelling. CCOB submits there is no basis upon which to grant the motion with respect to any of the conditions of the PTTW or ECA. With respect to the PTTW in particular, CCOB submits that there is a high degree of ambiguity and lack of clarity in

the conditions of the PTTW. This has a direct bearing on how much water taking is being authorized by the Director under the PTTW pursuant to the *OWRA*. CCOB submits that “when the Director issues an instrument that demonstrates a pattern of manifest errors or ambiguity in the wording of material conditions in that instrument, it constitutes strong indicia of unreasonableness under the first branch of the leave test and the potential for causing significant environmental harm under the second branch”.

CCOB's Submissions on the Test for a Review Motion

[40] CCOB submits that the power of reconsideration should only be exercised in exceptional and compelling circumstances. CCOB relies on *Trent Talbot* in asserting that the test for reconsideration is a “stringent” one which should only be exercised in “exceptional” circumstances. CCOB also points to *Chandler v. Alberta Association of Architects*, [1989] S.C.J. No. 102 at para. 20 for the proposition that there is “a sound policy reason for recognizing the finality of proceedings before administrative tribunals”.

CCOB's Submissions on Fairness

[41] In response to the Directors' submissions that it was procedurally unfair for them not to have the opportunity to make submissions on Conditions 3.3, 3.4b and 3.6, CCOB notes that “the Directors were provided additional time to make submissions well beyond that which normally is provided to a party on an application for leave to appeal”. Rather than the normal 15 day timeframe to file response materials, CCOB notes that the Directors had approximately 50 days.

[42] Second, CCOB states that the Directors were provided full notice and fair opportunity to make representations on each of the issues on which they are now seeking reconsideration. CCOB points to specific passages in the Directors' evidence and submissions at the leave stage to demonstrate that the Directors were engaged on the matters addressed in the Decision. Therefore, CCOB submits that there is no basis

for the Directors' assertion that the Leave Panel breached its duty to afford procedural fairness in relation to Conditions 3.3, 3.4b and 3.6.

[43] CCOB asserts that the Directors have failed to apply the test for submitting new evidence, which is necessary in light of para. 22 of the Directors' motion material. That paragraph states: "the Tribunal may be more comfortable receiving additional expert evidence on this issue as part of its reconsideration." CCOB points to Rule 234 and *Trent Talbot*, which enunciates the key considerations which are to be applied in considering whether or not to allow new evidence.

CCOB's Submissions on Condition 3.3 of the PTTW

[44] CCOB argues that the Directors' submissions regarding condition 3.3 in their motion requesting reconsideration are at odds with the Directors' submissions and evidence at the leave stage. In those earlier submissions, the Directors stated that the "proponent is required to monitor daily water takings and to separately monitor takings for the purpose of dust suppression. The net cumulative water consumption of the proponent's operation will not negatively impact current and future municipal and local domestic water users." CCOB submits that this statement confirms that the Director is authorizing two separate water takings: water taking for dust suppression in addition to water taking for aggregate washing. The amounts, however, are not clarified and thus remain at issue.

[45] Second, CCOB notes that the wording of condition 3.3 is highly ambiguous and therefore open to two possible interpretations: (1) the maximum amount of water permitted in Table A of the PTTW includes both washing and dust suppression, or (2) water taking for dust suppression is in addition to permitted takings for washing aggregate. CCOB submits that as a general rule, every condition of a PTTW must be unambiguous in its meaning if it is to be capable of being complied with and enforced. CCOB submits that condition 3.3 does not demonstrate these properties.

[46] CCOB submits that a review of the leave decision contradicts the Directors' claim that the Leave Panel did not discuss the leave test. The first branch of the leave test was discussed in some detail at pp. 16-19 of the Decision and the second branch at pp. 48-50. CCOB submits the test was adequately discussed in the Decision, including the statement that the Leave Panel would rely on the wording of the *EBR* and case law such as *Lafarge Canada Inc. v. Ontario (Environmental Review Tribunal)* (2008), 36 C.E.L.R. (3d) 191 (Ont. Div. Ct.) ("*Lafarge*").

CCOB's Submissions on Condition 3.4b of the PTTW

[47] CCOB disagrees with the Directors' allegation that they were not afforded procedural fairness in regard to condition 3.4b. CCOB submits that the Directors contradict their own assertion by stating that "the evidence already before the Tribunal demonstrates how infrequently fines will have to be removed from the settling pond." CCOB submits that the Directors' submissions on condition 3.4b only serve to reinforce the ambiguity of the wording of condition 3.4b that troubled the Leave Panel. Use of the phrase "when necessary" does not provide an indication of how frequently the temporary increases in water taking for the purpose of refilling the settling and recirculation pond is authorized under the PTTW.

CCOB's Submissions on Condition 3.6 of the PTTW

[48] CCOB submits that there was ample evidence based on the documents filed on the leave application to support the Leave Panel's conclusion on condition 3.6. CCOB submits that the Directors provided evidence and submissions that related to condition 3.6. CCOB submits that condition 3.6 is a "study-while-you-operate" type of condition.

CCOB's Submissions on Objectives for Monitoring Requirements in the PTTW

[49] CCOB submits that based on the evidence at the leave stage, the Leave Panel was entitled to be concerned about a monitoring program that failed to include any clear objectives. CCOB submits that objectives are necessary for evaluating the monitoring program and determining whether objectives in the conditions are being met.

CCOB's Submissions on Condition 5 of the ECA

[50] CCOB submits that the Directors' characterization of condition 5 as a spill contingency plan does not address the concern which was central to condition 5, that of exposure to toxic substances and the potential for contamination of soil, sediments, and water resources. CCOB submits that the title of the condition itself, "Contingency and Pollution Prevention Plan," demonstrates that more than spills were contemplated. CCOB submits that condition 5 should employ an approach such as that contained in s. 56 of the *Canadian Environmental Protection Act, 1999*, S.C. 1999, c. 33, which outlines what a pollution prevention plan entails. CCOB submits that the Directors have tried to limit the scope of condition 5 in order to minimize the Leave Panel's concerns about the lack of a trigger mechanism in relation to toxic substances. CCOB submits that the Directors' argument is not supported by a purposive interpretation of the *EPA*.

CCOB's Submissions on Condition 4.8 of the ECA

[51] CCOB submits that the Directors' submission that the ECA Director cannot regulate, within the sewage works ECA, the ultimate disposition of the accumulated sediment is at odds with the wording of condition 4.8, which provides that the "Director and Owner shall discuss suitable uses for the sediment for on-site rehabilitation". On its face, CCOB submits, condition 4.8 appears to address the issue of disposal of accumulated sediment from sewage works. CCOB submits that the Directors' position is

also inconsistent with s. 53(6) of the *OWRA* and the MOECC's "Guide to Applying for an Environmental Compliance Approval".

CCOB's Submissions on Right of Appeal and Threshold

[52] CCOB states that it has filed a Notice of Appeal with respect to all the conditions in the instruments for which leave was granted. Therefore, the Directors will have an opportunity to raise the issues in this motion in the upcoming *de novo* hearing under s. 145.2(1) of the *EPA*. CCOB argues that the stringent threshold from *Trent Talbot* should therefore apply. CCOB argues that the Directors' motion does not come remotely close to meeting the high threshold test.

CCOB's Submissions on Finality and Other Considerations

[53] CCOB submits that the public interest in the finality of the leave Decision weighs against a review. CCOB also submits that Rule 238 is not exhaustive and the Tribunal is entitled to look at other relevant circumstances. Here, CCOB relies on *Sigrist and Carson v. London District Catholic School Board et al*, 2008 HRTO 34 ("*Sigrist*") in stating that reconsideration processes prolong proceedings and work to the advantage of well-resourced parties. CCOB points to para. 16, which states:

...since the power to reconsider decisions has the potential to lengthen legal proceedings, the public interest in the economy and finality of litigation requires the Tribunal to take care in deciding when to exercise that power. The rationale for this is not hard to imagine. It is not unusual for the Tribunal to make orders at various stages of a complaint, even before its final disposition. The prospect of expeditiously reaching the conclusion of a Tribunal proceeding would be considerably diminished if every ruling made during the course of the proceeding could give rise to a reconsideration request. Likewise, even a final Tribunal decision will not result in the anticipated closure of issues if there is broad access to reconsideration. In both scenarios, parties who are better able to withstand the costs of litigation will have an unfair advantage, whether these costs are financial, emotional, or simply the diversion of attention from other important activities. It should also be noted that it is not only the parties to the litigation that bear the costs of prolonged proceedings. The Tribunal's resources are finite and the manner in which one case proceeds has an effect, directly or indirectly, on others.

[54] CCOB states that frivolous reconsideration motions can have a negative effect on public participation.

Reply Submissions of the Directors

Directors' Reply Submissions on the Test for a Review Motion

[55] The Directors generally agree with CCOB's articulation of the analysis that the Tribunal undertakes under the review Rules. The Directors submit that they have met the threshold for review set out in Rule 238 on the basis of a breach of procedural fairness and material errors of fact and law. The Directors submit that no right of appeal lies from a leave decision so a lower threshold should apply here. The Directors quote *Trent Talbot*, at para. 39, in arguing for a lower threshold of review:

... this Tribunal's threshold test should be a stringent one for reviews of decisions for which a right to appeal is provided, which is the case for most, but not all, of the Tribunal's decisions. There may be good reasons to have a somewhat lower threshold of review for decisions without rights of appeal because the motion to review may be a party's final option.

