

ALBERTA
ENVIRONMENTAL APPEAL BOARD

Report and Recommendations

Dates of Hearing - March 15, May 11, 12, 17, 1999

Final Replies - June 14, 1999

Date of Report and Recommendations - July 13, 1999

IN THE MATTER OF Sections 84, 85, 86, 87, 88, 91, 92 and 93 of the *Environmental Protection and Enhancement Act*, (S.A. 1992, ch. E-13.3);

-and-

IN THE MATTER OF appeals filed by Mr. Rudy and Ms. Gertie Mizera, Mr. Adelhardt H. Glombick on behalf of Glombick Farms and Ms. Marilyn Fenske with respect to Approval No. 20754-00-01/Amending Approval No. W1075 issued to Beaver Regional Waste Management Services Commission by Mr. Wayne Inkpen, Director, Northeast Boreal and Parkland Regions, Alberta Environmental Protection.

Cite as: Mizera *et al.* v. Director, Northeast Boreal and Parkland Regions #2, Alberta Environmental Protection, *re: Beaver Regional Waste Management Services Commission*

HEARING BEFORE

Dr. M. Anne Naeth
Mr. Ron V. Peiluck
Dr. Curt Vos

APPEARANCES

Appellants: Mr. Mitch Bronaugh representing Mr. Rudy and Ms. Gertie Mizera; Mr. Adelhardt Glombick representing Glombick Farms; Ms. Karin Buss, counsel, Ackroyd, Piasta, Roth & Day, representing Ms. Marilyn Fenske; Ms. J. Biggin; Ms. Sally Ulfsted; Mr. Lee Fenske; Dr. Jim Argo

Department: Mr. Grant Sprague, counsel, Alberta Justice, representing the Director of Alberta Environmental Protection, and Mr. John Shaw, Mr. Gene Leskiw, Mr. Wayne Inkpen, Mr. David Lloyd; Mr. Richard Stein, Alberta Geologic Society

Approval Holder: Mr. Michael Welsh, counsel, Welsh and Company, representing Mr. Francis Hugo, Mr. Forrest Wright, Mr. Brian Adeney, Mr. Elston Solberg, Mr. Paul Ruffell and Beaver Regional Waste Management Services Commission; Mr. John Deagle and Ms. Rhonda Rudnitski, Canadian Waste; Mr. Charles Moell, C.E. Moell & Associates

Other Parties: Mr. Robert Wilde, representing Mr. Mark and Ms. Faye Garstad; Ms. Cindy and Mr. Doyle Booth

Other Participants: Mr. Dennis Fenske

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I. BACKGROUND

[1] The Environmental Appeal Board (Board) received appeals from Mr. Rudy and Ms. Gertie Mizera dated June 17, 1998, Mr. Adelhardt H. Glombick on behalf of Glombick Farms dated June 22, 1998, Ms. Marilyn Fenske dated June 27, 1998 and Ms. Alice E. Mahlum dated June 28, 1998 (Appellants). Each Appellant objected to Approval No. 20754-00-01/Amending Approval W1075 (Approval) issued by Mr. Wayne Inkpen, Director of Northeast Boreal and Parkland Regions (Director), Alberta Environmental Protection (Department), to Beaver Regional Waste Management Services Commission (Commission) for the construction, operation and reclamation of a Class II landfill, dated May 29, 1998.

[2] The Board acknowledged receiving each Appellant's appeal and requested from the Department copies of all related correspondence, documents and materials. In a letter dated June 22, 1998, the Board advised the Commission that an appeal had been filed and provided them with a copy of the appeal. Additional appeals received were also forwarded to the Commission.

[3] According to standard practice, the Board wrote to the Natural Resources Conservation Board (NRCB) and the Alberta Energy and Utilities Board (AEUB) on June 22, 1998 asking whether this matter had been the subject of a hearing or review under their respective Board's legislation. Replies were received on June 26, 1998 from the NRCB and July 2, 1998 from the AEUB advising they did not hold hearings or reviews of this matter.

[4] On July 28, 1998, the Board forwarded the requested materials from the Department to all parties and later advised the parties on August 7, 1998, that the Board would be proceeding to a mediation meeting. This meeting took place on September 9, 1998, in Ryley with Dr. John Ogilvie as the presiding Board member.

[5] Following the mediation meeting the participants indicated further discussions would be useful to achieve a possible resolution of these appeals. The Board requested the parties provide a status report by September 25, 1998, advising whether or not further discussions would be

warranted and to have the file held in abeyance accordingly; or to hold another mediation meeting; or, if no resolution was possible, to advise if the Board should proceed to a preliminary meeting.

[6] After reviewing the status reports from the parties, the Board decided to conduct a further mediation meeting on November 12, 1998, which was held in Edmonton. Dr. John Ogilvie was the presiding Board member. No resolution was reached at the mediation meeting; therefore, a preliminary meeting was set for November 25, 1998.

[7] An application for interim costs was received on July 29, 1998, from Ms. Karin Buss, counsel for Ms. Marilyn Fenske. The Board replied to this letter on August 11, 1998, advising that the matter of costs would be addressed either at the conclusion of, or following, a mediation meeting. On November 17, 1998, the Board advised all parties that any requests for interim costs would be dealt with at a later date.

II. THE PRELIMINARY MEETING

[8] The Board held a preliminary meeting November 25, 1998, in Edmonton pursuant to section 87 of the *Environmental Protection and Enhancement Act* (Act). The purpose of this preliminary meeting was to determine (1) standing and (2) the matters to be heard at an upcoming hearing. The Board determined that Ms. Marilyn Fenske, Mr. Adelhardt Glombick and Mr. Rudy and Mrs. Gertie Mizera were directly affected and as such would be parties to the upcoming appeal hearing as well as the Director and the Commission.¹ The issues determined for discussion at the hearing were: litter and waste spillage, noise, odour, surface and groundwater quality, health and quality of life and buffer zone.²

¹ *Mizera et al. v. Director, Northeast Boreal and Parkland Regions, Alberta Environmental Protection, re: Beaver Regional Waste Management Services Commission*, EAB No. 98-231-234-D, (December 21, 1998) at 11.

² *Ibid*, at 11.

[9] On February 1, 1999, the Board allowed the following additional parties with certain qualifications (avoid duplication of evidence and questioning at the hearing and only call witnesses to provide technical or scientific information that would enhance their presentations): Mr. Mark and Ms. Faye Garstad, represented by Mr. Robert Wilde; and Ms. Cindy and Mr. Doyle Booth.

III. THE HEARING

[10] The hearing took place March 15, May 11, 12 and 17, 1999 at the Board office in Edmonton.

[11] The hearing on March 15, 1999 dealt with an adjournment request that was granted by the Board due to the illness of several parties. Documents (Toxcon Report referred to in the Shaw Report, plans and specifications referred to in section 3.3.3 in the Approval, the groundwater monitoring program referred to in section 4.4.1 in the Approval, the soil management program referred to in section 4.5.3 in the Approval) were requested by Ms. Buss. The Board, in keeping with its practice of open disclosure, requested production of those documents to all parties by March 19, 1999. A two-day hearing was determined adequate if all parties focused on the issues.

IV. SUMMARY OF THE EVIDENCE

A. The Appellants

[12] The Appellants gave evidence to indicate they shared the same basic concerns about the landfill but each dealt specifically with one or more of the issues the Board had previously determined would be the focus of the hearing. Each gave evidence to show their close proximity to the landfill and the long-term nature of their lives near/in Ryley.

[13] Mrs. Mizera indicated she noted an increase in asthmatic symptoms³ when strong odours from the landfill occurred. At those times she could not leave her house and spend a quiet evening outdoors. Several times a year the odours were so strong she was forced to leave her property for a period of time. She indicated the odours appeared to be of a burning and sour or rotten garbage nature. The problem was most intense in summer and not too bad in winter.

[14] Mrs. Mizera said one of the luxuries of retirement she had looked forward to was sleeping late in the morning but the noise from the landfill usually prevented this. The noise most offensive to her was from back-up warning signals on landfill vehicles. The increased traffic on Highway 854 was a major noise issue, with the air brakes on the large hauling trucks going by her home to the landfill a frequent source of annoyance.

[15] Mr. Mizera said he was one of the first men to haul garbage in the area and was familiar with the groundwater regime and the landfill through years of working for the town. He said there was a good supply of groundwater in the early years and you could quickly fill up a dug hole. Most homes had domestic water from shallow wells. He filled many of the wells himself when they were decommissioned. He said it was not unusual for streets to cave in or basements to flood in the town due to the shallow groundwater table. They often had to pump water out of their basement when they lived in town. He believed the area had a shallow groundwater table and this was a source of concern for potential contamination.

[16] Mr. Mizera said he was concerned with litter and liquid waste on his property⁴ from the improperly tarped hauling trucks and the landfill itself. There was often garbage in his hayfield⁵ that caused serious problems with the haying equipment and necessitated his getting on and off the equipment to remove the garbage from it. Plastic in the baler was a particular problem, often wrecking the bearings. He said as a result of the garbage in the hay he was only able to sell it to

³ Exhibit 6 - Letter of February 3, 1999 from Dr. Richard Hackett regarding Gertrude Mizera.

⁴ Exhibit 8 - Pictures of garbage.

⁵ Exhibit 9 - Pictures of garbage from hayfield.

horse owners for half the price he would get from cattle owners. Mr. Mizera presented a sample of drippings from a hauling truck⁶ which, when opened by the Board, had a strong hydrocarbon odour. This waste material had polluted his car and garage when it was picked up on his car tires from the road. They reported the spill to Alberta Environmental Protection⁷ but received no follow up. Under cross examination Mr. Mizera said they knew it came from a garbage truck because they followed the truck with the drippings to the landfill to be certain it was associated with it.



Exhibit 8(a): Picture of garbage on Mr. Mizera's property.

[17] Mr. Mizera said they were further impacted by the landfill in that their renter of 15 years had recently given written notice⁸ to vacate citing negative environmental changes such as

⁶ Exhibit 11 - Jar of spillage.

⁷ Exhibit 14 - Letter related to exhibit 11 addressed to Jeff Toering, Alberta Environmental Protection, Pollution Control, from Rudy and Gertie Mizera dated January 15, 1998.

⁸ Exhibit 10 - Letter to Mr. and Mrs. Rudy Mizera dated April 1, 1999 from renter stating she will be vacating their farm residence due to environmental conditions.

“quality of air and noise” as her reason. The Mizeras were concerned with the large number of seagulls in the vicinity of the landfill and on their property. They believed it was affecting other wildlife populations in the area. Mr. Mizera indicated he noticed a considerably smaller baby duck population since the seagulls moved in. Mr. Mizera said he was also concerned about water drained onto his property by the Commission without notice or his permission. If he was not given warning of such drainage, bales stored in the field or his hay could be damaged.

[18] The Mizeras indicated they had approached their Member of Parliament (MP) and Member of the Legislative Assembly (MLA) and the Commission with their concerns but got no results. They said they were never approached by the Commission to remedy their concerns nor to purchase their property. When asked during cross examination why they did not complain more frequently, Mr. Mizera indicated they would continuously be on the phone if they reported every incident of odour and litter. He also indicated that based on the response they usually got from the Commission, they expected no results anyway.

[19] Dr. Argo was called as an expert witness and testified there were serious health concerns related to living close to a landfill. He thought the contents of the landfill would contain “an extremely dangerous and potentially toxic brew”.⁹ He cited the Hertzman paper¹⁰ on numerous occasions as a credible indication of the potential problems to people living near a landfill. His major concerns were that this landfill was built on a water table in a higher topographic area than the people living around it. He was quite concerned about hydrocarbons and vinyl chlorides from the waste material. Dr. Argo suggested a minimum buffer zone of one mile from the nearest resident. When questioned by the Board, he indicated the buffer zone should be established from the edge of the Appellant’s property to the edge, not the center, of the landfill.

⁹ Whenever quotation marks are used in this Decision and there are no footnotes to give a source of quotation, the quotation is taken directly from the record of the hearing.

¹⁰ Exhibit 15 - Paper by Dr. Jim Argo titled “The Potential Magnitude and Extent of the Contaminated Sites Problem in Canada” prepared for Hazardous Waste Section, Monitoring and Criteria, Environmental Health Directorate, Health Canada dated May 1994.

[20] Ms. Fenske was specifically concerned with the containment of water within the landfill site. She believed groundwater could readily be contaminated with leachate since the landfill was on a high water table. This in turn could contaminate her dugout in their southwest corner which was used for domestic purposes and was closer to the landfill than their home. She believed dugouts in the area filled from groundwater since when dug they filled from the bottom and sides and the water level fluctuated with the water table. Ms. Fenske was also concerned with the potential for surface water contamination from the landfill. She believed that the drainage ditch on the property was draining outside the landfill and was also altering the natural drainage pattern and distribution of water in the area.