[56] The Directors disagree with the proposition that the upcoming main appeal of the instruments weighs against a review of the Decision. Rather, the Directors submit that, since there is no right of appeal from the leave Decision, this weighs in favour of granting a review.

[57] The Directors submit they are not seeking to reargue the case because the findings that formed the basis of the Decision were never raised or addressed at the leave stage. The Directors also state that they are not requiring an analysis of the substantive merits of the appeal by way of this motion, as suggested by the County. The Directors state that, because the Tribunal relies heavily on previous rulings in determining matters before it, the Directors want to correct the Decision so it does not

stand as a precedent. Therefore, public policy considerations weigh in favour of granting the reconsideration.

Directors' Reply Submissions on Condition 3.3 of the PTTW

[58] The Directors submit that CCOB's interpretation of this condition as having two possible interpretations is at odds with a plain reading of the PTTW. The Directors state that the end use of the water taken does not determine the number of takings approved; it is the source of the water that determines the number of takings. The Directors point to CCOB's submissions on the ecosystem approach and note that nowhere does it suggest that water taken for dust suppression is not part of the overall water taking. The Directors state that the first time CCOB raised a concern about an apparent lack of a limit was in response to this request for review, which further demonstrates procedural unfairness.

[59] The Directors do not agree with CCOB's allegation of ambiguity. They state that nothing in the reports by CCOB's and the County's consultants speak to uncertainty with respect to the amount to be taken and its uses.

[60] The Directors ask that the Tribunal to reject CCOB's submission that "as a general rule, every condition of a PTTW must be unambiguous in its meaning if it is to be capable of being complied with and enforced." The Directors state that it appears CCOB is referencing the principle of "strict construction" according to which a penal law must be interpreted. The Directors reference *Bell ExpressVu Ltd. v. Rex*, [2002] 2 S.C.R. 559 at paras. 28-29 and *Ontario v. Tenny*, 2015 ONCA 841 at para. 17 as more relevant guidance on the interpretation questions raised here.

Directors' Reply Submissions on Condition 3.4b of the PTTW

[61] The Directors submit that CCOB misapprehends the issue and law in regard to their allegation that there was a denial of procedural fairness. The Directors state that neither CCOB nor the County raised an issue with respect to the frequency of removal of accumulated sediment in their applications for leave. As the issue was not raised, the Directors did not have the opportunity to respond. Alternatively, the Directors state that there was some evidence in the record to address the Leave Panel's concern about the frequency of removal of accumulated sediment.

[62] The Directors submit that they are not seeking to introduce new evidence at this point but rather, in light of the denial of natural justice, submit that the Tribunal may wish to receive additional expert evidence on the question of frequency of removal of fines and its impact on the overall water taking.

Directors' Reply Submissions on Condition 3.6 of the PTTW

[63] The Directors submit that, with respect to the maximum water taking permitted under the PTTW, the Leave Panel misunderstood the statutory regime. Therefore, the Directors reiterate that there is no statutory authority to increase the amount of water taken pursuant to a permit without amending the permit.

Directors' Reply Submissions on Monitoring Requirements

[64] The Directors reiterate that the PTTW and ECA both contain extensive and precisely articulated monitoring parameters, with a clear, overarching purpose.

Directors' Reply Submissions on Condition 5 of the ECA

[65] The Directors submit that the use of the terms “spill” and “pollutant” are interchangeable as they relate to spill contingency plans. This, they submit, is reflected in Part X of the *EPA* where the definition of “spill” makes reference to a “pollutant”. The Directors further state that the *Canadian Environmental Protection Act, 1999* is not relevant.

Directors' Reply Submissions on Condition 4.8 of the ECA

[66] The Directors submit that, as the accumulated sediment in the recirculation pond is not sewage, it may not be regulated within a sewage works ECA. Condition 4.8 does not purport to grant the Director the authority to regulate its use within the sewage works ECA.

Analysis and Findings

The Review Rules in General

[67] As with other situations involving the exercise of discretion under its Rules, the Tribunal is guided by the wording of the applicable Rules and the overall purposes of the Rules and the relevant legislation (e.g., *SPPA*, *EBR*, *OWRA*, and *EPA*). As set out in *Baker*, at paras. 15-19, the Tribunal’s power to order a review is a discretionary power to be used only rarely:

Under the Rules, review of a decision is a two-step process. The first step is a determination of whether a review is “advisable.” It is only if the answer to this question is yes that the second step, the review itself, is conducted. ..

The Rules give the Tribunal broad discretion to determine when a review is advisable. In making this determination, Rule 230 [now 238] states that the Tribunal “may consider any relevant circumstances,” including the six listed criteria. In *Trent Talbot*, the Tribunal held that this list is not

exhaustive and that the “first three criteria generally set out examples of possible grounds for when the Tribunal may exercise its authority to grant a review, and the last three criteria set out examples of the circumstances weighing against a review” (para. 37).

The role of the Tribunal here is not to assess whether the decision is “correct”, but to determine

whether there were errors that meet the criteria set out in Rule [230] [now 238], so as to warrant a review. The review process should not be used as an opportunity for a party to reargue the case. A panel hearing a motion to review should refrain from granting a review simply because a different outcome could have been reached by another panel of the Tribunal. (*Trent Talbot*, para. 41).

This means that the Tribunal should not re-weigh the evidence to see if a different decision could have been reached, but should review the record and the submitted material only with a view to determining whether the original panel made a material error that warrants a review in the circumstances.

In *Trent Talbot*, the Tribunal determined that “the power to review should only be exercised in exceptional circumstances under the criteria set out in Rule [230] [now 238]” (para. 43). This high threshold test for review acknowledges the importance of the finality of Tribunal decisions.

[68] As noted in *Miller*, at para. 18, “any number of reasonable outcomes might be under consideration in a proceeding”. Therefore, the review motion panel should not find that a review is advisable simply because it would have reached a different decision. It is not the role of the panel hearing a review motion to merely substitute its decision for that of the original panel and grant a review hearing too readily. Rather, the power to review should only be used in exceptional circumstances.

The Review Rules and the Threshold for Reviewing EBR Leave to Appeal Decisions

[69] This motion to review seeks to narrow the scope of the leave which was granted in the Decision. Thus, even if the Directors were successful on the motion seeking a review and the review hearing itself, there will still be further steps leading up to the main hearing in this matter.

[70] The only decision on a motion to review a Tribunal *EBR* decision is *Miller*. That case involved a dismissal of a leave application, which effectively ended the litigation at an early stage. Here, the Directors take issue with a leave decision that granted leave in part, meaning that there will now be a preliminary hearing and a main hearing of the matter. As is standard practice, mediation will also be offered to the parties by the Tribunal. The leave Decision is not the final stage of this litigation.

[71] The Directors argue that the lower threshold contemplated in *Trent Talbot*, at para. 43, should apply to this motion because there is no right to appeal the Decision. Where the lower threshold applies, the factors to be considered under the Rules remain the same but the Tribunal's approach to the advisability of a review should be different (*Miller*, at para. 20). That is, the Tribunal will be more likely to determine that it is advisable that a review take place in situations where the lower threshold applies.

[72] The answer to the question of which threshold should apply is not as simple as stating that decisions without a right of appeal automatically get a lower threshold. As specifically stated in *Trent Talbot*, at para. 43, the Tribunal left the door open for a lower threshold "for decisions without rights of appeal because the motion to review may be a party's final option" (emphasis added). *Miller* involved a request for a review of a Tribunal *EBR* decision without a right of appeal. As contemplated in *Trent Talbot*, *Miller* adopted a lower threshold because the moving party in that matter had his case ended before the Tribunal through a decision under the *EBR* dismissing the leave application. The Tribunal, at para. 20 of *Miller*, made note of the fact that the moving party in that case had no right of appeal and the "only option" for raising his concerns (other than judicial review) was through a motion to review. No right of appeal existed and there was no next stage for the parties before the Tribunal. The review request was the moving party's "final option" before the Tribunal.

[73] Here, the decision was under the *EBR* and again there is no right of appeal. However, in this case, the substance of the matters raised in the review motion (i.e., the

proper wording or interpretation of conditions in the instruments) was not finally settled by the Decision. Indeed, the Decision simply permits the applicants (now appellants) to raise any or all of the conditions and issues listed in para. 119 of the Decision in the upcoming main hearing. So, the Decision at issue shares one similarity with the decision at issue in *Miller* (i.e., no right of appeal), but not another (i.e., the review request is not the final option, aside from judicial review, on the substantive matter).

[74] From a substantive point of view, decisions granting leave to appeal under the *EBR* are among the least final types of decisions that the Tribunal issues. Decisions granting leave are not a party's "final option" before the Tribunal. Indeed, nothing about the substance of the Directors' concern (i.e., that the final wording of the conditions in the instruments should remain as they are now) has been decided at this early stage.

[75] The lack of finality of the essential subject matter of this review request (i.e., the wording of conditions in the instruments) is illustrated well through a comparison of what the Directors seek in a review and what will be in store when this matter proceeds to a preliminary hearing. At the outset of their submissions, the Directors state the purpose of their motion: "correcting the errors will allow the Tribunal to appropriately narrow the grounds of appeal so that the appeal will be focussed and proceed expeditiously". Under the Rules, whose purposes explicitly include efficiency and timeliness (Rule 1), this matter is to be scheduled for a preliminary hearing, where "identifying, defining or narrowing issues" and the "settlement or withdrawal of any or all of the issues" are to be addressed (Rules 132 (e) and (j); see also Rule 180). Especially since the Directors are not seeking to review the entirety of the Decision (and thus a preliminary hearing is sure to take place), there is no reason to utilize the review motion process to address matters that are about to be addressed in any event. The within review motion, and the review hearing itself if this motion were granted, would simply unnecessarily duplicate processes and slow down the proceeding.