Exhibit 6(a): Picture of garbage in roadside ditch near Fenske residence.

[21] Ms. Fenske presented pictures¹¹ showing garbage from the landfill on her property and in drainage ditches. She was concerned the Commission had not done several things they were

¹¹ Exhibit 24 - Exhibits of Appellants; Exhibit 27 - Garbage picked off fence May 7, 1999; Exhibit 43 - Pictures regarding culvert from Ms. Marilyn Fenske.

supposed to do including: berms around the landfill that were never constructed, trees and grass that were not planted, a liaison committee which was never struck, monitoring wells which were never decommissioned and air emission reports which were never made available. She said she had never been approached to discuss the location of the berm, unlike the Commission indicated. She said the Commission promised her a monitoring well on her property but it was not yet installed. She further stated she had never been offered an alternate water source or an offer for purchase of her land as indicated by the Commission. She was concerned that no Environmental Impact Assessment (EIA) had been done to determine the impacts of the landfill. She believed noise, litter and water pollution were never satisfactorily addressed. Ms. Fenske also questioned the need for a landfill of this size if the Commission had to go out of the province to get enough garbage to make it viable.

[22] Mr. Glombick believed the landfill gas issue had not been addressed in light of the latest Environmental Protection Agency (EPA) regulations. He questioned why the Department used the 1992 not the 1996 EPA regulations. He believed leachate recirculation provided the worst case scenario for gas leaks such as methane. His main concern was that a gas management plan was not required in the application but was to be addressed at a later date by the Commission. He wanted to know what the posted bond was for decommissioning the site. He indicated that in his experience, complaining to the Commission about noise and litter was useless as nothing would be done anyway. From his perspective as a banker, Mr. Glombick told the Board the environmental risk issue was not acceptable for properties adjacent the landfill and an environmental site assessment should have been done. The potential for contamination of lands adjacent the landfill was the problem for the banks.

B. The Department

[23] Mr. Inkpen said he was not compelled to call an EIA since it is discretionary for landfills. He did not call one because the landfill was not a new activity in the area and there had been previous in depth reviews where the impacts of the operation on human health, the environment and the community had been studied. He believed the landfill could operate with control measures and there was a clearly demonstrated need for it. He said issues raised by the

Appellants were similar to issues raised in previous reviews. He said he received advice from the Environmental Assessment Branch that it was not necessary, under section 39 of the Act, to refer the project to the Environmental Impact Assessment Division because they had a good understanding of the surrounding residents, what the potential impacts of the expansion would be on the environment as well as the mitigation measures the applicant was proposing to address those impacts.

[24] Under cross examination with Mr. Glombick, Mr. Inkpen said the gas management issue was “addressed” in the application and would depend on monitoring results. He said there was no management plan in the application because it would first have to be determined what gases were present and in what volumes. When asked if predictions of gases that might occur exceed EPA regulations by 1.5 times he said it “could be”. He also said he had no idea how to remove litter in a crop without damage and how trees would reduce odour. Mr. Inkpen said the environmental risk profile for the Appellants’ lands had “if it’s on a perceived basis that it has gone up”.

[25] Still under cross examination, Mr. Inkpen said he agreed with Mr. Shaw that Mr. Solberg’s concerns should just be ignored. He said he was not sure he had asked Tony Epp for only general comments although Mr. Epp had included several specific concerns with the application.¹² He and Mr. Shaw both said they did not give Mr. Epp’s full report to Mr. Stein to review. Mr. Inkpen said no contaminant hydrogeologist reviewed the application but hydrologists familiar with leachate movement from landfills did review it.

[26] Mr. Inkpen discussed under cross examination from Ms. Buss what he needed to know when working on the application prior to approving it. He said he needed to know how Stage I performed but when he signed the Approval he did not have the answer to that question. He said,

¹² Documents Subject of the Appeal, Tab 37, memo of April 28, 1998 from Mr. Tony Epp to Mr. John Shaw states:

“As Wayne Inkpen has asked for general comments regarding the addendum reports rather than specific comments regarding each issue, I will oblige him by providing you with the requested general discussion.”

however, he had “an indication of how Stage I was performing and that’s why we asked for further examination of Stage I”. He said he asked for information on the impact of the facility on surface water, groundwater and fish and wildlife resources in the area including Beaverhill Lake. He said he got no direct answer to these questions but addressed assumptions that were later presented in Mr. Shaw’s report that came in after the Approval had been signed. He said there was nothing written to document his discussions or assumptions. Mr. Inkpen said he needed to be aware of “what waste was coming into the landfill, the amounts and the adequacy of the acceptance procedures”. He said this information was provided in monthly reports from the Commission and through discussion with the Commission and their consultants. He said there was no reference to these reports in his assessment of the application. Mr. Inkpen said he needed comments on the adequacy of the site assessment and characterization of the site. He said he received two memos from Mr. Epp to say these assessments were not adequate so he went to Mr. Stein for a site characterization. Mr. Stein subsequently concluded the site was adequate for a landfill with the engineering that was proposed. Mr. Inkpen said Mr. Stein gave him a letter based on calculations and assessments. He said this information was in Mr. Stein’s notes, which he saw, but they do not form part of the Department’s records. He said he needed to understand the site hydrology now and how it will be affected by future site development. Although he provided no evidence, he said the issue was addressed in the review that Mr. Shaw and Mr. Stein were doing.

[27] When questioned by Ms. Buss about the need for the facility, Mr. Inkpen indicated he relied on information from the Vegreville Regional Health Unit when they determined that it was in the interest of the area, the greater region and the capital region to have the facility. He said he did not follow up on the 1994 recommendation since he saw no information come forward to dispute the previous assessments. He agreed with Mr. Epp that a thorough review of the application and supporting material could not be undertaken due to the poor quality of the original submission. He also agreed with Mr. Epp that the addendum information provided by EBA does not address the issues raised or provide information that this is a suitable site for a landfill development. Mr. Inkpen also agreed with Mr. Epp that the site’s natural attenuation capability appears to be limited and cannot be relied upon to prevent off site migration of leachate. Mr. Epp said the original assumptions regarding the landfill, particularly the hydrology and geology, were not valid and he

did not recommend acceptance of the application¹³. Mr. Inkpen said he needed to know how much water was being collected in the interceptor trench and the quality of it and the effect of dewatering on the regional groundwater regime. He said he did not get a report but was “briefed” on the effectiveness and how it was lowering the water table.

¹³ Documents Subject of the Appeal, Tab 37, memo of April 28, 1998 from Mr. Tony Epp to Mr. John Shaw states:

“In my opinion, a thorough review of the application and its supporting material cannot be undertaken due to the poor quality of the original submission. The addendum reports provide discussion on a number of issues identified through your review; however, other issues may have arisen had the original submission been of better quality or had it been properly revised.”

“With that in mind the addendum information provided by EBA Engineering Consultants Ltd. at times either does not address the issues raised, or else provides information that contradicts the applicant’s position that this is a suitable site for landfill development. Discussions regarding the low permeability of the bedrock units and consequent slow rates of leachate migration are not supported by the hydraulic conductivity testing of the different hydrostratigraphic units underlying the site. Also reliance on the leachate collection system to control migration of leachate from cell 2 does not make sense particularly as this control mechanism is to be relied upon for the entire operational life of the landfill. In fact, EBA’s contention that groundwater flow across the site is directed towards cell 2 is not supported by the flow net prepared for the site. The influence of the cell would appear to have only a localized influence on the groundwater flow. What mechanisms are in place to ensure the leachate collection system will remain operational and not become bio-fouled or damaged due to settling within the landfilled waste? Based on the discussions to date, the site’s natural attenuation capability appears to be limited and cannot be relied upon to prevent offsite migration of leachate. However, no evaluation of the bedrock’s natural attenuation capability has ever been undertaken. It seems odd that no discussion of the ability of the liner to control outward migration of leachate is provided in the addendum. Rather it seems that the effectiveness of the liner is compromised by the fact that it will be saturated throughout the operational and post-closure life of the landfill.”

“Discussions regarding the effect of groundwater quality from cell 2 seem premature as the effects from cell 1 and the abandoned landfill may mask the potential effects from cell 2. These two sources of groundwater contamination must be eliminated.”

“The application for the original landfill was based on information and assumptions that appeared to be supported by investigative effort at the time of the application. However, as the landfill expands and more information becomes available regarding site geology and hydrogeology as well as the affects of the first cell on groundwater quality, it appears that some of the original assumptions are not valid.”

[28] Thus, under further examination by Ms. Buss, Mr. Inkpen said he went to the third party review with Mr. Stein because if the application was rejected or denied “on the basis that we were unable to do a review and understand the material, certainly the Commission would have it appealed and we’d be sitting here facing a tough cross examination from Mr. Welsh”. He said “It was necessary, in whatever circumstance, to determine what was the actual situation given the confusion. Mr. Stein was able to put the jigsaw puzzle together and to reconcile all the different facts and the confusing evidence that came in the application and the following materials, all of which, admittedly, contradicted one another one after another, and he came up with a clear and coherent site characterization which allowed the construction of the landfill”.

[29] Under further questioning from Ms. Buss, Mr. Inkpen said that in an EIA, the social and economic effects of the landfill on adjacent landowners could be assessed. He said those effects were already known but he had no documentation on it. He said there was no documentation on cumulative effects in the area either.

[30] Mr. Shaw felt a 450 m buffer zone was appropriate. He said most impacts were attenuated between 300 and 500 m. His calculations indicated 480 m was an appropriate distance for noise to be mitigated which complied with the EUB standard. He said in all the time he studied this he had not come across any information that would lead him to conclude the buffer distance should be reduced or increased. He referred to the difficulties in most landfill health studies.

[31] Mr. Shaw said they applied a more stringent criteria for the disposal of produced sands than the EUB because at the time the Approval was issued they “still had concerns about the quality assurance and quality control with respect to the construction of the liner and the performance in particular of the Stage II liner”. He said those concerns have now been alleviated. He also said this limitation has put the economic viability of the landfill in question. He indicated that since the Approval was issued he was in the field and reviewed new information, such as that of Mr. Moell. He said he is still comfortable with what he wrote in the review document.

[32] Under cross examination Mr. Shaw said methane gas was “important but not urgent”.

He said there was not enough organic material to generate methane nor a low enough pH; according to the Canadian model there was not enough methane until 40% capacity and they were now at 20% and not about to reach 40% until 2005. He therefore believed there was a lot of time to develop a plan. Further, without a tight cap on the landfill there would be no pressure to drive the methane out subsurface into the environment to create safety hazards. He said there were no data to show levels of non-methane organic compounds in the landfill at this time to cause concern. He said the closure and post-closure plans were still under review and they would include details on gases. Mr. Shaw indicated there was no danger of methane migrating sideways beyond 50 to 60 m.

[33] Under further cross examination Mr. Shaw said he wanted to make it clear that “anywhere in the Approval that we require the submission of a plan it means that the plans in the application were not accepted for one reason or another”. In most cases he said these were “technical issues” not a question of “ingenuity or creativity in coming up, it’s just coming up with a plan rather than, shall we say, expressions of good intent”. Mr. Glombick referred to federal regulations being considered that would require a gas management plan for landfills over 1 million tonnes, considerably smaller than the Ryley landfill and suggested for this site a plan should have been in place “not planned to be in place”.

[34] Also under cross examination Mr. Shaw said he would like to make it known that he became aware during this hearing that the landfill had been accepting materials from the sewage treatment plant for the greater Vancouver Drainage District. He said this was likely the odour the Appellants reported. He said he spoke with Mr. Deagle and told him that “anything that came down a sewer pipe was sewage and that the Approval forbid the acceptance of sewage at this landfill stage”. He said Mr. Deagle assured him they would no longer accept this material.

[35] Mr. Wilde read from Mr. Moell’s latest report that “the method of analysis of hydrochemical data generated will depend on the results of the baseline chemical analyses” and “it is considered that no such analysis will be possible and that the analytical results must be evaluated with respect to expected natural hydrochemical conditions”. Mr. Wilde asked Mr. Shaw what kinds of conclusions could he thus get? Mr. Shaw replied that this might be a good thing because if there

was too little water in the wells to test there would not be a lot of transmission of anything. Mr. Shaw also said “we’ve made, I think, considerable progress over the application in...in developing a feasible plan for groundwater monitoring...it’s not complete yet and...but we are concerned about protecting the water resources that do exist in..in the vicinity”.

[36] Mr. Bronaugh asked Mr. Shaw if he agreed that the Hertzman report found health problems in people living 500 to 750 m from a landfill. He replied he had seen the paper and that statement but it was likely heavily influenced by selection problems with the controls. He also agreed that in the Approval the Director had the authority to give written authorization to make changes to the Approval on three areas that would then not be appealable. These areas included vertical and lateral expansions of the landfill. He also acknowledged the Approval refers to a southwest quarter he said should have read southeast. He indicated these were the kinds of things the Director would likely change without another application for approval. He did say that the Director himself would be responsible for determining what was minor and what was major.