[76] Based on the above analysis, the Tribunal finds that the lower threshold in *Miller* is to be applied only in a subset of cases under the *EBR*, namely those that are without rights of appeal and are final substantive determinations. A dismissal of a leave application, as in *Miller*, is the clearest example of where the lower threshold applies as the substantive decision subject to the leave application becomes final.

[77] The lower threshold is not applicable in cases where leave to appeal is granted in whole. In those cases, a Director's entire substantive decision will be subject to a preliminary hearing and main hearing; the leave decision will not have removed any aspects from consideration. For partial leave decisions, the basis for a lower threshold in *Miller* does apply to those aspects of the instrument for which leave was not granted, as those aspects will proceed no further.

[78] Here, the only aspects of the instrument subject to the Directors' review motion are a subset of those conditions and issues for which leave was granted. No final decision has been made on those aspects and the substance of those issues can be debated at the main hearing. While there is no right of appeal *per se* in this matter, there is clearly a right of the Directors to bring forward all their evidence and argument at the main hearing, which will be a "new hearing".

[79] It follows that the lower threshold in *Miller* does not apply here. The Tribunal will therefore use the higher threshold in *Trent Talbot*, but observes that the Directors' motion would not have succeeded even if the lower threshold had applied.

The Rule 238 Considerations

[80] Rule 238 contains a list of non-exhaustive considerations for the Tribunal to consider in determining whether a review is advisable. Generally speaking, the first three considerations in Rule 238 are examples of situations where the Tribunal will consider ordering a review hearing. The last three considerations "are not grounds for

review *per se*, but rather relevant considerations for a panel hearing a Motion to review to examine in determining whether a review is warranted” (*Trent Talbot*, at para. 191). A party submitting a motion to review should not ignore the final three factors on the assumption that meeting one of the first three automatically generates a review hearing. Determining the advisability of a review involves more than just the first three factors in Rule 238. Advisability is to be determined in the context of all relevant factors listed in Rule 238 and any other relevant considerations.

Rule 238(a): Jurisdiction

[81] Rule 238(a) addresses “whether the Tribunal acted outside its jurisdiction”. No party provided any submissions on this factor. Consequently, it will not enter into the Tribunal’s analysis of whether it is advisable to review the Decision.

Rules 238(b): Material Error of Law or Fact

[82] Rule 238(b) addresses “whether there is a material error of law or fact such that the Tribunal would likely have reached a different decision but for that error”. In their submissions regarding alleged material errors, the Directors also take issue with the Leave Panel’s relatively short discussion of the *EBR* leave test. That matter addressing an alleged insufficiency in reasons will be addressed first. This will be followed by an analysis of the Directors’ specific allegations of material errors of law or fact relating to the Leave Panel’s treatment of various conditions and issues. The Tribunal will conclude its analysis by addressing the Directors’ allegations of procedural unfairness, which would be an error of law.

The Decision’s Treatment of the EBR Leave to Appeal Test

[83] As part of their argument that the Leave Panel committed a material error regarding condition 3.3 of the PTTW, the Directors submit that the “Tribunal pointedly

declined to discuss” the legal test for granting leave to appeal “despite vigorously contested submissions on what the applicants are required to demonstrate in order to be granted leave to appeal”. The Directors submit that the Leave Panel granted leave based on “speculation about an entirely implausible interpretation of conditions of the PTTW”.

[84] Presumably, in making this argument about the alleged insufficiency of the Leave Panel’s discussion of the leave test, the Directors are alleging a legal error in the Decision’s interpretation or application of the test. The Directors did not provide submissions on what sufficiency standards, if any, ought to apply to non-final decisions such as leave decisions. However, it is not necessary to address this question as, for the reasons stated below, the Tribunal finds that the Decision is not insufficient in any way in regards to its treatment of the parties’ submissions on the leave test or in its interpretation and application of the leave test itself.

[85] CCOB states that the Directors’ argument that the Leave Panel failed to discuss the leave test “is flatly contradicted by a review of the leave decision”. CCOB states that the Leave Panel did not decline to address the leave test, but in fact discussed it in some detail at pp. 16-19 of the Decision. CCOB submits that the Leave Panel correctly observed that sufficient guidance on the test is found in the statute and case law, and followed the approach set out in *Lafarge*. The Leave Panel also followed the approaches in *Concerned Citizens of Tyendinaga and Environs v. Ontario (Ministry of the Environment)*, [2012] O.E.R.T.D. No. 17 and *Guelph v. Director (Ministry of the Environment)*, [2014] O.E.R.T.D. No. 25 (“*Guelph*”).

[86] For the purposes of the specific matters raised in this motion to review, the main relevant question before the Leave Panel involved the first part of the *EBR* leave to appeal test, which states:

41. Leave to appeal a decision shall not be granted unless it appears to the appellate body that,

(a) there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have made the decision...

[87] Among the various statutes that come before the Tribunal, the *EBR* is unique in that it has a leave stage. Whereas the instrument holder could have appealed the instruments directly, third parties must obtain leave to appeal. If leave is granted and the leave applicant subsequently files a notice of appeal, then the processes used for a direct appeal by the instrument holder generally apply (i.e., preliminary hearing, mediation if applicable, and main hearing).

[88] To obtain leave under the *EBR*, an applicant must meet the stringent leave test but it does not need not prove that the decision under review was "unreasonable" under the first part of the leave test. The standard established by the legislation requires less than that by employing the words "appears" and "good reason to believe" prior to the reference to "no reasonable person".

[89] The Directors submit that the parties devoted considerable portions of their arguments to the interpretation of the leave test, but that the Leave Panel did not. For example, the Directors' leave submissions at paras. 54-66 include arguments about the leave test, including reference to *Lafarge*. The Directors also relied on general standard of review case law regarding "reasonableness" such as *Dunsmuir v. New Brunswick*, 2008 SCC 9 and *Communications, Energy and Paperworkers Union of Canada, Local 30 v. Irving Pulp & Paper, Ltd.*, 2013 SCC 34.

[90] As is common in recent Tribunal leave to appeal decisions, the Leave Panel followed the precedent in *Lafarge*, which discussed the leave test in depth. The Leave Panel declined to engage in a lengthy re-analysis of all the parties' arguments on the nature of the test and cited the following important passage from *Lafarge*, at para. 45:

At the leave to appeal stage, the standard of proof is an evidentiary one, i.e., leading sufficient evidence to establish a *prima facie* case, or

showing that the appeal has "preliminary merit", or that a good arguable case has been made out, or that there is a serious issue to be tried. Although worded differently, all of these phrases point to a uniform standard which is less than the balance of probabilities, but amount to satisfying the Tribunal that there is a real foundation, sufficient to give the parties a right to pursue the matter through the appeal process. This lesser standard is embodied in the words of s. 41, namely "appears" and "there is good reason to believe". It is not the function of the Tribunal member who is giving leave to determine the actual merits of the appeal; rather, the member must determine whether the stringent threshold in s. 41 has been passed.

[91] At para. 36 of the Decision (see also para. 7), the Leave Panel stated:

The parties provided submissions on the appropriate application of the leave test. Each has its own gloss on the test, emphasizing some words rather than others and some passages of the applicable case law and not others. There are allegations from one party that another has misapprehended the standard of proof. The Tribunal does not see any utility in canvassing these submissions in detail. Sufficient guidance on the test is found in the wording of the *EBR* and the applicable case law and there is no need here to reanalyze many of the statutory interpretation issues that were conclusively addressed in *Lafarge*. The Tribunal simply follows the approach set out in *Lafarge* in assessing this application for leave to appeal.

[92] It was open to the Leave Panel to engage in a detailed analysis of the parties' arguments on the leave test if it chose to do so. However, the parties to a case do not dictate to a tribunal how much attention a given issue will receive in a decision, whether it is a merits decision or a leave decision. There is no requirement for the treatment of, or even articulation of, issues in a tribunal decision to coincide with the treatment of those issues by the parties. The Tribunal can control its process (see *Lafarge* at para. 76), address the issues it determines to be important (see Rule 180), and analyze them to the depth it sees fit without committing an error in so doing.

[93] The Decision applies the specific wording of the leave test in several sections. For example, the finding in para. 56 follows the leave test wording closely (see also, paras. 66, 76, 79, 86, 112, 119 with respect to the first part of the test and paras. 125 and 131 for the second part):

The Tribunal therefore finds that it appears that there is good reason to believe that no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind (in particular, the ecosystem approach), could have issued a 10 year PTTW with the possibility that the permitted water taking levels could be increased after two years based on two years of water taking reporting, and other uncertainties in the PTTW regarding the actual water takings that are likely to occur. (emphasis added)

[94] This is in keeping with *Lafarge*, at paras. 60-61, which used similar wording:

...it was reasonable for the Tribunal to conclude that it appeared that there is good reason to believe that no reasonable person could have made the decisions to issue the CofAs without applying an ecosystem approach and a precautionary approach to its decisions. On this ground alone, we conclude that it was reasonable for the Tribunal to conclude that the test in the first part of s. 41 was met... (emphasis added)

[95] As noted in *Lafarge*, the wording in s. 41 is lower than demonstrating unreasonableness because of the “appears” and “good reason to believe” wording before “no reasonable person”. Therefore, if a panel were to find, based on the evidence and submissions in a leave hearing, that no reasonable person could have made the decision, this would meet the leave test. So too would a finding that there is good reason to believe that no reasonable person could have made the decision. Finally, a finding like the ones in the Decision that it appears that there is good reason to believe that no reasonable person could have made the decision would also meet the test as interpreted in para. 45 of *Lafarge*. This panel’s reading of the Decision leads it to conclude that the Leave Panel was aware of the test to be met and followed the guidance in s. 41 of the *EBR* and the *Lafarge* case.

[96] To summarize, it was open to the Leave Panel to refer to the wording of the leave test and applicable precedent and move on to other more central matters. This was especially appropriate here, where the Directors sought to apply case law on general unreasonableness to the *EBR*, where the unreasonableness concept is embedded in a context that has two important qualifiers (“appears” and “good reason to believe”) (see *Guelph* at para. 78). Given that the Leave Panel had binding

precedential authority before it on the actual *EBR* leave test in the form of the *Lafarge* decision, it follows that it was not required to analyze more general case law about a different legal test (i.e., general unreasonableness) that was submitted by the Directors. Here, the Leave Panel appropriately and reasonably followed *Lafarge* and declined to retrace what is now a well-trodden path in respect of the interpretation of s. 41. The Leave Panel then went on to apply the test in a manner that was consistent with the wording of s. 41 and the guidance from *Lafarge*.

[97] The Tribunal finds no material error in the Leave Panel's treatment of the interpretation and application of s. 41. The Tribunal also finds that the reasons in the part of the Decision relating to the leave test were sufficient and that it was open to the Leave Panel to decide not to devote further pages of analysis to that issue.

The Decision's Treatment of Several Conditions and Issues Relating to the Instruments

[98] The bulk of the Directors' submissions on this motion allege material errors on the part of the Leave Panel in its interpretation of various conditions in the instruments.

[99] The Directors take issue with numerous statements in the Decision and offer their views on where the Leave Panel erred in respect of each statement. Some errors are alleged to be factual errors, while others are alleged to be legal errors. Some alleged errors are not specified by type. To the extent that the condition-specific submissions also relate to the Directors' fairness argument, they are dealt with in a separate section further below.

[100] Dufferin supports the Directors' submissions and offers a few brief additional comments on the interpretation of some of the conditions under scrutiny. CCOB responds to the Directors' submissions on each condition while the County takes the position that the Directors' submissions are best addressed at the main hearing.

[101] The leave Decision contains 132 paragraphs and runs 52 pages. Within the context of s. 41 of the *EBR*, it addresses a range of broad principles while also focusing on specific conditions and issues. It was rendered following a written hearing on the basis of a record of materials that consisted of evidence, submissions and authorities that occupy a banker's box of documents.

[102] The structure of the analysis of the first part of the leave to appeal test in the Decision is set out in para. 32, which states (see also para. 34):

The Applicants raise the following specific arguments in respect of the first part of the Leave Test (Reasonableness) in relation to both the PTTW and the ECA:

- Ground 1: Failure to Consider, Incorporate, Reflect or Apply the Statement of Environmental Values ("SEV")
 - Ground 1(a) – Ecosystem Approach
 - Ground 1(b) – Cumulative Effects Concerns
 - Ground 1(c) – Sustainable Development Principles
 - Ground 1(d) – Precautionary Approach
 - Ground 1(e) – Adaptive Management Principles
- Ground 2 - The Common Law Rights of the Applicants

[103] The Decision found that the first part of the leave test was met in respect of most of the above grounds. However, many of these findings are specific to certain conditions or issues in one or both of the instruments. Examples of the findings on five grounds that are based on principles of environmental decision-making in the SEV are:

- Paragraph 56, which relates to the ecosystem approach and the PTTW,
- Paragraph 76, which relates to cumulative effects and PTTW,
- Paragraph 79, which relates to cumulative effects and the ECA,
- Paragraph 86, which relates to sustainable development/sustainability and the PTTW, and
- Paragraph 112, which relates to precaution and adaptive management and the PTTW and ECA together.

[104] The Decision found that the first part of the leave test had not been met in other respects. Examples are:

- Paragraph 66, which relates to the ecosystem approach and the ECA, and
- Paragraph 118, which relates to common law rights and the PTTW and ECA together.

[105] The Decision also found that some aspects of the grounds advanced were outside the scope of the applications and declined to address them (see para. 88). It also declined to re-analyze specific aspects of the decisions under the common law ground given that the first part of the leave test had already been met under other grounds relating to principles of environmental decision-making found in the SEV (see para. 118).

[106] To summarize, under the first part of the leave test with respect to the PTTW, the Decision found in favour of the applicants in part on leave grounds relating to the following SEV-related principles: ecosystem approach, cumulative effects, sustainable development/sustainability, precaution and adaptive management. For the ECA, the successful leave grounds were cumulative effects, precaution and adaptive management.

[107] It is also clear that, for many of the grounds that did satisfy the first part of the leave test, the Leave Panel made findings that linked the grounds to the Leave Panel's concerns with specific conditions or issues in the instruments. In many sections of the Decision, there are examples where the Leave Panel finds that a particular ground meets the test in respect of only some aspects of the instruments. For example, paras. 109-111, which deal with precaution and adaptive management together, state:

The Tribunal again finds that the Directors made significant and laudable efforts to apply both precaution and adaptive management as seemed appropriate in the circumstances. The sewage system was redesigned and many new conditions were added to the instruments. It seems clear

that the new design will result in significant water conservation and additional aquifer protection and that it is innovative in that these are the first of their kind conditions to deal with concerns expressed by interested parties.

... However, there are no specific objectives for the various components of the monitoring program. Dufferin's argument that the overall context of the instruments creates the objective of environmental protection is too vague to provide the kind of information required for adaptive management.

Of greater concern is the fact that these contingency plans have not yet been received or reviewed by MOECC even though several years of analysis and consultation have occurred since these instruments were first applied for...

[108] Paragraph 119 of the Decision ties together all of the Leave Panel's detailed analysis and sets out the specific "aspects" of the instruments that satisfy the first part of the leave test in light of the leave grounds that were advanced by the applicants.

Paragraph 119 states:

The Tribunal finds that it appears that there is good reason to believe that no reasonable person could have issued the PTTW and ECA in regard to the following specific aspects of the decisions:

- Condition 3.3 of the PTTW, which does not specify whether the water taking permitted for dust suppression is *in addition* to the maximum amounts set out in condition 3.4a.
- Condition 3.4b of the PTTW, which does not clarify *how* often Dufferin may revert to the maximum rate of water taking in Condition 3.2 "for one month following removal of sediment from the settling pond".
- Condition 3.6 of the PTTW, which states that "[w]ithin 60 days following two full years of operation, the Permit Holder shall submit to the Director a report evaluating water taking needs and making recommendations regarding future water needs and potential changes to the permitted rates and volumes." This means that the permitted water taking for almost eight years of the PTTW is unknown and will not be known for over two years.
- The lack of clear and specific objectives for the monitoring requirements in the PTTW.
- Condition 4.7 of the PTTW (Trigger Mechanism and Contingency Plan) and Condition 5 of the ECA (Contingency and Pollution Prevention Plan). These Plans are not available and will only be subjected to scrutiny by the MOECC and the Proponent, after the instruments have been granted.
- The ECA Contingency and Pollution Prevention Plan, which does not contain a trigger mechanism.

- Condition 4.8 of the ECA, which does not specify future uses of sediment for on-site rehabilitation.

[109] The final disposition in the Decision states at para. 132:

The Tribunal finds that the Applicant has satisfied the two-part test for leave to appeal found in s. 41 of the *EBR*, in relation to the PTTW and ECA. Leave to appeal is granted in part. The grounds for appeal shall be limited to only those aspects of the instruments set out in paragraph 119 above.

[110] On this motion to review, the Directors take issue with most, but not all of the aspects listed in para. 119. In particular, they submit that there are material errors in respect of three conditions of the PTTW (plus the issue pertaining to monitoring) and two conditions of the ECA from the list set out in para. 119 of the Decision. In at least one instance, the Directors also allege that the Leave Panel erred in respect of the second part of the leave test (e.g., condition 5 of the ECA).

[111] The County submits:

In its 52-page decision, the Leave Tribunal carefully considered the extensive evidence and argument put to it by the Applicants, the Directors, and CRH, the Instrument Holder. It weighed these facts and arguments in a nuanced and reasoned fashion.

There is no evidence to suggest that the Leave Tribunal made a material error of fact or law within the meaning of Rule 238.

With respect, the Directors appear to disagree with, or misunderstand, the approach the Leave Tribunal took in coming to its decision.

The Tribunal took a principled approach to its decision, assessing the evidence and arguments before it in light of the MOECC's own Statement of Environmental Values ("SEVs"). The SEVs that both CCOB and the County argued that the PTTW and ECA failed to consider, incorporate, reflect or apply include: an ecosystem approach; cumulative effects concerns; sustainable development principles; precautionary approach; and adaptive management principles.

The Leave Tribunal agreed with both CCOB and the County that the SEV factors were intrinsically important to its analysis of the leave applications; it also agreed with CCOB and the County that the PTTW and ECA conditions could not reasonably be said to have adequately accounted for them.

It was neither unreasonable nor a material error of any kind for the Leave Tribunal to take this approach.

[112] A challenge for the Tribunal in assessing the Directors' request is that it largely ignores the structure of the Decision and the broad leave grounds relating to the SEV. The Directors' submissions proceed immediately into arguments about the Leave Panel's alleged misinterpretation of the aspects of the instruments on which leave was granted, and the related fairness arguments. The Directors' submissions are extremely detailed and lengthy, as are CCOB's in response. The County states that the Directors' submissions are more suited to the upcoming merits hearing.