[37] Mr. Shaw indicated that when Mr. Solberg saw the Approval he was concerned the landfill operation might not be able to fulfill some of the requirements of the Approval. Mr. Shaw said he did not agree with Mr. Solberg and didn’t change the Approval. He said he thought the Commission would not have difficulty meeting the pesticide criteria, to achieve the limitation of leachate head above 30 cm and there was no need to put “untreated” in front of “biomedical waste”. He said he thought the reason sewage grits came from Vancouver was that the operator had a misunderstanding about what sewage grit meant.

[38] Mr. Shaw, when questioned by Ms. Buss indicated that he was not relying entirely on the Public Health Advisory Board decision which approved the landfill expansion of one cell only but did say he relied on it in part. He said he was not aware that waste was still being put into Stage I cells. He said that since the Commission was directed to investigate and remediate it, they should view it prudent not to deposit waste there anymore. He said he agreed that public health was a major concern with any landfill and he relied on the historic Vegreville Health Unit and the Public Health Advisory Board findings for health concerns to make his recommendations to Mr. Inkpen.

He said he also relied on his memory of the Toxcon Report which he had read some years ago. He said the fact that in that report it was clearly stated results should only refer to the site it was assessing was a general precaution always made in such reports.

[39] Mr. Shaw agreed that in his report he said “the hydrological interpretations in the application are often in conflict both with each other and with the data presented...also the many errors in transcribing data from original sources to the interpretive instruments of text, tables and figures in the application made it specially difficult to determine the validity or otherwise of the finding”. He said that was why “we made them do it over and over again until they got it right”. Mr. Shaw agreed they still had difficulty figuring out what was happening with site hydrology and further groundwater reports were ordered because the ones in the application were unclear. He said by the time they issued the Approval they had a “good understanding in general” of site characterization. He said they did not have an understanding of the “specific” groundwater monitoring program.

[40] Mr. Shaw agreed with Ms. Buss that no berm had been built on the north and east boundary of the landfill as required by the Development Appeal Board approval. He also agreed that potential microbial contamination of the dugout from the gulls around the landfill was possible.

[41] Under questioning from the Board, Mr. Shaw indicated the buffer zone is defined from the boundary of where waste is going to be placed. Mr. Shaw reiterated there was no visual impact study done and no requirement for landscape, beautification or green plans. He said the closure and post-closure plan should be “a stage process and it starts with now”. He said the application was “full of good intentions about all the nice things that were going to be done eventually, but there really wasn’t a plan that you could follow and that you could see when things were going to happen scheduled according to the development of the landfill”. He said there is supposed to be more detail on gas management in the plan they just received but he had not read it.

[42] Mr. Lloyd said the Department used a process that is flexible and dynamic. In cross examination Mr. Lloyd said he appointed Mr. Inkpen Acting Director for the purpose of dealing

with this application. He said the first time he became aware sewage grit was being accepted from Vancouver was “actually, just from the hearing today or yesterday, or was it today, I think when John Shaw mentioned it”. He said he was not aware of when the site had last been inspected and when it was going to be inspected or the results of the inspection as this was the responsibility of others who worked for him. He said before he could declare anything a contravention, such as sewage material from Vancouver, he would have to assess the details of the allegation. The discussion of the word immediate led Mr. Lloyd to say he knew there was a legal definition¹⁴ but his definition meant “right now”. When asked if he actually reviewed the amendment as indicated in his written statement, Mr. Lloyd said he “went through some of the documents just briefly to understand the issues”.¹⁵

[43] Mr. Stein under cross examination indicated more information was needed when reviewing the Approval. He said “it became quite apparent that yes, there had been a lot of work done, but the way it was interpreted, the way it was presented, was in a very, very confusing matter...manner...and it took us a long time to try to sort that out and we...we had to require more work and so on and so on and more interpretation to be...to be brought back”. He said that in his report he listed several inadequacies of the liner material but in the final conclusions, in spite of these shortcomings, he still thought the site was suitable. Thus he said the “engineering was critical for this site as a landfill”. He said he was given no alternative sites to review.

¹⁴ H.C. Black et al., *Black's Law Dictionary*, 6th ed. (St. Paul: West Publishing Co., 1990) defines immediate as:

“Present; at once; without delay; not deferred by any interval of time. In this sense, the word, without any very precise signification, denotes that action is or must be taken either instantly or without any considerable loss of time. A reasonable time in view of particular facts and circumstances of case under consideration. Next in line or relation; directly connected; not secondary or remote. Not separated in respect to place; not separated by the intervention of any intermediate object, cause, relation, or right. Thus we speak of an action as prosecuted for the “immediate benefit” of A., of a devise as made to the “immediate issue” of B., etc.”

¹⁵ Written Submission of the Department, March 8, 1999, Evidence of David Lloyd, he states:

“I have reviewed the amendment and I support the decision made by Mr. Inkpen”.

[44] When questioned by Ms. Buss, Mr. Stein said that he did not do any tests on the liner sample but did calculations only. He said it was obvious the sample was composed of clay fragments that have a high attenuation capacity. He said he does not agree with Mr. Epp that the effectiveness of the liner is compromised by the fact that it will be saturated throughout the operation and post-closure of the landfill. He said it was the best thing for the liner since if it was saturated and fully swelled it would be most impermeable.

[45] In questioning from the Board, Mr. Stein said he thought there should be more than the 8 wells Mr. Moell was proposing for monitoring. He thought monitoring should go deeper and include the fractured zone beneath the weathered zone, the active flow zone and the sandstone unit to 20 or 30 m since water moves through all of those zones. He said from the work that was done on the area, "there were some incidents in some locations where you get some unexpected fracturing that occurs at some greater depth and it's difficult to trace". He said you "don't know how continuous those areas are but with a landfill this size, one should be sure that nothing is getting out of the area and it should be monitored within the perimeters of the site".

[46] Mr. Bronaugh questioned the Department employees on whether they had read the material from the Appellants. Mr. Inkpen said he did not read all of it, just the odd excerpt that Mr. Sprague provided. Mr. Shaw said he read all of it, some more quickly and some more closely. Mr. Lloyd said he did not read the material thoroughly but just skimmed parts of it and read parts of it.

C. The Approval Holder

[47] Mr. Ruffell indicated his role was to design the elements of the landfill, develop the elements of the landfill associated with landfill gas, design requirements for closure and post-closure and develop the operation plan for the landfill. A four-step process was used in the design.¹⁶ First

¹⁶ Documents Subject of the Appeal, Tab 14, EBA Engineering Consultants Ltd., Supplementary Submission for Expanded Use of the Site, Reassessment of Design for the Ryley Regional Landfill, Ryley, Alberta, August 1997, Section 5, p. 20-38.

existing site information was reviewed and numerous gaps were detected.¹⁷ Next, drilling on site was done to identify surface water features including modes of transport into the site. Then a step-matrix process was used to assess health impacts of the landfill using a systematic identification of source, pathway and impact change for contaminants from the landfill. This was followed by development of design features to mitigate or remove those impacts. Finally upset issues were dealt with such as fire and inclement weather. Mr. Ruffell indicated groundwater, surface water and air pollutions would be dealt with through engineering features such as liners, leachate collection systems and ponds. Dust, vehicle emissions, traffic, noise, visual impact and acceptance of prohibited waste would be dealt with through the operation plan.¹⁸

[48] Mr. Ruffell indicated when he designed the landfill he took into account the new code of practice developed since the Vegreville Health Unit decision. To test the design, they modeled the upset not the normal case scenario, including the situation if the liner did not exist, the full landfill on the full quarter section, one meter head on the liner, very high chloride concentrations, produced sands in the landfill and conservative tracers (chlorine, chloride, benzene). They determined the interceptor trench was very effective and a cover would further reduce the recharge of groundwater under the site. The clay till and the clay shale of the liner met the texture and permeability requirements of the permit under both laboratory and field conditions. Mr. Ruffell said there was a high quality assurance during construction. He visited the site periodically and had a full time technician on site.

[49] The Department added to the landfill design. They maintained a buffer of 450 m from the working area and 300 m from the disposal area. This put Ms. Fenske's dugout 360 m from the operating portion of the landfill. They required use of field not laboratory permeability and thus factored a safety of one order of magnitude over the laboratory permeabilities. This was later measured with an in situ permeameter showing laboratory values were one order of magnitude lower

¹⁷ From the hearing record, Mr. Ruffell said: "Clearly on this site there were a lot of information gaps; not a lot of investigation had been done."

¹⁸ Documents Subject of the Appeal, Tab 2, EPEA Application No. 001-20754 dated March 10, 1997, Appendix D, Operations Plan.

than field values.

[50] Mr. Ruffell discussed the leachate recirculation in the landfill, indicating he believed the system was a good one. He said landfill gases were clearly created by conditions of microbial actions within the landfill. He was aware the EPA suggested non-methane organic constituents of 50 t was prudent but maintained that 150 t was acceptable. He said he emphasized supplying, maintaining and monitoring gas monitors in all enclosed spaces on and around the landfill. He indicated passive venting structures should be provided on all closed areas. Under cross examination he said EBA did not have any gas management experts on staff.

[51] Mr. Ruffell said liners leak, but slowly. He said he believed the site was superior to a lot of sites where landfills are permanently placed. The design features would deal with the fact that liners leak. These features include the recirculating leachate, the siting and attenuation features of the surrounding area and the fact that groundwater use for deep aquifers does not occur in the area. They also put contingency plans in place to deal with issues of groundwater contamination earlier than predicted from the model. Mr. Ruffell said the monitoring program around the landfill will indicate that the liner is leaking before the leachate has any opportunity to go off site.

[52] Mr. Ruffell indicated he recalled a meeting he was at with the Commission and Ms. Fenske where they discussed provision of a water supply to her in perpetuity. He did not recall her response to the offer. He knew of no cases in Alberta where people became ill due to a landfill. Under cross examination he said he did not include evidence from the Appellants at this hearing because he did not think their health effects could be related to the landfill. When questioned by the Board, Mr. Ruffell indicated an incremental increase in garbage over time was not assessed. He also said a landscape architect was not involved in a beautification/landscape/planting plan.

[53] Mr. Moell said he was retained early in 1998 by Canadian Waste to do a site geologic characterization. He drilled 25 bore holes, mapped geologic features and conducted off site groundwater and surface water monitoring and on site groundwater monitoring. His work was

presented in five reports.¹⁹

[54] Mr. Moell indicated one of his shallow monitoring wells (6 m deep) was in the zone which supplies water to Ms. Fenske's dugout. He said the total dissolved solids in the well was 15,000 mg/l compared to the standard 500 mg/l and compared to 624 mg/l from the Fenske dugout. Thus he suggested Ms. Fenske's dugout was not supplied by groundwater. He further suggested a bore hole, kitty corner to the Fenske dugout, drilled to 10 m with no water inflow was further indirect evidence the Fenske dugout was not supplied by groundwater.

[55] Mr. Moell said although Mr. Mizera alleged wells were fed from quicksand, he found no quicksand or fluvial sands on site. Thus he surmised geologic conditions were considerably different in Ryley than on site. He found 3.5 m maximum of glacial till underlain by sandstone, shale and siltstone (claystone) to 6 m which had substantial fracturing from weathering. Part of the sequence he found had a hydraulic conductivity of 10^{-4} cm/s (very high) within 6.5 m, other parts had values of 10^{-9} cm/s (very low). He indicated from this sequence down to 20 m, material consisted entirely of claystone or shale with interruptions of rock. Here he measured hydraulic conductivities ranging from 10^{-8} to 10^{-9} cm/s, two orders of magnitude lower than required in the design. He found no evidence of groundwater contamination. Using a standard definition of aquifer, Mr. Moell said there were no aquifers within 90 m of the surface on the site. He further indicated the only zone that would possibly transmit leachate from the landfill site is the weathered

¹⁹ C.E. Moell & Associates Ltd., 1999: *Hydrogeologic Characteristics of the Ryley Regional Landfill Site*. Groundwater monitoring results prepared for Canadian Waste Services Inc.

C.E. Moell & Associates Ltd., 1998a: *Geological Characterization of the Ryley Regional Landfill*. Consulting report prepared for Canadian Waste Services Inc.

C.E. Moell & Associates Ltd., 1998b: *Presentation and Interpretation of Water Monitoring Results - Off-Site Wells and Dugouts, Ryley Regional Landfill*. Consulting report prepared for Canadian Waste Services Inc.

C.E. Moell & Associates Ltd., 1998c: *Preliminary Geologic Assessment of the Ryley Regional Landfill*. Consulting report prepared for Canadian Waste Services Inc.

C.E. Moell & Associates Ltd., 1998c: *Development of a Groundwater Monitoring Plan - Proposed for the Ryley Regional Landfill*. Consulting report prepared for Canadian Waste Services Inc.

and fractured zone within 6.5 m of the surface. Thus there was potential for lateral movement from the landfill and he had recommended additional wells be installed in the weathered fractured zone he identified.