[113] At this point of the analysis, it is helpful to address certain terminology used by the Leave Panel. For some of the terms in the Decision, there is no single correct use of the terms and they have been employed differently by the parties and Leave Panel in different contexts. For the purposes of this motion, the Tribunal will call the list of items in para. 119 of the Decision the seven "conditions and issues" or "aspects" that can be addressed at the upcoming main hearing if the appellants raise them in their notices of appeal. All other aspects of the instruments that were subject to the application for leave to appeal, but were not listed in para. 119, are not on the table any more. Like the Leave Panel, the Directors refer to the seven remaining "conditions and issues" as the "aspects" on which leave has been granted (paras. 4 and 52 of the Directors' written submissions).

[114] The Directors also refer to the "grounds on which leave was granted" (para. 3 of Directors' written submissions) in discussing the aspects listed in para. 119 and related reasons in the Decision. Part II of the Directors' written submissions refer again to "grounds on which leave granted" and include detailed submissions on alleged errors regarding the aspects listed in para. 119. The Decision uses "grounds" differently as between the leave and appeal stages. With respect to the leave stage, it uses "grounds" to describe the applicants' arguments based on five key SEV principles (ecosystem, cumulative effects, sustainable development, precaution, and adaptive

management) and common law rights (see para. 32 of the Decision). For example, ground 1(a) in the Decision relates to the applicants' arguments that the Directors failed to consider, incorporate, reflect or apply the ecosystem approach in the SEV. In referring to what can be raised at the upcoming main appeal, the Leave Panel refers to the "grounds" for the appeal (para. 132). In that context, it is referring to the seven aspects that have been permitted to be raised in the main appeal of the merits. As noted above, the Directors' motion submissions largely ignore the leave grounds relating to the SEV principles, despite the central role the SEV principles play in the Decision, the *EBR* and *Lafarge*. The Directors focus almost entirely on specific details relating to the conditions and issues listed in para. 119 of the Decision (i.e., the appeal grounds as used in para. 132).

[115] For clarity, this Order will use the following terminology. With respect to the first part of the leave test, the Leave Panel considered six "grounds" for leave, five of which emanate from principles of the SEV that are meant to guide government decisions under the *EBR*. The Leave Panel found that the first part of the leave test had been met in respect of some of those leave "grounds", and granted leave to appeal seven "conditions and issues" or "aspects" of the instruments that relate to the broader leave "grounds" that met the first part of the leave test. Now that partial leave has been granted, the appeal grounds (as opposed to leave grounds) are limited to only those aspects of the instruments set out in paragraph 119 of the Decision (see para. 132 of the Decision).

[116] The Tribunal now turns to a consideration of whether the Leave Panel's treatment of the leave grounds, conditions and issues gives rise to a material error of fact or law. The Tribunal finds that, in main hearings and leave to appeal hearings, it is often the case that there is more than one viable outcome for the Tribunal to consider. Just as a court would defer to a specialized tribunal's decision to choose one preferred option from a range of reasonable alternatives, one Tribunal panel reviewing a decision of another Tribunal panel under Rule 235 should consider the motion to review in a

manner that offers considerable deference to the original panel, which examined the evidence and submissions in depth. This deferential approach is reflected in the wording of the Rules and the relevant case law discussed above (i.e., *Trent Talbot*, *Miller*, and *Baker*).

[117] In this regard, the County argues:

...the Leave Tribunal clearly considered the voluminous expert evidence that was presented to it. It appropriately limited the scope of its analysis to those aspects that it deemed directly relevant to the Section 41 Test when considering whether or not to grant leave to appeal.

In taking such an approach, the Tribunal, followed existing Tribunal jurisprudence. In particular, the Leave Tribunal highlighted that:

A leave to appeal hearing is not meant to be a written version of the ultimate hearing of the merits. While there is inevitably some overlap between the matters that may be raised at the leave stage and those at an appeal hearing, it remains important that the focus remains on the former. [...]

Put another way, Tribunals must avoid collapsing an analysis of the substantive merits of an appeal when undertaking a Section 41 Test analysis.

Respectfully, the Directors appear to insist that the Leave Tribunal do precisely that. They appear [to] believe they are owed a right to argue the detailed technical merits of its decisions around the PTTW and ECA conditions as part of the Leave Tribunal's Section 41 Test analysis.

The bulk of the Directors' motion submissions are focussed upon the detailed technical merits of its decisions around the PTTW and ECA, even going so far as to invite the Tribunal to consider further expert evidence as part of its reconsideration.

It is premature for such an analysis. The Directors will have ample opportunity to advance these arguments, and introduce further evidence as they deem appropriate, during the hearing on the merits of the appeal.

[118] In this case, the Leave Panel examined voluminous materials in deciding to grant leave only in respect of certain identified conditions and issues in the instruments. The Tribunal agrees with the County that the Leave Panel took a SEV-related principled approach to the first part of the leave test and determined which specific conditions and issues should be subject to scrutiny in a main hearing. The Tribunal finds that this is not

a case where there was only one reasonable outcome that could be arrived at, which the Leave Panel either had to reach, or commit a material error in failing to find. It was open to the Leave Panel to find that the s. 41(a) test was met in respect of the various leave grounds vis-à-vis specific conditions and issues in the instruments.

[119] With respect to s. 41(a), the Leave Panel highlighted numerous aspects of the instruments that gave rise to no significant concerns. However, it also set out a range of very significant concerns with some parts of the instruments. The Leave Panel's SEV-related principled analysis, which it groups together as "Ground 1", starts at para. 41 and ends at para. 112. The SEV-related grounds are clearly the central lens through which the Leave Panel considered the applications. This is completely appropriate given that the SEV is the "relevant policy" that has the widest application of the many laws and policies that are considered under s. 41(a). The SEV principles were central in the *Lafarge* case and occupy a very important place in the *EBR* itself, which states:

11. The minister shall take every reasonable step to ensure that the ministry statement of environmental values is considered whenever decisions that might significantly affect the environment are made in the ministry.

[120] The Tribunal agrees with the Leave Panel's emphasis on the importance of ensuring that government decisions consider, incorporate, reflect and apply the SEV principles, which are entrenched in modern environmental decision-making and constitute a main source of guidance in implementing the *EBR* and the other laws, regulations, policies and instruments to which the *EBR* applies.

[121] Inquiring into how a Director's decision "took into account", "considered", "incorporated", "reflected", or "applied" relevant laws and policies such as the SEV is a central aspect of the Tribunal's role under s. 41 of the *EBR* (see *Lafarge*, at paras. 49 and 57; see also *Guelph*, at paras. 20-30). The s. 41 test is not limited to assessing compliance with s. 11 of the *EBR* (i.e., was the SEV "considered"?). Under s. 41, the Tribunal is tasked with determining whether the leave test has been met. In addressing

a relevant law or policy under s. 41, the Tribunal can look at how a Director considered a policy and also how a Director took into account, incorporated, reflected or applied a policy.

[122] The Decision recognizes the central importance of the SEV to environmental decision-making in accordance with *Lafarge* and the *EBR*'s purposes and provisions. As submitted by the County, it may be accurate to state that the Directors fundamentally disagree with the Leave Panel's principled approach, to the point that the Directors' submissions on this motion largely ignore the SEV and make only brief reference to some of the relevant principles of environmental decision-making, including those referred to in *Lafarge*.

[123] In *Lafarge*, the Divisional Court noted at paras. 5-7:

The [EBR] was enacted with the purpose of protecting, conserving and, where reasonable, restoring the integrity of the environment, providing sustainability of the environment and protecting the right to a healthful environment (s. 2). Part II of the EBR provides a framework for public participation in decisions by designated ministries, including the Ministry of the Environment, where decisions may have a significant environmental impact.

Part II also provides a process for a ministry to develop a Statement of Environmental Values ("SEV") (ss. 7-10). The SEV is to explain how the purposes of the EBR are to be applied when decisions that might significantly affect the environment are made in the ministry, and explain how considerations of the purposes of the EBR should be integrated with other considerations, including social, economic and scientific considerations, that are part of decision-making in the ministry. Section 11 requires the minister to take every reasonable step to ensure that the ministry SEV is considered whenever decisions that might significantly affect the environment are made in the ministry.

In the SEV of the Ministry of the Environment, there are three guiding principles: the ecosystem approach, environmental protection (which includes the precautionary approach) and resource conservation.

[124] The current MOECC SEV also refers to the ecosystem approach, environmental protection, precaution, and natural resource conservation, among other principles. The

specific relevance of the SEV in *EBR* leave to appeal proceedings before the Tribunal was addressed in *Lafarge*, at paras. 55-57:

... Lafarge and the Ministry argued that the EBR treats policies separately from SEVs and, therefore, if the Legislature intended a SEV to be part of the s. 41 consideration, it would have said so expressly.

Upon a consideration of ss. 7 and 11 of the EBR, it is arguable and, therefore, reasonable for the Tribunal to have regarded the SEV as relevant policy which should guide the decisions of Directors. Under s. 7, the Minister is required to prepare a SEV that explains how the purposes of the EBR are to be applied when decisions that might significantly affect the environment are made in the Ministry. Moreover, under s. 11 the Minister is to take every reasonable step to ensure that the Ministry SEV is considered whenever decisions that might significantly affect the environment are made in the Ministry. There is no exclusion for Directors when they are making a decision whether or not to implement a proposal for a Class I or a Class II instrument.