[56] Under cross examination Mr. Moell was asked to discuss his statement that the “shape of the response curve for some wells suggests that leakage may be occurring” from some of the B-depth piezometers. Mr. Bronaugh said examination of the data did not show that. Mr. Moell replied the qualifying remarks in his table indicate it could be leakage, slight dewatering or major dewatering. Upon review of the table, he said he had indicated dewatering not leakage for those piezometers in his report.

[57] Under questioning from the Board, Mr. Moell indicated he was certain there were no buried channels in the area. He said after the 8 new holes were dug he would be confident he understood “everything that was needed to know about the shallow hydrogeologic system on the site”. He also said he did not feel comfortable using one dry well in the northeast corner of the landfill property to make a projection that the Fenske dugout had no relationship to groundwater.

[58] Mr. Adeney indicated distance from the permanent boundary of the landfill was 450 m from the Fenske mobile home, 450 m from the Booth residence, 1100 m from the Garstad residence and 1350 m from the Mizera residence; the Glombick cabin was 200 m from the edge of the primitive site and 700 m from cell 3. Based on surface hydrology he said it was not “physically possible” for landfill drainage to get to properties south of the landfill because it would have to drain over a 1 to 2 m high divide. He said the diversion channel mimics the historical route water would have taken so any water ending up in the Fenske dugout would have gotten there anyway. He suggested the ponding water in Ms. Fenske’s pictures was a temporary condition in the springtime.

[59] Mr. Adeney went on to discuss the three drainage systems for the landfill. The first is the collection of leachate on active portions of the landfill that drains into the waste and is recirculated or, in the longer term, treated. Thus water would not get into the surface water system. The second system is the collection of water from inactive parts of the landfill to storm water ponds,

which had sufficient storage for a 100 year storm with 100% runoff. The third system is the ability to divert external drainage around the site.

[60] Mr. Deagle said that with Canadian Waste he has attempted to go a little beyond what is required. He felt very remiss that the Appellants had litter on their property that he was not aware of and said he could not understand why they did not phone him. He said he knew they reacted very quickly when they were called. He said when odourous loads came in they attempted to cover them very quickly. He said gulls were always a very difficult situation to deal with but in Calgary they were allowed to shoot the birds. He indicated when he first came to the Ryley site in late 1997 he was disgusted with the situation.²⁰ Mr. Deagle indicated a Hydrocarbon Contaminated Soil Management Plan had been approved by the Department. Mr. Glombick questioned Mr. Deagle on the amount of the bond for the site and said he was reasonably satisfied with the amount.

[61] Ms. Rudnitski apologized for not knowing what was going on with nuisance issues and said it was a “communication process that will need to be fixed”. She said once a year a senior auditor comes to the site without warning and she also shows up at the site without warning. She said since the new landfill manager has been in place she has seen considerable improvements in the way things are managed. Prior to that, the working face was often 10 to 20 feet wide. She said they were currently completing a third party auditing process as per the Approval requirement. She said hydrocarbons were limited on the site to 30,000 mg/kg. She also said they sampled surface water without being required to and groundwater was sampled by a third party.

[62] Under cross examination Ms. Rudnitski indicated the leachate is currently being circulated but options for disposal were being investigated. She said on site evaporation was in a feasibility study and would involve reapplication with the government to apply for an evaporation pond; on site distillation would also require permission from the government; or the leachate could

²⁰ From the hearing record, Mr. Deagle said: “When I approached the site I was pretty disgusted myself with the way it was, the shape it was in. We endeavoured to do the cleanup immediately, do everything that we could. We poured a lot of money and resources to turning that into a sanitary landfill, and we’re continuing to work on it.”.

be shipped to a waste water treatment plant. She also said she had not seen any advertisement in the local papers for a liaison committee.

[63] Mr. Solberg said he supports both Class I and II landfills. He said you normally don't hear from proponents of the landfill; but some of them recently built new homes in similar proximity to the landfill as the Appellants. He said the landfill is important for generating jobs and he has confidence in the geology, engineers and operators.

[64] Mr. Wright went through the history of the landfill to show that chronologically the Commission has tried to resolve the problems of adjacent landowners. He said in 1997 Mr. Glombick was asked to contact the landowners and see if there were common grounds for negotiating a land deal. At that time he also forged a formal policy on buffer zones. He said shortly thereafter Mr. Terry Church of the Government of Alberta said it was "neither wise to establish a formal policy relative to buffer zones and that the Commission should adopt a policy of offering fair market value only for any land that they purchased". Under cross examination Mr. Wright clarified the policy was in place last fall, then withdrawn when there was a realization the operating agreement might be in jeopardy.

[65] Mr. Wright said in 1998 an offer was made to the Garstads which they declined. A similar offer was made to and rejected by the Booths. He indicated the Commission was doing other things of positive note for the community. These included leasing lands to the Booths at a very good price, giving the Booths two free applications of dust control a year when ½ was the norm and constructing a road to mitigate traffic past the Booths. He said he tried three times to set up a Public Advisory Committee and advertised for it two times. He said the Commission offered Ms. Fenske a cistern but she never followed up on the offer. Mr. Wright further indicated 6 properties in Ryley sold this year, suggesting the owners were satisfied with the prices paid.

[66] Under questioning by the Board, Mr. Wright said there was a plan for thousands of different trees to be planted and this plan had the input of Dr. Evans who is a plant scientist. He said trees would be planted south of the northeast holding pond, there was a plan for finger berms

coming out the south of the northeast holding pond with trees and an evaporation pond. He said monies were set aside for this beautification plan for this year.

[67] Mr. Hugo discussed the environmental security of the site. He said he assisted in the coordination and facilitation of the application processing for the landfill permit. He said the site was one of the best in the world in its natural state because of the hydrogeology: clay material with a hydraulic conductivity of 10^{-8} m/s and no aquifer below the site. Further engineering development makes it even better. Mr. Hugo further indicated the permit is very good as it is performance based clearly setting out reporting and monitoring requirements and the accountability of the owner to meet the requirements.

[68] Mr. Hugo discussed the buffer zone, stating that under the Planning and Development Regulations there was a requirement for a 450 m buffer between the operating portion of a landfill and any residence. He said this was being maintained at the site. He commented on acceptance of hydrocarbon contaminated soils or produced sands, saying it was permitted under Alberta regulations and under the permit, provided the materials were not hazardous. Finally Mr. Hugo commented that odours on this site may come from other sources such as the Safety Kleen Landfill, the Class I landfill to the west across the road, the Ryley sewage lagoons, activities in the Village of Ryley such as burning and paving, highway activities and farming activities.

D. The Intervenors

[69] The Intervenors gave evidence to indicate they shared similar concerns as the Appellants but they focused their presentation on issues most directly affecting them.

[70] Mr. and Ms. Garstad said the landfill should not be located on a water table with so much potential for contamination. They were constantly picking up litter and noise was an annoyance. Ms. Garstad said odour from the landfill was different than sewer odour. She indicated they abandoned a vegetable garden because of concerns about the safety of water from their dugout. She discussed an incident from 1997 when she noted a shimmer around her and her mouth and

throat became numb. She did not report it, because she assumed no one would care. She discussed a 1998 incident when she was walking on the road and was hit with a shower of small particles. She said walks and picnics were no longer enjoyable or an option in their lives. She said the bird population had dwindled and now they only see gulls and magpies. She said they had one abnormal foal and one stillborn foal. The mental anguish for her was at times tremendous.

[71] Mr. Garstad said the offer by the Commission was worthless. The landfill located next to their land was economically devastating as he had been refused loans from several banks. He said the whole experience was psychologically disrupting. He indicated the environmental risk associated with the declining values of their properties was a major concern.

[72] Mr. Wilde discussed how property values affected lives. He was concerned with leachate risks associated with organic constituents. He indicated landfill decommissioning and reclamation should be included in the Approval. He presented several papers as exhibits to show the impacts of landfill sites in other locations. He also suggested there were numerous concerns raised by Department personnel that were not addressed prior to the Approval being issued.



Exhibit 20: Picture of litter against fence line of an appellant.

[73] Ms. Booth cited generally poor health from the landfill site and the stress imposed on working in it including nose bleeds, headaches, a heavy chest, major dizziness and vomiting. When she worked at the site she said they had porous gloves, no shots and no breathing apparatus unless they asked for it.

[74] Ms. Booth presented evidence on the problem with the seagull population around her home.²¹ These birds were dirty, fouling the dugouts and creating avenues for health risks as well as preying on other bird species such as ducks, reducing their numbers considerably. One of her foals had diarrhea after it drank dugout water and a veterinarian report said it could be from gull fecal matter. She said they could no longer cut hay where they used to because of the garbage. She said litter was a major problem when there were south and southeast winds and because the site was only covered at the end of the day.

[75] Ms. Booth suggested the biggest problem with the Approval was its openness to interpretation. She was also concerned that the Commission promised things they did not deliver such as the building of a fence around the site and collecting data which they did not make available.

V. SUMMARY OF FINAL ARGUMENTS

A. The Appellants

[76] Mr. Bronaugh, representing Mr. and Ms. Mizera, submits the Commission believes the odour, litter, noise and property value/borrowing potential problems experienced by the Appellants are just the price of progress, are as well managed as possible and are adequately

²¹ Exhibit 19 - Pictures of wind blown litter, wind blown litter and gulls and east end of melt water channel; Exhibit 20 - Pictures of odour(s) due to lack of daily intermediate cover and wind blown litter and gulls and gull fecal matter; Exhibit 21 - Pictures of flooded melt water channel 1999, litter 1996, gulls 1999 and D. Booth dugout 1999, 1999 water(s) blocked by berm and gulls, 1999 winter view from Booth home; Exhibit 45 - Pictures from Cindy Booth, envelope entitled mitigation and visual impact.

addressed by the Approval. He argues reassurances are hollow if on site measurements are not made (as in the issue of noise). Mr. Bronaugh says the Appellants maintain the problems are unacceptable and have a large negative effect on their quality of life and health.

[77] Mr. Bronaugh states there are fundamental differences among the parties on the likelihood and potential severity of groundwater contamination. He says the Commission assumed the shallow geologic deposits must be impermeable, since there were no shallow wells in the area. He asserts the Appellants presented evidence to show there were shallow wells. A liner sample he procured from the site shows structure and poorly bonded aggregate clumps that offer preferential pathways for leachate migration. Leachate pumping will delay groundwater contamination for a number of years but only until recirculation stops.

[78] Mr. Bronaugh said data Mr. Moell used to determine site suitability were not sound. His piezometers had an effective screened length of 8 inches and none were positioned to assess permeabilities at depths less than 8 m below the surface. He said other investigations using longer piezometers and more varied depth ranges revealed permeabilities within a few meters of the surface exceeding 10^{-4} cm/s. When Mr. Bronaugh assessed piezometer slug test hydraulic conductivities below the bedrock surface he found a zone of high permeability above it and for a meter or two below it due to fractures and weathering. He noted several geologists referred to this zone of high permeability extending to a depth of 5 m or so and also attributed it to fracturing and weathering. Mr. Bronaugh said 8 of 10 B-depth wells Mr. Moell tested had hydraulic conductivities between 10^{-7} and 10^{-5} cm/s. Mr. Moell appears to attribute this to leakage but in cross examination said none of the wells were suspected of leaking, but of dewatering. Mr. Bronaugh noted horizontal values were assumed equal to vertical values in Mr. Moell's calculations; yet Mr. Moell testified horizontal values are 2 orders of magnitude greater than vertical values. Thus his values, used in assessing landfill suitability, are underestimated. Mr. Bronaugh concludes the geologic materials below the landfill cells thus offer a conduit for horizontal movement of leachate.



Exhibit 20: Pictures of wind blown litter along perimeter of the landfill site.

[79] Mr. Bronaugh questioned why Mr. Epp and Mr. Leskiw, who were harshly critical of the Commission's application, were not invited to review the new Commission document to determine whether it adequately addressed their concerns. Mr. Shaw contracted Mr. Stein to assess the application, but he did not give him a copy of Mr. Epp's memo. Thus he did not have all the information available to the Director.

[80] Mr. Bronaugh argues Mr. Shaw is erring in fact when he says all contaminants will be profoundly affected by molecular diffusion. An important document from McKay et al. shows potential for rapid migration in fractured clays of colloid-sized contaminants and of contaminants adhering to colloids.²² Mr. Bronaugh disputes the Department's and Commission's lack of acceptance of the Hertzman report saying it is "a model of epidemiology at its best".

²²

Exhibit 40 - Article from Environ. Sci. Technol., Vol. 27, No. 6, 1993 titled "A Field Example of Bacteriophage as Tracers of Fracture Flow" by Larry D. McKay and John A. Cherry.

[81] Mr. Bronaugh states the Director said there had been no consideration of gases emanating from the landfill because the landfill was not a point source. Mr. Bronaugh said for point sources the concentration of an emitted pollutant or effect varies with the inverse square of the distance from the source. For line and area sources the inverse law does not apply. Thus Mr. Bronaugh argues that large garbage dumps need a wider buffer zone than small ones because adverse effects and concentrations remain higher at greater distances.

[82] Mr. Bronaugh was concerned Mr. Lloyd had no idea about inspections to the site and worried that meant the Commission and Canadian Waste were left to the honour system even after they had demonstrated a disregard for the terms of the Approval.

[83] Mr. Bronaugh suggested relief for the Appellants would include capping the maximum height at that of cell 2, and not permitting effluent to be disposed of by dumping it into the sewage lagoon, the overflow that is already permitted to be released across the Mizera land. Because the Appellants' lands are basically not saleable, the Commission should be required to buy them for a buffer zone.

[84] Mr. Glombick argues the proponents focus on economic benefits and seek to minimize costs while maximizing revenue from permitted and non-permitted waste material. Mr. Glombick argues the statutory 450 m buffer is not being complied with for his property. He said his cottage is within 200 m and food or food material is prepared and stored there including honey, grain and vegetables. However, no one from the Department or the Commission ever inquired about the nature of his site. Mr. Glombick indicated the environmental risk profile for his land was relegated to unacceptable status with a lower market acceptance due to the landfill.



Exhibit 45: Picture of visual impact of the landfill.

[85] Mr. Glombick said the landfill gas management issues were dealt with from an economic perspective only. He indicated the non-methane organic compounds were already 1.5 times the EPA limits. He was concerned the 1992 EPA regulations were used for the Approval although 1997 regulations were in place. The relief Mr. Glombick seeks is for the Commission or the Operator to relocate them to the equivalent of their setting prior to the landfill.

[86] Ms. Buss, representing Ms. Fenske, argued the Director has not complied with his duties under the Act. Under cross examination Mr. Inkpen said he did not receive requested information on the need for the facility or that the facility was in the public interest. Mr. Inkpen stated he relied on the 1994 decision of the Vegreville Health Unit on the expansion of cell 2. Ms. Buss argues the Director is required to not fetter his discretion by relying on decisions of previous Boards, especially since the situation surely changed since 1994. The duty upon the Director requires he include a justification for the release of substances into the environment. Ms. Buss indicates that although this information was requested by the Director in his emails, it was never obtained. Ms. Buss submits that on this basis alone the Approval should be revoked and the

application completed prior to an Approval being issued as indicated in the approvals regulation.²³

[87] Ms. Buss argues the Director's breaching of his obligations to review a complete application are further evidenced by the deferral approach in the Approval. The Director dealt with gaps in required/requested information by including terms and conditions to the Approval that require further reports to be prepared. An example of this is the closure and post-closure plan to be filed with the Director by February 28, 1999. Ms. Buss said numerous correspondences indicate the Director did not have sufficient information on site hydrology, confirmed with the requirement that the Approval Holder develop a groundwater monitoring program. The Approval requires a soil management program for soils containing hydrocarbons and a gas management plan, proof the information was not available to the Director but was required for an assessment of the proposed amendment. Ms. Buss indicates the Director failed to consider impacts on the surface water regime such as the accumulation of water on the Fenske land.

[88] Ms. Buss argues that one of the requirements of a complete application under the approvals regulation is a public consultation component. There is no evidence of public consultation. Mr. Inkpen refers to previous hearings done in applications for single cells. The regulation permits the Director to circulate the proposed amendment to the applicant as well as persons who filed statements of concern. That the Appellants who filed such statements were not given that opportunity reflects the lack of regard for the rights and interests of the adjoining landowners. Ms. Buss argues that by not using a complete application, the Director is implicitly accepting, with no evidence, the impacts and mitigation measures that have not yet been determined. She said such deferral of important information to later points of time, in effect, withdraws some of the environmental impacts of the project from public view and denies persons directly affected by the project their full right of review and appeal.

²³

Approvals and Registrations Procedure Regulation, A.R. 113/93, section 4(1) states:

The Director shall not review an application for the purpose of making a decision until it is a complete application.

[89] Ms. Buss indicates the Director failed in his duties to assess the need for environmental impact assessment. She said that while the Act does not specify what considerations the Director should take into account when ordering an EIA, it does give relevant considerations. Ms. Buss states the evidence showed there was public concern, the activity was located in an environmentally sensitive area, there were similar activities in the same area and an unknown technology was to be used for the landfill gas issue. Ms. Buss said that although the Director gave evidence he normally documents important decisions and the rationale for them, there is no such documentation on the issue of an EIA. Ms. Buss argues that Mr. Shaw's statement that the Director would not have learned anything new is purely speculative. She further states this misses one of the major points of an EIA, that of public input. She proposes obvious information gaps would have been omitted such as the social and economic effects of the project as well as the closure and post-closure plan and the handling of gases and hydrocarbon contaminated soils.

[90] Ms. Buss expresses concern that the Director relied on the Toxcon Report for his assessment of public health effects since it is 9 years old and relates to a particular landfill from which generalizations should not be made. She suggests a letter from Mr. Goddard does not qualify as a health impact assessment. She says, the Director admits to potential impacts such as risk to the Fenske dugout to contamination by seagulls. The Appellants also gave evidence on potential impacts from garbage in water courses and the impact on their livestock and grazing areas. Ms. Buss argues since the potential impact on human health is the biggest concern with landfills, this is a glaring omission in the application and a clear indication an EIA was required.

[91] Ms. Buss argues that in spite of the Commission's admission on cross examination that no subsequent development permit has been issued for cell 3, the conditions have not been met such as berm construction along the north and east side of the property with planted grass and three rows of trees, fence construction and rumble bar installation. Ms. Buss submits the Commission's failure to follow such conditions and for the Director to not take it into consideration is evidence of blatant disregard for the rights and interests of the Fenskes. Ms. Buss indicated the Director is expressly authorized to consider past performance of the Applicant in ensuring environmental protection in reviewing an application under the approval regulation. Ms. Buss indicated it was

clear the Commission and the Operator did not take a proactive approach to preventing or minimizing disturbances on neighbouring property, even though the Commission admitted hearing about such complaints in previous meetings and on previous occasions.

[92] In conclusion Ms. Buss submits that the Approval should be revoked. Alternatively the Approval should be conditional upon the Commission owning or controlling each quarter section surrounding the landfill. A further alternative would be to have conditions such as limiting the Approval to cell 3, not allowing diversion of surface water to surrounding lands or altering natural surface and groundwater regimes, requiring annual monitoring on the Fenske dugouts, satisfying the terms and conditions of the Development Permit before the Approval comes into effect, requiring water be piped to the Fenske/Schaffer homes from Ryley at no cost to the families, accepting no oilfield waste, limiting the height of the landfill to that of the shelter belt, the Commission paying the costs of autopsies on any livestock suspected to have died from garbage ingestion, pumping leachate from all cells in perpetuity and having the Commission develop and follow site specific proposals for handling leachate.

B. The Department

[93] The Director submitted litter would always be a factor with any landfill and it would be unreasonable to guarantee litter would not escape the landfill. He argued that management provisions were included in the Operations Plan to appropriately address and mitigate windblown litter. The Operations Plan requires perimeter fencing, moveable wind screens, litter catching fences, wetting waste to prevent dispersal, immediate cover, immediate (daily if necessary) retrieval of litter on and off site and in ditches carrying surface water, litter covered enroute to the site, litter covered once deposited on site and a complete unannounced site visit this operational year.

[94] The Director submitted it was unfortunate some Appellants were reluctant to phone the Commission to report litter on their property. He was convinced by evidence from the Commission that complaints of litter were dealt with quickly. The Director believed there was no evidence to identify the material submitted by Mr. Mizera nor where it came from other than the

secondary highway adjacent his property.²⁴

[95] The Director believed the issue of noise was appropriately addressed by the attenuation rate for noise and the hours of operation of the landfill combined with the requirement for equipment noise suppression as presented in evidence and referenced in the Operations Plan.

[96] The Director submitted odour source is a difficult issue, due in part to the location of several facilities with potential for odour emissions. He indicated prevailing winds are from the northwest and the Village of Ryley sewage lagoons are located immediately north of the Garstad and Mizera residences and west of the Glombick property. The Director said he advised the Commission Operator he would recommend suspension of the deposit of sewage grit into the landfill and had heard the Commission Operator agree not to accept it. The Director submits odour is impossible to eliminate but provisions in the Approval impose reasonable mitigation measures by requiring odourous wastes be immediately disposed of in a cell and covered with soil.

[97] The Director argued the Approval contains appropriate measures to protect surface water quality. He submitted diverting water from the NE ¼ to the County road ditch via a diversion ditch was not a matter properly before the Board since it was authorized by a *Water Resources Act* license.²⁵ He said run on was prevented from reaching active areas and contacting waste through the diversion trench west of the active cells. On site water would be captured and only released if it met Alberta Surface Water Quality Guidelines. The Director specified the Approval addressed water concerns via requirements for the construction and approved operation of run on and runoff control systems prior to waste being placed in a stage, large storm-water retention ponds, a run on system to divert peak flow from entering the active portion of the runoff control system and a runoff system to preclude water from contacting the waste. The Director submits there is no evidence to suggest a link between the landfill and recharge of dugouts and groundwater. The Director

²⁴ Exhibit 11 - Jar of spillage.

²⁵ *Fenske v. Manager, Alberta Environmental Protection, re: Beaver Regional Waste Management Services Commission*, EAB 98-241-D (October 20, 1998).

questioned why, if shallow wells exist in the area, were dugouts used by the Appellants. The Director would have no objection to the monitoring of Ms. Fenske's dugout annually

[98] The Director said Mr. Moell's calculations and data from his short screen-length wells were not available when the Approval was issued but horizontal hydraulic conductivity values were based on worst case scenarios. The Director argues that although "certain chemical contaminants might diffuse and escape through a compacted clay liner this can in no way be suggested for microbial or colloidal particles". He said in contaminant migration that when one has "even relatively high hydraulic conductivity combined with the very low effective porosity associated with a fractured impermeable material, the result is much the same as having a very low hydraulic conductivity combined and a high intergranular porosity".²⁶ He said this means the "formation produces less water. That is to say it has low transmissivity".²⁷ The Director said the Approval requires a new groundwater monitoring program to provide a further safeguard should the leachate recirculation and liner fail to contain the leachate. He said, regardless, the hydraulic conductivity of the site was low and if all engineering measures failed, contaminant migration would be insignificant in velocity and/or quality. He based this on Mr. Shaw's evidence that two very large and deep excavations were made without intersecting any water producing formation and Mr. Moell's evidence of slow recovery of monitoring wells and the difficulties in purging the wells for sampling. He said, the Commission is required to address the Stage 1 landfill and develop a remediation plan.

[99] The Director clarified that although Mr. Epp said he could not conduct a thorough review due to the poor quality of the original submissions and thus recommended the application for expansion be denied, he did not say he had reached conclusions on the site. The Director, Mr. Shaw and Mr. Leskiw all agreed there were questions, hence the Director sought the advice of Mr. Stein. Thus the Director summarizes after careful review of information presented and based in part on information collected by the Department, he concluded there was sufficient understanding of the

²⁶ Closing Arguments of the Department dated June 4, 1999, p. 8, #64.

²⁷ Closing Arguments of the Department dated June 4, 1999, p. 8, #64.

site groundwater regime to proceed with an Approval. The Director submits he also relied on an engineered liner (greater than 1 m thick, hydraulic conductivity not exceeding 10^{-9} m/s tested with in situ disc permeameters) and the leachate management system. This system includes an accelerated leaching process to assist in degradation of cell material, high chloride limits to ensure proper disposal of contaminants, leachate recirculation and leachate depth no greater than 300 mm above the liner to ensure the liner retains the leachate through an inward hydraulic gradient.

[100] The Director argues the Appellants did not present a causal link between their health and the landfill. He did not think the papers presented by the Appellants showed any conclusive links between landfills and health impacts. He thought these papers had difficulties with inadequate measurement of exposure, control of confounding factors and specificity; they were also on sites “drastically different” from this one.²⁸ He suggests that even if the papers were validated, it appears from the Hertzman study the level of risk approaches background conditions at approximately 500 m. The Director suggests gaseous subsurface emissions, such as that of methane, will not occur because the liner prevents it. If it did occur the dangers would be only felt within 50 to 60 m of the landfill. Non-methane organic compounds were at very low part per billion levels and thus EPA regulations would make the site exempt from the installation of a gas control system.

[101] The Director indicated allegations had been made that the Approval was processed in haste without due consideration. The Director states this is obviously not so given the vast amount of information required by the Director. The Director asserts phased projects are appropriate and not new and allow a developer a degree of certainty of the project.