We conclude that the Tribunal was reasonable in finding that leave should be granted because of the failure to apply the SEV. The Tribunal concluded that the SEV falls within “government policies developed to guide decisions of that kind”, which was consistent with past jurisprudence of the Tribunal on SEVs – see, for example, *Dillon v. Ontario (Director, Ministry of Environment)* (2002), 45 C.E.L.R. (N.S.) 9 at 27.

[125] The SEV is likely the most frequently cited relevant policy in Tribunal leave decisions under the *EBR*. It was issued under the *EBR* itself, with particular reference to the purposes of the legislation. It is of general application and includes many principles that are broadly reflective of modern environmental-decision-making. Consistent with the reasoning in *Lafarge*, it can be reasonably said that SEVs are meant to occupy an important role in government decision-making, including decisions of Directors. SEVs also play an important role in s. 41 proceedings before the Tribunal.

[126] The identified SEV-related concerns with the instruments set out in the Decision include, for example, a lack of emphasis on environmental considerations under the rubric of sustainable development/sustainability. Such concerns are not minor, but rather go to the heart of sound environmental decision-making. At para. 85, the Leave Panel noted:

The SEV refers to both “sustainability” and “sustainable development”. The Director defines sustainable development as “economic development without depletion of natural resources”. However, this is quite different from the well-known definition from the World Commission on Environment and Development (Brundtland Commission) report *Our Common Future* (Oxford: Oxford University Press, 1987), p. 43): “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” A similar definition is found in the *Federal Sustainable Development Act*, S.C. 2008, c. 33. Two statutes directly implicated in these Leave to Appeal applications, the *EBR* and the *OWRA*, refer to sustainability. The purposes of the *EBR*, set out in section 2(1), are to “(a) to protect, conserve and, where reasonable, restore the integrity of the environment by the means provided in this Act; (b) to provide *sustainability of the environment* by the means provided in this Act; and (c) to protect the right to a healthful environment by the means provided in this Act.” [emphasis added] The purpose of the *OWRA*, set out in section 0.1, is “to provide for the conservation, protection and management of Ontario’s waters and for their efficient and *sustainable use*, in order to promote Ontario’s long-term environmental, social and economic well-being.” Based on these definitions, the Tribunal finds that the Directors’ definition of sustainable development is too limited: “economic development without depletion of natural resources” places more emphasis on economic development than sustainability *of the environment* as required by the *EBR* and the sustainable use of Ontario’s waters, as required by the *OWRA*. In the analysis that follows, the Tribunal focuses on environmental sustainability, whether viewed as a separate principle of its own or an approach to implementing sustainable development principles that emphasizes the importance of environmental sustainability.

[127] Given that the Leave Panel’s findings included significant concerns relating to basic principles of environmental decision-making found in the SEV, it was reasonably open to the Leave Panel to exercise its discretion to grant leave in whole (see *Lafarge*, at paras. 61, 62 and 75). It was also reasonably open to the Leave Panel to decide to grant leave in part by identifying which specific conditions and issues should be addressed in a merits hearing. The Leave Panel chose to match the broad grounds that gave rise to concerns with specific conditions and issues in the instruments. This is an entirely appropriate approach under the *EBR* and *Lafarge*. SEVs are statements of broad principle that are meant to find life in everyday government decisions affecting the environment. The analysis in the Leave Decision is a good example of how broad SEV principles can be meaningfully brought to bear on specific decisions.

[128] With respect to granting partial leave, there was likely a range of reasonable alternatives (see *Miller*, at para. 18) in respect of scoping the leave decision. The Directors believe that several of the seven conditions and issues should not have been included. The applicants believe all were appropriately included (keeping in mind that the leave applicants actually sought leave in full and only obtained partial success from the Leave Panel). Given the voluminous record and the wording of the s. 41(a) test, which includes “appears” and “good reason to believe”, the Tribunal finds that the Leave Panel was dealing with various grounds, conditions and issues that raised mixed questions of law, policy and fact. A range of reasonable outcomes was possible and the Tribunal finds nothing in the Directors’ motion materials that demonstrates that any material error of law or fact is present in the Decision in respect of the broad grounds or specifically in the list of conditions and issues in the instruments that merit a full hearing.

[129] The Tribunal agrees with the County in concluding that it is unnecessary and unproductive in a review motion such as this for it to get into a condition-by-condition analysis of the wording used in the instruments as discussed in the Decision. Many of the Directors’ and CCOB’s submissions on this motion are of this nature and are better suited to the upcoming main hearing.

[130] Granting leave to appeal a particular condition is not synonymous with a conclusion that the condition must be changed in the main hearing. If the Directors believe that some of the conditions that are subject to leave are worded appropriately as is, they can raise that point at the preliminary hearing, in mediation or in the main hearing. The leave decision does not force the Directors to propose changes to address the concerns raised by the Leave Panel. Also, it is not the role of the Leave Panel to make a final decision on whether a condition will be changed (see para. 40 of the Decision).

[131] It is also not the role of the Tribunal on this review motion to get into a detailed analysis of the wording of each condition subject to leave, as noted by the County. The

application of the evidence and submissions to the first part of the leave test, including the interpretation of conditions in the instruments, was the central role of the Leave Panel in considering the voluminous materials submitted in the leave hearing. It was open to the Leave Panel to interpret the conditions as it did (including in some instances, simply noting ambiguity rather than concluding on their exact meaning; see para. 55 of the Decision for example), based on the materials that were submitted on leave. Accordingly, the Tribunal declines to address most of the detailed arguments put forward by the Directors and CCOB as they are arguments that have no bearing on the disposition of this motion. The Tribunal agrees with the County that they are arguments that can be advanced at later stages in this proceeding and are not arguments that demonstrate the types of errors meant to be addressed in review motions respecting leave to appeal findings, which do not finally settle the ultimate wording of the conditions.

[132] The above analysis largely focuses on the Decision's treatment of the first part of the leave test, which culminated in the list set out in para. 119. As noted above, the Directors also took issue with the Decision's treatment of condition 5 of the ECA vis-à-vis the second part of the s. 41 test. The Tribunal also sees no error in that regard. The Leave Panel assessed the second part of the test separately from the list of conditions and issues listed in para. 119 (see paras. 120-131). As noted in the Decision, at paras. 124-125 and 131, some arguments that were successful under the first part were also relevant to the second part. Where a leave panel decides to grant partial leave, there is no requirement that every condition that is of concern under the first part of the test itself also meet the second part. Both parts of the test must be met in respect of the instrument subject to a leave application, but a leave panel, in granting partial leave, can determine the appropriate scope of the main appeal and does not need to independently assess each condition in an instrument separately vis-à-vis both parts of the s. 41 test.

[133] To conclude on this section, the Decision's treatment of the grounds, conditions and issues relating to the instruments gave rise to no material error of law or fact. As no error has been identified, it is not necessary to determine whether the Tribunal would likely have reached a different decision under Rule 238(b).

Fairness

[134] The Directors state repeatedly that they were denied procedural fairness. The right to be heard is an element of procedural fairness. A denial of procedural fairness would be an error of law. The Directors' argument is that they were not given a right to be heard on the Leave Panel's "findings".

[135] The County submits that the process followed by the Leave Panel was fair:

The Directors were provided the opportunity to be heard. As is evidenced throughout its lengthy Leave Decision, the Leave Tribunal considered thoughtfully and thoroughly the Directors' submissions. The Leave Tribunal simply did not agree with all of them.

The Leave Tribunal made its decision based on the arguments and information it was presented. Although it may not have adopted precisely the arguments either side presented it in crafting its reasons, it also clearly did not ignore them.

The Leave Tribunal did not rely upon evidence not presented by the parties to the proceeding. The Leave Tribunal did not consider issues that it had not been presented. It analysed the permits and their conditions in light of the SEV factors—which was precisely the task that the County and CCOB in their leave applications had placed before it. The Directors were afforded the opportunity to make submissions, which they did. The fact that the Directors did not respond adequately in their submissions to those of the County and CCOB, and therefore did not succeed in convincing the Leave Tribunal to accept their position, in no way establishes the need for a review under Rule 235. Such a review should not provide the opportunity to the Directors to cure defects in their submissions in the leave application.

Importantly, the Directors will not [be] deprived of the opportunity to make the arguments that they feel they ought to have been able to make. They will be able to do so during the hearing on the merits of the appeal. That is the proceeding and forum within which these arguments are properly heard.

[136] In their reply submissions, the Directors state that their “request for review is not an attempt to reargue the case before the Tribunal. The findings that formed the basis of the Tribunal’s decision at issue were never raised or addressed at the leave stage...” (emphasis added).

[137] For the reasons that follow, the Tribunal finds that there was no denial of procedural fairness because: 1) there is no right to be heard on Tribunal “findings”; 2) the entirety of the two instruments were the subject of the leave applications from the outset, and the conditions and issues subject to leave are a subset of the two instruments which were clearly before the parties and Leave Panel; and 3) the leave grounds on which the applicants relied and the Leave Panel concluded that the leave test had been met, which were based primarily on five principles of environmental decision-making in the SEV, were also known by all parties from the outset.

[138] Based on its examination of the leave record and the dates on which submissions were filed, the Tribunal is satisfied that the Directors are correct in stating that the Leave Panel’s “findings” were not provided to the Directors for the purposes of soliciting additional input. The findings were only provided to all parties in the Decision itself at the end of the leave process. The question that arises here is whether any sort of procedural fairness concerns arises from the Leave Panel’s failure to issue preliminary findings and seek additional evidence or submissions on those findings.