[102] The Director said there is no evidence to support the statement that the landfill significantly reduced the value of the property of adjoining residents. The Director accepted the statement from Mr. Glombick that risk assessment, including environmental risk, is a factor in a bank’s lending practice. He believed it unfortunate the Appellants had not provided a professional environmental assessment as evidence. The Director said there was no evidence to indicate Mr.

²⁸ Closing Arguments of the Department dated June 4, 1999, p. 13, #108.

Garstad was refused loans due to environmental risk. There was also no causal link established between the landfill and the Mizera's boarder leaving.

[103] The Director argues the activity was not one for which an EIA was mandatory. He further noted the activity had been occurring on the site for a long time. There was no evidence the number of environmental effects were increasing. He did not think it necessary to call an EIA since the impacts of landfills were well known as were the needs for the landfill. The Director concludes that more steps than required by the Act were taken to understand the concerns of people who had filed Statements of Concern. An EIA would not have added further value to the process.

[104] The Director said little or no weight should be placed on the Montague tape, Dr. Putt's examination of the liner sample, Dr. Argo's groundwater evidence, Ms. Biggin's evidence and Mr. Bronaugh's groundwater and hydraulic conductivity calculations since these people are not experts in the respective fields and/or there were issues in sample collection, lack of applicability to this site and lack of availability for cross examination. He indicates the issue of sewage grit from Vancouver in the landfill is being examined by the Director and is a question of interpretation. He does not believe the produced sands are a hazardous waste nor dangerous oilfield waste.

[105] The Director believes the Approval contains appropriate conditions to safeguard the environment and to mitigate any environmental consequences of the activity in question. In coming to that decision he relied upon the professional judgement of his experienced staff and other professionals, all who were available for examination and cross examination. The Director submits the Appellants did not raise any environmental concerns he did not consider and address. The Director said the onus is on the Appellants to show there is some major flaw in the Approval from an environmental perspective and he does not believe that has been done.

C. The Approval Holder

[106] The Commission indicated a multiple barrier concept was employed for on site litter control. Past efforts included collecting litter from properties directly affected during severe winds

and reacting efficiently to complaints. Checking along Secondary Highway 854 was not done as under normal operating conditions litter would not travel that far from the site. The Commission deduced poorly tarped trucks were the source of the most chronic impact. They noted these trucks were not owned by the Commission but they have taken steps to alleviate the issue. These steps include rejecting poorly tarped trucks at the landfill, collecting litter from properties impacted by transfer activities and monitoring litter along portions of Secondary Highway 854 and Highway 14.

[107] The Commission argued that some noise is not preventable. The backup alarms are required by law for the safety of personnel working on site. They said landfill hours of operation for the public were 7 am to 7 pm but other noise activities in the area, such as farming, had no time restriction. They noted other noise sources in the area included Secondary Highway 854 carrying other truck traffic and the CN rail line paralleling Highway 14. The Commission indicated it and the Village of Ryley may consider asking drivers on Secondary Highway 854 to refrain from using engine retarder brakes as they approach Highway 14.

[108] The Commission argued the landfill is not the sole source of odour in the area. Other odours include the sewage lagoon, a hazardous waste landfill, agricultural burning and livestock operations. They pointed out that neither the Ryley or West Edmonton landfill sites had a higher incidence of sick time than typical industry standards with people who worked closest to the odours.

[109] The Commission argued they demonstrated a proactive philosophy in monitoring surface water and groundwater on neighbouring properties by sampling in June 1998 without being required to. They argued there is potential for water quality in nearby dugouts to be impacted by agricultural activities and submitted dugouts were not a suitable water source for domestic use. The Commission said the surface water quality was protected by the segregation of potentially contaminated runoff and clear runoff. Because the groundwater level is greater than 3 m below surface swales, there is no hydraulic connection through which groundwater could contaminate surface runoff and drain off site. They also noted the small area of diverted runoff, formerly ponded at the west landfill berm, is from pasture and croplands. They said the small area draining to Township Road 502 as a result of the 1998 diversion channel historically drained to the northeast

corner of the section, not south to Bible Creek as suggested, due to a natural divide through the center of Section 10. They said the new channel minimizes local ponding where the landfill berm blocked the natural flow path. The Commission suggests if Ms. Fenske continues to be concerned about diverted water, there is “no apparent reason why the culvert that crosses the road in front of her house could not be removed and the water directed further east along the road ditch to reconnect the original drainage course”.

[110] The Commission argued surface water may only be released from storm ponds (clean runoff) into Bible Creek on the Commission’s land via a *Water Resources Act* permit. This permit requires the water be tested, the Department be notified and the discharge occur at a time when it is not adversely affecting farming activities of the downstream land owners. They reiterated that leachate is recirculated but once the chloride limit is reached the leachate will need to be removed and disposed of. The Commission and the Operator began investigating options for the management of leachate last year as a proactive step. To date, no leachate or effluent had been discharged from the landfill site.

[111] The Commission reiterated hydraulic conductivity values were one of several hydrogeologic considerations in determining site suitability. Hydraulic conductivity tests were performed on 25 piezometers to depths of 8 m. They stated a standpipe piezometer is used primarily to determine pressure head at a single point in the subsurface at a specific depth, usually to determine groundwater flow direction. Because screen added to conduct hydraulic conductivity tests can spoil pressure head measurements, screen lengths must be minimized to obtain accurate measures of pressure head. The Commission argued short screen lengths are needed to measure extreme values of hydraulic conductivity which are the only important measurements in site assessments. Long screen intervals would provide a homogenized hydraulic conductivity value (bulk hydraulic conductivity). The Commission argues Mr. Moell’s 1983 objective was to measure pressure head and to use the piezometers to determine maximum values of hydraulic conductivity for the geologic deposits in which the piezometers were located.

[112] The Commission said the possibility of leakage cannot be discounted from Mr.

Moell's B-depth wells. They further argue only 2 wells yield data to indicate fracturing. Both of these wells are located on the west boundary of the landfill adjacent to the groundwater interceptor trench. The Commission argued that flow to a well screen from heterogeneous, stratified and semiconsolidated sediments of low hydraulic conductivity will occur exclusively horizontally because of the strongly anisotropic nature of the deposits. Thus Mr. Moell considers them vertically impermeable with resultant hydraulic conductivity values reasonably represented as K_h . The Commission says it is a moot point since recalculated values from Mr. Bronaugh are not substantially higher than those originally determined by Mr. Moell. Mr. Stein is of a different opinion; however, the Commission notes he was not involved in any field activities but only reviewed reports of others. The Commission submits that since fractures visually encountered by Mr. Moell in boreholes were scattered and isolated in the quarter section, it is reasonable to conclude the weathered zone is not extensively fractured and does not readily transmit groundwater. The absence of groundwater inflow into cell 3 at the time of excavation further supports this. The Commission also argues Mr. Moell provided geologic maps and cross sections for the full quarter in his 1999 report and made no admission that the geology was not well known.

[113] The Commission argued Mr. Bronaugh's assessment of fractures in the upper bedrock and till is anecdotal, likely referring to the Laidlaw Environmental Services (LES) site. They said Mr. Moell reported a weathered zone is present beneath the entire quarter section and fractures were occasionally detected in that zone, both visually and from hydraulic conductivity tests.²⁹ They state this weathered zone contains little groundwater and because it is highly mineralized is not representative of an active groundwater system. They argue because the zone is thin and near the surface it can easily be isolated by groundwater dams and cutoff walls. Further to this it is slated to have new groundwater monitor wells installed.

[114] The Commission said the evidence presented at the hearing that shallow wells were in abundance in the area is simply hearsay of an anecdotal nature, with no actual data to substantiate it. They question that if shallow water was so prolific in the area it would seem reasonable for local

²⁹ Written Submission of BRWMSC, March 5, 1999 enclosing Report of C.E. Moell and Associates Ltd. "Hydrogeologic Characteristics of the Ryley Regional Landfill Site" dated February 24, 1999.

residents to drill instead of using dugout water. The Commission said no evidence was given that they are in an environmentally sensitive area. Beaverhill Lake, which is an important environmental area, is about 15 km downstream and was considered remote at the LES Landfill hearing in 1997. They addressed the Appellants' concerns about cumulative impacts by saying the entire site was modeled for groundwater and atmospheric emissions. They suggested Dr. Argo's testimony should be considered anecdotal only and there was no proof the Fenske dugout was groundwater fed. The Commission submitted the assertions of Mr. Wilde about leachate chemistry being similar in both hazardous and nonhazardous landfills were unfounded.

[115] The Commission argued the Operator began to explore landfill gas management options in 1998 and there was time to properly address the issue. They argued a system designed and installed now based on theoretical values and modeling pose more of a threat to safety and the environment since it is grossly over or under designed. They said few landfills in Canada install gas collection systems during the design or construction phase. They reiterated they continue to support the trigger of 150 t of non-methane organic compounds in spite of the change of policy to 50 t in the EPA regulations. They further asserted the landfill is in the initial stage of landfill maturation with largely aerobic conditions and levels of oxygen and nitrogen are at peak making total gas generation low. They said the collection and treatment of landfill gas requires application of a landfill cap and installation of gas collection pipes, wells and trenches. Thus they support the Department's progressive nature of the Approval. Further, the application commits to monitoring and testing of gas generation rates and composition after the first cell is closed.

[116] The Commission argues that they have met the set back requirements of the Subdivision and Department Regulation of the *Municipal Government Act*. They argue the papers recommending larger buffer zones are not applicable since the sites researched were very different than Ryley. That notwithstanding, they contend this is a land use matter.

[117] The Commission asserts the presence of the landfill "may or may not have an effect on property values in the immediate area" and it "may or may not have an effect on the ability of

property owners to use their equity in their property to secure loans".³⁰ The Commission argues no clear evidence was presented to support the Appellants' claims. The Commission further states that notwithstanding, this is a land use issue beyond the purview of the Board.

[118] The Commission indicated the sewage grit acceptance was actually reported and referred to in the monthly report of the Operator. The Commission clarified Mr. Shaw did not order the Operator to stop receiving the material. He only informed Mr. Deagle the Department was considering the material as a "borderline" waste stream.³¹ The Department had not and has not made any decisions regarding receiving of this material. The Commission indicated the produced sand received prior to the Approval issuance had been stockpiled on site as a supply of cover material. The Commission said the Approval set acceptance conditions for oilfield waste that are more stringent than any criteria in Alberta and the Operations Plan mentions this waste stream and suggests acceptance criteria and site management for it. The Commission and the Operator jointly requested the Board to lift and eliminate the restriction on produced sands or hydrocarbon contaminated soil of 5,000 ppm chlorides and 30,000 ppm hydrocarbons.

[119] The Commission argued the landfilling into cell 1 was viewed as an operational mistake when it was actually a preventative maintenance measure. They said less than 50 t of waste was deposited in the cell to fill an open end of a trench to stop water ponding in that depression. They noted the cell had never been closed and under the terms of the original permit could continue to operate indefinitely, or until it is not used for a period of more than 2 years.

[120] The Commission argues that rumble strips were not installed as required since removing the truck traffic from the road eliminated their need. The tree planting and berm development required by the Development Appeal Board was still considered a matter of legal contention. They argued the construction of the berm is contrary to provisions restricting sight lines at roadway intersections and there is a gas pipeline in the northeast corner of the quarter.

³⁰ Closing Arguments of the Commission dated June 4, 1999, p. 19, #6(i).

³¹ Closing Arguments of the Commission dated June 4, 1999, p. 21, #7(i).2.

[121] The Commission submits the Montague tape and the liner sample should be dismissed as irrelevant to this hearing due to how the sample was collected and the general nature of the video. The Commission argues no evidence was introduced to support health issues of the Appellants were linked to the landfill. They argued Mr. Mizera "...alluded to water filled trenches and massive infiltration into the trenches when he used to haul garbage to the site many years ago. This may or may not be the case.... There was no evidence of any free water during the excavation of cell 3 in 1998."³² The liquid spills alleged by Mr. Mizera were not tested and appeared to be petroleum based, possibly an asphalt sealer or primer for roadway paving. The Commission said the reduction in native bird species due to the gull population increase "may or may not have occurred". The Commission argued the drainage ditch was closer than 300 m to the landfill but since the ditch is not a permanent water body the 300 m restriction does not apply. They said a Liaison Committee was now in place and functioning. The Commission still asserts that an EIA was not required since none of the issues raised were new and an EIA would not have accomplished anything. They further submit an offer of a water supply to Ms. Fenske was made, land management personnel training was ongoing and there was a defined need for the landfill expansion. They alleged the Board was aware of the potential volatile nature of some of the participants towards the Commission or it would not have had an undercover armed security guard in the audience during some portions of the hearing.³³

[122] The Commission concluded final arguments by saying the Approval was issued as a very demanding performance based document requiring the Commission to continually prove its performance in accordance with the design requirements through rigorous monitoring and reporting. They argue the permit is undoubtedly the most rigorous and thorough landfill permit ever issued in Alberta and probably in Canada. In meeting these performance requirements, this landfill ranks as one of the best in the world. They submit the Director did not err in issuing the Approval and in so doing followed all terms and conditions of the Act. The Commission argued the Appellants did not

³² Closing Arguments of the Commission dated June 4, 1999, p. 27, #11(k).

³³ Addendum to Closing Arguments of the Commission, p. 2. In fact, contrary to the submission of the Commission, there was no armed guard present at the hearing.

satisfy the burden on them to prove this decision was wrong or improperly issued.

D. The Intervenors

[123] Mr. and Ms. Garstad reiterated the considerable stress the landfill has caused them and their family. They clarified that the Commission negotiated a move to property near Camrose that was subsequently abandoned when Mr. Garstad made a presentation at a Commission meeting that offended Commission members.³⁴ They were offered a written document two months later that they did not accept because it was too open to interpretation. They also submitted they were unable to use their property as collateral to consolidate the family's debts due to location to the landfill.

[124] Mr. Wilde, representing Mr. and Ms. Garstad, argued the Garstads need financial compensation for documented impacts. He further indicated project justification was not likely if the landfill was accepting waste from outside Alberta and there was no long term financial viability evident for the landfill. Mr. Wilde further suggested cumulative impacts of the landfill be addressed. He points out the distance calculations to the various Appellants' residences do not use the same point in the landfill and questions the rationale for that.

[125] Ms. Booth reiterated the issues before the Board and how they have impacted her and her family. She stressed the importance of no EIA and no off site monitoring of the issues. Ms. Booth questions the delay (September 1, 2001) in requiring supervision of landfill daily operations by certified operators and landfill reports being required only annually. She indicates the difficulty with the inability to use her home property as collateral for a loan due to the environmental risks associated with the landfill next door. She is asking for replacement cost value for their property and home so they could successfully relocate.

³⁴

Closing Arguments of the Garstads dated May 28, 1999, p. 2, #4.

VI. FINAL REPLIES FROM THE APPELLANTS

[126] Mr. Bronaugh questioned evidence presented by Mr. Shaw in the context of his being proclaimed an expert in a large number of areas including: noise, odour, methane generation, leachate chemistry, epidemiology, buffer zones, enforcement, oil waste sand. He said doing standard calculations from a book formula (as done with noise) could hardly qualify as paying attention to serious issues. He was concerned the Commission appeared determined to pursue the dumping of sewage grits into the landfill. He further questioned the observation that groundwater did not enter the large excavation, since it would have been prevented by the large interceptor trench.

[127] Mr. Bronaugh questioned the Commission's lack of acceptance of evidence by the Appellants related to gull problems, litter, dugout filling and shallow wells. He also questioned the value the Commission will not place on Dr. Argo's observations during a visit to the landfill and his emphasis on the seriousness of the problems based on his prior experience. He questioned the validity of accepting Mr. Moell's 1999 data from 80 and 50 cm piezometers when his earlier shallow well values were rejected since the Department believed they were likely to intersect fractures. Mr. Bronaugh further questioned the Director's final argument about low transmissivity in the material since hydraulic conductivity measures the rate which water moves through a material, whether through fractures or between grains. He further pointed out that permeability denotes a characteristic of water bearing material while transmissivity denotes the analogous characteristic of the water bearing unit. He said his hydraulic calculations were twice as high as those of Mr. Moell, not close.

[128] Mr. Bronaugh submits Alberta Environmental Protection made dangerous and irresponsible assertions concerning the site. He said he has proven this through pointing out inconsistencies and oversights, correcting errors and drawing attention to the meaning of evidence. He concludes the evidence does not always support the Department's position. Finally Mr. Bronaugh continues to assert that much of the evidence presented by the Appellants is indeed evidence not hearsay. Mr. Bronaugh expressed concern that Mr. Lloyd had a "great capacity for

unawareness".³⁵ He said the reason the buffer zone was such a big issue is because it offered a mediated solution to the appeal and it could deal with many of the issues at hand.

[129] Mr. Glombick said it is not normal practice for a bank to seek an environmental assessment from a professional immediately without first assessing the risk internally. He said on the bank site inspection prompt form, landfill nearby is specifically listed. He said anything related to waste management, waste collection/disposal and waste storage has a high risk in land contamination, waste management, emissions and incidents. He said he has been a banker for 20 years and knows the landfill site as a neighbour property falls in the unacceptable environmental risk category. He submits the director gave no contrary evidence. He said only the establishment of a larger buffer zone will deal with the issue, as land 1 mile away would not have as severe increase in environmental risk. Mr. Glombick reiterated that a buffer zone was also the only solution for the fact that he will be within 200 m of future development in the landfill.

[130] Mr. Glombick further states he is not satisfied with the response from the Director or the Commission on landfill gas management. He said Mr. Shaw suggests gas generation in Alberta is much slower due to climate while on the other hand suggesting recirculation of leachate will accelerate the degradation and gas generation process. He concludes the landfill is a business not a "noble necessity" as suggested and the property owners should not have to suffer for the proponents to realize economic benefits.

[131] Ms. Fenske reiterated the unacceptable piecemeal approach of the Approval and disputed numerous claims of the Director and the Commission including the following. Testimony was given about blown garbage and gull infestation in the diversion ditch³⁶ therefore it could not be called clean water. Ms. Fenske said she never received a purchase offer for her land. Ms. Fenske indicated it was interesting to note the Commission's point that it reported this sewage grit to AEP in its 1998 annual report and monthly reports, while at the hearing the Director and his staff

³⁵ Reply to Closing Argument from Bronaugh dated June 11, 1999, p. 9, #135.

³⁶ Reply to Closing Argument from Ms. Buss dated June 15, 1999, p. 6, #159.

appeared to have been unaware this was occurring. Certainly it reinforced her concern that the Department does not have the resources to monitor the operations of a landfill properly, including the review of monthly reports. She said the fact that the Commission will not commit to close cell 1 belies their concern for the environment and their repeated reliance on the Vegreville Health Unit assertion that a new regional landfill would be in the interest of public health because of the risks associated with the original unlined cell. She argues the testimony of the Appellants is evidence. Ms. Fenske said there is still no evidence of any written or documented offer of any kind from the Commission or the Operator to the Fenske family. The fact that Mr. Wright testified that the Commission compensated one farmer for the loss of a cow is evidence that the landfill has an adverse effect on livestock. She concludes by saying the best solution is the creation of a buffer zone that will eliminate residences and farm operations within the quarter section surrounding the landfill.

[132] Mr. and Ms. Garstad reiterate the statements by other Appellants that their testimony under oath is direct evidence. Ms. Booth said she believes a photograph speaks a thousand words.

VII. CONSIDERATIONS AND CONCLUSIONS OF THE BOARD

[133] The Board heard testimony from a variety of parties: government officials and the Commission with many years of administration and/or technical experience and education; the Appellants with a diverse background of experience and education such as a banker 20 years experience, farmers who have worked the land and managed livestock for collectively hundreds of years, people who have lived in the area and know its history, people who have worked in the waste industry in numerous capacities. Consistent with Board procedure, these people presented evidence under sworn oath or affirmation. Throughout the proceedings of these appeals, numerous individuals disputed each other's qualifications and thus credibility of their evidence and cross examination. This was especially apparent with the Commission and the Department as they discussed evidence presented by the Appellants, saying they were not experts in the various fields and hence their evidence should carry little or no weight in the Board's decision making process.

[134] The Board considered the definition of expert. The Canadian Oxford Dictionary defines expert as “having special knowledge or skill in a subject”. The legal definition is “one who is knowledgeable in specialized field, that knowledge being obtained from either education or personal experience”.³⁷ The Board believes the Appellants’ participation is critical to a fair and balanced hearing. Private people speak to values more than to technical issues and their participation avoids the intellectual vacuum of closed door thinking. They help ensure government and other agencies are aware of and accountable to changing public needs. Perhaps most importantly in these appeals, local individuals can share unique facts about the proposed project site. Thus the Board will view evidence provided by anyone without a job title or a formal education in the same way as from someone with those credentials, assuming each are professing expertise in appropriate areas.

A. Focus Issues Of The Hearing

[135] When considering the plethora of information before it, the Board first focused its assessment on the issues it set for the hearing: (1) litter and waste spillage, (2) noise, (3) odour, (4) surface water and groundwater quality, (5) health and quality of life and (6) buffer zone.

1. Litter and Waste Spillage

[136] The Board believes the Appellants presented compelling evidence that litter was an issue. Mr. Mizera, Ms. Fenske and Mrs. Booth all provided dated pictures from various locations

³⁷ H.C. Black et al., *Black’s Law Dictionary*, 6th ed. (St. Paul: West Publishing Co., 1990) defines “Expert” as:

“one who is knowledgeable in specialized field, that knowledge being obtained from either education or personal experience. *Midtown Properties, Inc. v. George F. Richardson, Inc.*, 139 Ga.App. 182 228 S.E.2d 303, 307. One who by reason of education or special experience has knowledge respecting a subject matter about which persons having no particular training are incapable of forming an accurate opinion or making a correct deduction. *Balfour v. State, Ind.*, 427 N.E.2d 1091, 1094. One who by habits of life and business has peculiar skill in forming opinion on subject in dispute. *Brown v. State*, 140 Ga.App. 160, 230 S.E.2d 128, 131.”

showing extensive littering. Mr. Mizera, under oath, said he followed the truck dripping the sample he collected to the landfill.³⁸ The Board accepts the evidence of the Appellants in spite of the admonition from the Commission that the sources of litter and waste could not be proven. The Board believes the Appellants would not be able to reasonably present any more proof than they did.

[137] The Commission and the Department indicated litter and waste spillage were dealt with appropriately in the Approval. It is evident to the Board the mitigative measures in the Approval are no different than measures supposedly already in place in the current operation. As indicated in the memo from the Public Health Unit, the litter issue could be dramatically reduced with better management.³⁹ The Board submits the Approval should include specific statements about areas to be routinely checked and the checking procedure. It seems there are different interpretations of immediate from “right now” to “the earliest point it is convenient”. The Commission and the Department both reminded the Board there was also a legal definition of immediate.⁴⁰ The litter management plan should indicate specific time periods to check litter routinely, after major events such as storms and within a specific number of hours after hearing a complaint. In spite of this, there appears to be no doubt there are litter impacts which no amount of management efforts can eradicate. Litter does and will continue to impact adjacent land owners. The Board decided that a larger buffer zone would further mitigate the litter issues associated with the site and stricter specific controls on hauling trucks could better mitigate the roadside litter.

2. Noise

[138] The Board agrees with the Appellants that noise from the site should actually have been measured not just “calculated”. The Board agrees with the Commission that backup alarms, although they generate noise, are necessary for safety. The Commission indicated it may consider

³⁸ Exhibit 11 - Jar of spillage.

³⁹ Documents Subject of the Appeal, Tab 23, Letter from Lew Goddard, Community Health Services, Area 1, to Mr. John Shaw, Environmental Regulatory Services, dated November 25, 1997.

⁴⁰ *Supra*, note 14.

asking truckers to eliminate use of engine retarder brakes. The Board suggests they do more than “consider” it. However, noise emanating from passing trucks or machinery dispersing the garbage can be heard regardless of noise standards and mitigative measures. Adjacent landowners bear the burden of listening to the noise during the hours of operation. The Board submits that a larger buffer zone is necessary to mitigate noise.

3. Odour

[139] The Appellants, having lived in the vicinity of both the sewage lagoon and the landfill have sufficient experience to differentiate a typical sewage lagoon smell from a landfill smell. The Board believes they have correctly attributed smells directly to the landfill. Ms. Rudnitski commented that the face of the working area was often very large prior to the new management on site, thus contributing to the potential for odour. Thus the Commission needs to have specific conditions in the Approval that dictate the size of the working face and the time period within which odourous garbage would need to be covered. As in the litter issues, the Board submits that the Approval is no different than the one the Commission is operating under now and as such the problems are not mitigated as well as they could be. Like litter and noise, odour is negatively impacting adjacent land owners. Without mitigation, no amount of management efforts are going to eliminate this impact on their quality of life. Thus the Approval needs specifics to mitigate odour issues, including a larger buffer zone.

[140] The Department indicated that an Approval cannot specify everything and that there is a need to be flexible. The Board believes in this case the need for specificity is warranted by the poor track record of the Commission.⁴¹

4. Surface Water and Groundwater Quality

[141] Surface water and groundwater were addressed in great detail in the Approval in the

⁴¹ Note this poor track record was commented on by others as well as the Board.

Operations Plan and in the hearing. However there is still missing information relative to what the Director said he required to review the application. The Board is also concerned with the inconsistencies and contradictions in the data and interpretations from the experts. This will be dealt with in more detail in the following sections of this Decision. In conclusion, the Board agrees with the staff of the Director, that more studies are required.