[139] There is a fundamental difference between “findings” and the evidence, arguments, grounds, issues and other matters heard in a hearing. Before making findings, the Tribunal provides the parties with an opportunity to be heard. Except in unusual situations (such as in some main merits hearings where findings may give rise to a need for further information regarding the revision of the wording of conditions of approval for example), there is normally no need to hear from the parties on the findings of the Tribunal. Rather, the Tribunal hears from the parties, and then makes its findings and disposition. That is the normal course of events. Thus, the Directors’ general

position that it was not heard on the Tribunal's findings is no basis for an argument that procedural fairness principles were violated.

[140] In addition, the Tribunal notes that the findings in a decision granting leave do not constitute a final decision on the wording of any condition in an instrument. No right or interest of the Directors has been finally decided. The parties still have a full right to be heard on the merits.

[141] Without getting too far into the details, the Tribunal now turns to an examination of what matters were on the table in the written hearing. In its application for leave to appeal the PTTW, CCOB requested that the Leave Panel grant it leave to appeal the "decision in its entirety, including all general and special conditions in the Permit". Identical wording is found in CCOB's application for leave to appeal the ECA. The County's application for leave to appeal seeks "leave to appeal the decision of the Director to issue the [PTTW]". Similar wording is found in the County's application for leave to appeal the ECA.

[142] CCOB's written submissions on its application for leave to appeal the PTTW specifically refer to seeking leave respecting all conditions and make detailed submissions on their allegations that the Director failed to properly address the following SEV principles: ecosystem approach (pp. 24-32 of their PTTW submissions), cumulative effects (pp. 32-34), sustainable development (pp. 34-37), precaution (pp. 37-40), adaptive management (pp. 41-43). They also make submissions on common law rights (pp. 43-45) and the second part of the leave test (pp. 45-56). All of those categories of arguments are also included in CCOB's written submissions on its application for leave to appeal the ECA (pp. 12-23 of their ECA submissions).

[143] The County's leave submissions regarding both the PTTW and ECA also allege that the Directors failed to consider or properly apply the five SEV principles listed

above. The County's submissions are less detailed than CCOB's but make specific reference to CCOB's submissions rather than duplicating them.

[144] The Directors' leave submissions address the five SEV principles in detail (pp. 27-43), common law rights (pp. 43-45), and the second part of the leave test (pp. 45-47). Dufferin's leave submissions address the five SEV principles in detail (pp. 25-30 and 39-42), common law rights (pp. 31 and 42), and the second part of the leave test (pp. 31-37 and 42-45). There are also references to the SEV in the reply materials (e.g., pp. 14-16 of CCOB's reply regarding the PTTW).

[145] As noted above, the Leave Panel found that the first part of the leave test was met with respect to all of the SEV-related grounds for the PTTW and some of the SEV-related grounds for the ECA in relation to seven conditions or issues in the instruments. The Tribunal finds that all relevant leave grounds, including those relating to the SEV, were raised by the applicants from the outset. The Tribunal also finds that the applications for leave to appeal by both CCOB and the County sought leave to appeal the entirety of the instruments.

[146] As noted by the County, the Directors' review motion focuses on the wording of the conditions in the instruments rather than the broader SEV-related grounds. The Directors argue that they were denied procedural fairness in that they were not given an opportunity to be heard on the condition-specific findings of the Leave Panel. CCOB makes detailed condition-specific submissions that seek to demonstrate that all relevant aspects of the instruments were before the Leave Panel at the leave stage. CCOB points to specific passages of the record where various conditions were debated by the parties or discussed in the evidence (see pp. 8-22 of CCOB's submissions on the review motion). Based on the submissions made on this motion (without re-reading the entirety of the written record in the leave proceeding), the Tribunal is satisfied that all the relevant leave grounds and the instruments as a whole were before the Leave Panel

from the outset of the leave to appeal application process and that the Directors had ample opportunity and time to submit whatever they felt to be relevant.

[147] The applicants sought leave to appeal the entirety of two decisions and brought evidence and argument in support of the s. 41 test in respect of the decisions. The Tribunal has determined in past cases that it has the jurisdiction to grant leave in whole or in part. This is reflected in Rule 60 and discussed in *Lafarge* at paras. 75-76:

There was nothing improper or jurisdictionally incorrect in the Tribunal's decision to grant the respondents full leave to appeal both CofAs, even though the Tribunal found that only certain specific grounds had satisfied the leave test under s. 41.

The wording of s. 41 focuses upon the Directors' decisions and not on the individual grounds that an applicant may choose to advance at the leave stage. The Tribunal reasonably ordered that the scope of the appeal was not limited to the grounds on which the applications had been granted leave or to the issues raised by the Leave Applicants in their leave applications, "unless the Tribunal orders otherwise". This latter qualification is entirely consistent with the Tribunal's ability to "control its own procedures" as recognized in the *Smith* case, *supra*, and ensures that the Tribunal will continue to retain overall authority over the scope of the appeal as the matter proceeds to a hearing on the merits.

[148] The above passage from *Lafarge* confirms that it is open to the Tribunal to exercise its judgment in deciding how to scope an appeal proceeding, such that, had the Tribunal in *Lafarge* granted leave only in part, that would also have been proper.

[149] Here the Leave Panel found that the s. 41 test had been met in respect of many of the SEV-related grounds, but decided to exercise its discretion to grant leave only in part. That approach is consistent with the role of a specialized tribunal seeking to carry out a summary application for leave process while simultaneously seeking to avoid creating a full main appeal hearing where only a scoped one is more appropriate given the nature of the findings it has made.

[150] It cannot be said that in scoping its grant of leave, the Leave Panel effectively denied the Directors fairness to address the specific elements of the instruments that

the Leave Panel determined to merit leave. The whole of the instruments were subject to the application and the Leave Panel found the s. 41(a) test to have been met on a number of important and significant grounds. Notably, many of those grounds addressed the Directors' treatment of key principles set out in the SEV. The Leave Panel exercised the discretion set out in para. 76 of *Lafarge* by electing to focus the appeal on a subset of conditions that were of most concern and that were tied to the identified concerns regarding the treatment of various key wide-ranging principles of environmental decision-making.

[151] As noted above, given the relief requested by the applicants and the significance of the findings made, the Leave Panel could have reasonably granted leave in whole, which would have raised no issue of fairness. From that perspective, the Leave Panel's decision to focus the appeal on a relatively short list of conditions and issues is presumably preferable, from the Directors' view, than to have granted leave in full as it will result in a more efficient process on appeal. Nevertheless, the Directors attempt to turn the Leave Panel's decision to focus the appeal only on those matters of greatest concern into an argument that fairness was somehow violated because they did not get an opportunity to weigh in on the Leave Panel's findings relating to the seven conditions and issues before the Leave Panel rendered its Decision granting leave in part.

[152] The Tribunal notes that implementing the Directors' view of fairness would likely draw out the leave process and require another round of submissions whenever the Tribunal was contemplating giving partial leave regarding a decision for which full leave was sought. Putting into place such a "two stage" approach runs contrary to the summary written leave to appeal process that is contemplated by the *EBR* and Ontario Regulation 73/94. To avoid drawing out the process, the Tribunal would likely have to employ an "all or nothing" approach and simply grant leave in whole so long as the leave test was met. This would create lengthier main hearings and undermine the efficiency and effectiveness goals sought to be achieved by the Tribunal's practice of granting leave only in part in appropriate cases.

[153] However, the Tribunal does not have to choose from either the “all or nothing” or “two stage” options above as it does not agree with the Directors that the process followed by the Leave Panel was unfair in any respect. The Leave Panel provided all parties a full opportunity to be heard on all relevant matters, and indeed granted the Directors additional time to respond to the applications for leave to appeal. The Leave Panel’s exercise of discretion in scoping the upcoming main appeal was not procedurally unfair, or in the words of *Lafarge*, “improper or jurisdictionally incorrect”. Indeed, it was a reasonable and appropriate approach to carrying out a summary leave to appeal process while at the same time promoting an efficient main hearing where only the identified conditions and issues would be up for debate.

[154] To summarize, there is nothing procedurally unfair to the Directors in allowing the seven “conditions and issues” to proceed to a preliminary hearing and main hearing, after the Leave Panel conducted a written hearing that could have fairly and reasonably resulted in the entirety of the two instruments being subject to leave to appeal. There is also nothing procedurally unfair in the Leave Panel making its own independent findings on grounds, conditions and issues even if those findings are not exactly consistent with the way those were advanced by one or more parties. A specialized tribunal with a mandate to implement public interest legislation can consider all relevant materials and reach the findings that it determines to be most suitable in the circumstances in light of the purposes of the applicable statutes.

Rule 238(c): New Evidence

[155] Rule 238(c) addresses “whether there is new evidence admissible under the conditions of Rule 234”. This factor essentially incorporates Rule 234 by reference. Rule 234 states:

The Tribunal shall not admit new evidence unless it decides that the evidence is material to the issues, the evidence is credible and could affect the result of the Hearing, and either the evidence was not in

existence at the time of the Hearing or, for reasons beyond the Party's control, the evidence was not obtainable at the time of the Hearing.

[156] As part of its argument regarding condition 3.4b of the PTTW, including the allegation that the Leave Panel unfairly considered this issue, the Directors submit:

The Tribunal may be more comfortable receiving additional expert evidence on this issue as part of its reconsideration of this issue. Such evidence would certainly have been provided to the Tribunal by the Director (and undoubtedly by CRH) had this issue been raised by the applicants, or had the Tribunal invited submissions on this issue.

[157] To the extent that this argument is part of the Directors' overall argument regarding the Leave Panel's alleged misinterpretation of conditions in the instruments and alleged unfair process, it is dealt with above.

[158] In reply, the Directors state that they are not seeking to introduce new evidence at this stage. Nevertheless, to the extent that this argument merely suggests that the Tribunal exercise its discretion to have new evidence introduced in a review hearing, it clearly falls short of the requirements in Rule 234, as noted by CCOB in their written submissions regarding paras. 168 and 170 of *Trent Talbot*. The test in Rule 234 has not been met and, therefore, the Tribunal's consideration of Rule 238(c) does not favour granting the Motion to Review.

[159] The Tribunal notes, however, that once leave is granted, parties are not subject to the new evidence rule in respect of the main hearing. The main hearing is considered to be a fresh proceeding by the Tribunal. Also, as a result of the interplay among s. 45 of the *EBR*, s. 145.2 of the *EPA* and s. 100(10) of the *OWRA*, the main hearing will be a "new hearing", which can include relevant evidence that was not before the Directors in the first instance or the Tribunal at the leave stage. It can include new information that was not in existence at the time of the leave hearing (e.g., new data). The parties may introduce any relevant evidence they believe will assist the Tribunal's

deliberations over condition 3.4b or any of the other aspects of the instruments for which leave was granted.

Rule 238(d): Reliance on the Decision

[160] Rule 238(d) addresses “the extent to which any person or any other Party has relied on the order or decision”. The Tribunal received few submissions on this point. The County states:

The County has relied upon the Leave Tribunal’s decision. It has incurred costs in doing so — namely by proceeding with its appeal of the PTTW and ECA conditions specified by the Leave Tribunal.

[161] The Directors reply as follows:

It should be noted that the County filed its notice of appeal after the Directors filed their motion for reconsideration. Furthermore, the Tribunal has indicated it will not hold a preliminary hearing for the appeal until the motion for review has been determined.

[162] Reliance on a decision would normally be a factor weighing against a review. The County’s above submissions on reliance are very brief. CCOB has not brought forward any specific argument related to reliance.

[163] It is clear that a successful review by the Directors would not end the proceeding, as the Directors’ request for review relates to most but not all of the aspects listed in para. 119 of the Decision. The County can proceed with an appeal regardless. The only question is what the scope will be if a review takes place. As well, as pointed out by the Directors, the Tribunal essentially put the preliminary hearing process on hold while addressing this review motion. The County can await the result of this motion before relying further on those aspects of the Decision that are subject to this motion. In this case, the Tribunal finds that Rule 238(d) would not occupy an important role in the list of considerations that weigh against a review.

Rule 238(e): Decision under Judicial Review

[164] Rule 238(e) is directed at whether the decision is under appeal or is the subject of judicial review. This factor is meant to address considerations relating to economy. If a decision is simultaneously the subject of two similar proceedings, one before the Tribunal and one appeal /judicial review, this fact will be considered by the Tribunal in determining whether it is advisable to conduct a review.

[165] CCOB provides general submissions on this factor, arguing that the Directors have other avenues to pursue their concerns in the upcoming main appeal. Those general submissions on whether a class of decisions can be appealed and/or be addressed in a main hearing are more relevant to Rule 238(f) and the *Miller/Trent Talbot* threshold question and therefore addressed elsewhere in these reasons.

[166] The Directors did not indicate in their materials that they are seeking judicial review of the Decision and the Tribunal has not received notice of such under Rule 245. The Tribunal, therefore, assumes that the requested review would not duplicate a court process. Therefore, viewed on its own, this consideration does not weigh against granting a review.

Other Considerations and Rule 238(f): Finality and Prejudice

[167] Rule 238(f) addresses “whether the public interest in finality of orders and decisions is outweighed by the prejudice to the requester”. It involves balancing one factor that generally weighs against a review (i.e., finality) and one that generally weighs in favour (i.e., prejudice to the requester if a review is not ordered).

[168] The opening sentence of Rule 238 uses the word “including” before a list of six considerations, which means that the list is not exhaustive and other relevant matters can be raised. In this case, CCOB makes submissions on what it believes to be other

relevant circumstances, with a particular emphasis on access to justice issues. The Tribunal finds that those CCOB submissions are related in part to Rule 238(f), so it deals with that Rule and other relevant circumstances together in this section for convenience.

[169] In light of *Sigrist* and *Trent Talbot*, CCOB argues:

...that there are also important public policy considerations beyond those set out in Rule 238 that arise when leave is sought by a Director after leave to appeal has been granted under the *EBR*. In *Sigrist* the HRTO observed that the reconsideration process prolongs proceedings and allows parties who are able to better withstand the costs of litigation to have an unfair advantage. These concerns are particularly relevant in the context of applications for leave to appeal under the *EBR*, which are generally brought by individuals or citizen groups with limited resources. A motion for reconsideration by the Director or a proponent has the potential to significantly increase the complexity of the proceeding and be time consuming and expensive. It can also negatively impact public participation in the government's environmental decision-making process under the *EBR*, thereby undermining its purpose of ensuring environmental protection and a role for the public in that process. Therefore, a frivolous motion for reconsideration can serve as diversionary tactic by parties with superior resources to suppress public participation and obviate third appeal rights under the *EBR*.

[170] The County argues:

Subrule 238(f) directs a Tribunal to consider whether the public interest in finality of orders is outweighed by prejudice to the requester. In other words, the finality of orders ought presumptively to be preserved, and it is in the public interest to do so, barring only prejudice to the requestor.

As requestors, the Directors face no prejudice whatsoever should the Tribunal hearing its motion refuse to grant their request and allow the appeal to proceed. They will not be deprived of the ability to defend their decisions to issue the PTTW and ECA with their respective conditions. In fact, the County submits that the Directors may stand to benefit from the additional public input.

Finally, a refusal to grant the Directors' request would serve the public good by facilitating public participation in an important environmental decision with impacts on a wide range of communities. This, in turn, is in keeping with the spirit of the *Environmental Bill of Rights*.

[171] The Directors make no reference to Rule 238(f) in their initial or reply submissions. The following general submission, however, appears to have some relevance to the “prejudice to the requester” aspect of that Rule and some of the other submissions made by CCOB and the County:

The Directors are aware that their motion might slightly prolong these proceedings. Their request for review is not, as suggested by CCOB, frivolously made. It is their view that the matters at issue in their request for review are significant (denial of natural justice and fundamental errors with respect to the statutory regime) and that if not corrected will stand as precedent for other Tribunal decisions. The Directors are aware that the Tribunal is not bound by *stare decisis*; however, as is evident from the leave decision itself, the Tribunal relies heavily on previous rulings in determining matters before it. The Directors submit that public policy considerations weigh in favour of the Tribunal reconsidering its decision and granting the relief sought.

[172] The Directors are correct that the Tribunal is not bound by *stare decisis* but does rely heavily on its accumulated jurisprudence. This enables each case to be decided on its merits according to the purposes and provisions of the relevant legislation while also providing an appropriate level of predictability and certainty to those affected by Tribunal decisions. However, as noted above, the Tribunal does not agree that there has been any material error respecting the statutory regime (or otherwise) or denial of natural justice. It follows that the Tribunal will not grant a review on such an allegation if it does not agree with the Directors that the allegation has been made out on the facts of this case.

[173] With regard to the “finality” aspect of Rule 238(f), a decision granting leave does not finally dispose of any substantive matters vis-à-vis the final wording of the instrument subject to the application. However, as the Directors point out, it does finally dispose of the leave application itself. The leave to appeal process can be a resource-intensive stage on its own.

[174] In cases where leave is granted following a detailed written hearing, there is a strong argument in favour of deferring to the finality of the leave decision and refusing to

add an unnecessary step to an already complex legal process (see *Sigrist*). A review hearing would add another layer in the litigation, duplicate processes that have been or will be undertaken, and unnecessarily draw on the limited resources of all parties.

[175] As noted by CCOB, *EBR* applications are often initiated by individuals and citizen groups with limited resources. Adding unnecessary steps to the process is time consuming and expensive, without any obvious benefit to the environmental protection and public participation purposes of the legislation. The Tribunal agrees with the County and CCOB that granting reviews in situations like this, where the moving party wishes to have a new panel substitute its views for that of the Leave Panel, would detract from the access to justice and public participation goals of the Rules and the *EBR*.

[176] In light of the above, the Tribunal finds that there is a public interest in the finality of Tribunal decisions granting leave to appeal. The Tribunal finds that there is no significant prejudice to the Directors in upholding that finality as any concerns that the Directors have can still be raised at the preliminary hearing, mediation (if the parties agree to that process), and main hearing.

[177] The Tribunal concludes that Rule 238(f) and the other relevant considerations raised by the County and CCOB weigh against granting the motion to review.

Overall Conclusion

[178] The Directors have not demonstrated that any of the factors that weigh in favour of a review under Rule 238 apply to the Decision. Having considered the factors in Rule 238 and the additional relevant circumstances raised by the parties, the Tribunal concludes that it is not advisable to review the Leave Panel's Decision.

ORDER

[179] The motion to review is dismissed.

Motion Dismissed

“Jerry V. DeMarco”

JERRY V. DEMARCO
ASSOCIATE CHAIR

If there is an attachment referred to in this document,
please visit www.elto.gov.on.ca to view the attachment in PDF format.

Environmental Review Tribunal

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