5. Health and Quality of Life

[142] The Appellants tried to show a causal link with their health and the landfill. They indicated a wide range of health effects they believe are influenced by the landfill such as asthma, headaches, dizziness, nose bleeds. None of them had conclusive proof of a causal link to the landfill; none of them had written medical reports to show a causal link. They did however substantiate their illness on numerous occasions indicating particular dates and times at which medical conditions were aggravated due to landfill activities. The Commission and the Director did not present any evidence to show that the landfill did not cause such symptoms. The Commission indicated the landfill personnel did not have an unusual health record. But the Commission did not prove this with medical reports and direct links to show working in the landfill does not affect health. They did not compare landfill worker days of absence or illness with other workers not at the landfill. While there is not enough information to make an informed decision on this issue, it would be difficult to disagree with the Appellants' observation that existence of the landfill is causing a great deal of stress to the adjacent landowners. Stress effects on human health have certainly been well proven in the medical literature and were discussed in Dr. Vos' cross examination of the Appellants where they all testified to the toll this stress has taken.

[143] The Board has also considered evidence dealing with the health effects of the landfill related to seagulls and domestic animals. The Appellants provided evidence that large flocks of seagulls occupied their land and the landfill.⁴² The impact of the gulls on human and animal health

⁴² Exhibit 19 - Pictures of wind blow litter, odour, wind blown litter and gulls and east end of melt water channel; Exhibit 20 - Pictures of odour(s) due to lack of daily intermediate cover and wind blow litter and gulls and gull fecal matter, Exhibit 21 - Pictures of flooded melt water channel

was addressed in oral and written submissions and the Board accepts the connection between the landfill and the Appellants' alleged problems in the landfill area. The Board also accepts that seagulls are predatory on other wildlife and thus the Appellants' observations about reductions in duck populations may be founded in fact.⁴³ The Board believes this issue should be better addressed in the Approval after consultation with personnel from the Canadian Wildlife Service and Alberta Fish and Wildlife and other experts in the field.



Closing Argument of Cindy Booth, page 3: Picture of sea gulls flocking around the Booth Residence

1999, litter 1996, gulls 1999 and D. Booth dugout 1999, 1999 water(s) blocked by berm and gulls, 1999 winter view from Booth home; Exhibit 45 - Pictures from Cindy Booth, envelope titled mitigation and visual impact.

⁴³ Documents Subject of the Appeal, Tab 27, letter from Mr. Daryl Cole to Mr. Doug Jeremy dated February 12, 1998, stated:

“A factor that may be of some concern is the large concentration of seagulls drawn to the landfill. Being opportunists in nature these large concentrations may have some detrimental effects on nesting waterfowl and upland birds in the immediate area and along travel corridors between Beaverhill Lake and the site.”

[144] The Garstads indicated they had an abnormal foal and a dead foal born and attributed this to landfill issues. They had no veterinary report to support their allegation. Mrs. Booth said her foal had diarrhea after drinking dugout water. Although she did not have a written report from a veterinarian she did say the veterinarian said it could be attributed to seagull fecal matter contamination of the dugout. Mr. Wright indicated the Commission had paid someone for an animal that died from ingesting garbage. The Board believes these animal health effects need to be considered in further detail and also dealt with in the Approval after consultation with Alberta Agriculture, Food and Rural Development personnel and other experts in the field.

[145] The Board also heard from Dr. Argo and the Appellants who presented numerous papers about the potential health effects of living near a landfill. The Commission and the Director indicated these papers and Dr. Argo's evidence were not applicable to this hearing in that they were not specifically from the Ryley site. But the Board accepts this information as a general indicator that health effects can be experienced by people living next to a landfill and it should be addressed better in the Approval through development of a larger buffer zone and other mitigative measures such as a gas management plant.

6. Buffer Zone

[146] The buffer zone has been a most contentious issue. The Commission and the Department essentially state the Board does not have jurisdiction to deal with this. The Board allowed the topic inclusion at the hearing because all parties had addressed it previously and it was directly connected to issues that were indisputably before the Board. While compensation is beyond the jurisdiction of the Board, the Board agrees with the Appellants that the best solution would be to have the quarter section on either side of the landfill under the ownership of the landfill company. This would appear to eliminate almost all of the so called nuisance issues and some of the more substantial health issues. It would also address the issue of declining property value.

[147] The discussion of the set back area was of further interest to the Board. The Commission presented evidence that each of the Appellant's residences was within the 450 m set

back distance specified in the Approval. The Commission and the Department gave no explanation for the calculations from different points in the landfill to the Appellants' residences. Nor did they explain the reason for accepting a 200 m distance in the case of Mr. Glombick. They said the current active area was greater than 450 m from Mr. Glombick's property. However, they did not address the issue of the future cells that would be 200 m from his cottage. The Board concludes this must be dealt with appropriately in the Approval. The Board believes Mr. Glombick uses the property as a residence, albeit for short periods of time, and that he stores and prepares food material (e.g. honey) on the property. Thus the required buffer zone area will need to be implemented.

[148] Notwithstanding the fact that purchasing a buffer zone is not within the jurisdiction of the Director and the Board, the Board does not agree with the argument of both the Commission and the Director that the financial impact to adjacent landowners cannot be proven. The Board accepts the testimony of Mr. Glombick, a senior bank executive, that this is a real issue. The Board accepts the testimony and evidence⁴⁴ of Mr. Garstad regarding devaluation of his property for tax

⁴⁴ Written Submission of the Garstads dated March 8, 1999, p. 1-2 stated:

"The Garstads applied to five different financial institutions for a loan pledging their land as security. The five banks are as follows: the Toronto Dominion Financial Group (TD), the Alberta Treasury Branches (ATB), the Bank of Montreal (BM), the Canadian Imperial Bank of Commerce (CIBC) and the Farm Credit Corporation/Societe du Credit Agricole (FCC/SCA). All five turned down the Garstad loan application. The letters of refusal were written between September 24, 1998 and October 23, 1998. The following are key phrases:

- TD: 'due to the location of the property and without conducting further environmental due diligence, we are unable to proceed...'
- ATB: Three requirements: including Satisfactory Phase 1 Environmental Study
- BM: 'declined due to environmental issues due to land bordering an existing landfill site'
- CIBC: Required: a Phase 1 environmental study '...due to proximity of a provincial landfill site to land that may be used as caveat security by CIBC.'
- FCC: 'The environmental risk associated with the security being offered is too high...'"

"All banks cite a perceived environmental liability/risk associated with the location of the Garstad property - proximity to the BRWMS industrial landfill. In every letter, the manager uses the root word 'environment' whether in terms

purposes and the association of the landfill and his denial of a bank loan.

B. Completeness Of The Application

[149] The Board will now focus its assessment on whether the Director had a complete application before him when he issued the Approval, whether he now has all the required information, and therefore whether he was able to make a completely informed decision.

[150] The Director is required to review a “complete application” prior to making a decision.⁴⁵ This was not done, although the Director notified the applicant in writing⁴⁶ that numerous pieces of information were required before the application could be considered complete. The

of environmental issues, environmental risk, environmental due diligence or requirement for a Phase 1 environmental study. All managers link proximity to the BRWMS industrial landfill with a potential environmental liability. And one level of government has acted on similar assumptions - the financial/assessed value of a (Garstad) property in the County of Beaver has something to do with its proximity to a landfill.”

“In 1996, the County of Beaver assessor deemed the Garstad property a “disadvantaged area” relative to other County properties. The reason for this devaluation is clear - proximity to land under land use bylaws permitting discretionary use as an(sic) major regional industrial landfill. It is not clear whether the assessment relates value to property aesthetics or to the potential for environmental contamination and adverse impacts to human health. In this case, the effect is the same; the Garstads can no longer expect financial terms comparable to those - so far - available to their neighbors.”

⁴⁵ Approvals and Registrations Procedure Regulation, A.R. 113/93:

1(c) “complete application” means an application, including additional information submitted under section 63(2) of the Act, that, in the Director’s opinion, is sufficiently complete to enable the Director to commence a review of the application under this Regulation.

4(1) The Director shall not review an application for the purpose of making a decision until it is a complete application.

⁴⁶ Approvals and Registrations Procedure Regulation, A.R. 113/93:

4(2) Where the application is not complete, the Director shall notify the applicant in writing and request the information necessary to make the application complete.

evidence strongly suggests that not all the Director's concerns were addressed. This is borne out in the numerous memos from his own staff as well as in the gaps in the Approval. The Board is aware that numerous places in the Act and the Regulation use the phrase "in the Director's opinion" and the Regulation gives the Director the right to "...waive any of the requirements of subsection (1)(a) to (q)"47 However, it is the opinion of the Board that the Director must be accountable for such decisions and in so doing, must give adequate rationale for them. In many cases the Board was not satisfied with the evidence provided for the Director's decision.

[151] The Board goes back to the beginning of the application process to assess the completeness of the application. The Director was advised by several Department personnel at the beginning of the application review that the application was incomplete. He was further advised as addendum material came in from the Commission that numerous points had still not been addressed appropriately and in some cases were more confusing than before. What follows are some examples of this in the review process.

[152] Ms. Beverly Anderson, the Regional Coordinator, reviewed the application at the request of Mr. Inkpen. In a memo to Mr. Inkpen dated October 27, 1997, she indicated the application lacked a proper and detailed reclamation plan.⁴⁸ She pointed out the contradictory nature

⁴⁷ Approvals and Registrations Procedure Regulation, A.R. 113/93.

⁴⁸ Documents Subject of the Appeal, Tab 21, memo from Ms. Beverly Anderson, Regional Coordinator to Mr. Wayne Inkpen, Director, Environmental Regulatory Service, dated October 27, 1997, p. 1 states:

"Section 2.6 (p. 8, Feb. 1997 Application) discusses the distribution of soil orders. Was a soil inventory map prepared that shows the location of the Solonetzic, Chernozemic and Gleysolic soils? After the landfill is decommissioned what will be the likely soil types that the site will be reclaimed to? Will there be an attempt to replicate the same distribution of Solonetzic and Chernozemic soils? This appears to be the case from the recommendation to separate soil layers (e.g. topsoil or Ah horizon, saline/sodic B horizons and non-saline subsoil or B horizons). None of the material my staff read indicates a detailed reclamation plan discussing what the eventual reclaimed soils will be and what vegetation types the section will be reclaimed to."

of the revegetation discussion.⁴⁹ In that memo she also indicated numerous other things were missing or confusing including the proposed landfill design and surficial geology.⁵⁰ She also points out numerous errors or generalizations provided in the application.⁵¹ She indicated the location near

⁴⁹ Documents Subject of the Appeal, Tab 21, memo from Ms. Beverly Anderson, Regional Coordinator to Mr. Wayne Inkpen, Director, Environmental Regulatory Service, dated October 27, 1997, p. 1 states:

“Section 5.1(f) (p. 12, Feb. 1997 Application) lists the plant species such as timothy and alsike clover and their recommended cover that the site will be reclaimed to. This list represents agronomic, non-native forage species. This contradicts statements made in Section 5.1(a) which say the landfill area ‘will be revegetated to reflect the natural dry land habitats in the area’ and ‘that the most suitable end use for the site is one of a natural reserve’. A natural reserve should consist of native plants and the reclamation seed mix should consist of local, native tree, shrub, grass and forb varieties.”

⁵⁰ Documents Subject of the Appeal, Tab 21, memo from Ms. Beverly Anderson, Regional Coordinator to Mr. Wayne Inkpen, Director, Environmental Regulatory Service, dated October 27, 1997, p. 2 states:

“Where is the April, 1997 application and attached documents which the August, 1997 ‘Reassessment of Design for the Ryley Regional Landfill, Ryley, Alberta’ report supposedly supplements (refer to page 1)? Is the August, 1997 document considered the final or at least latest draft of the proposed landfill design and is it complete to stand on its own? What parts of the August, 1997 document supplement, supersede or overlap previous reports?”

“Is it possible that we have not been provided with the complete package of information. If all the material was made available maybe some of the comments indicated above may not have been raised.”

“Where is the Application that is referred to in the first paragraph of page 7 (Feb. 1997, *Application for an Approval Under the Alberta Environmental Protection and Enhancement Act*)? I am assuming these 14 pages are additional information to this Application which was prepared earlier (before Feb. 28th) and appears not be part of the information provided for us to review.”

⁵¹ Documents Subject of the Appeal, Tab 21, memo from Ms. Beverly Anderson, Regional Coordinator to Mr. Wayne Inkpen, Director, Environmental Regulatory Service, dated October 27, 1997, p. 2 states:

“This may be a minor point but what defines poorly developed local soils and poor vegetation (page iii). Solonetzic and Chernozemic are considered amongst soil scientists to be generally well developed with distinct A, B and C horizons. An example of poorly developed, young soil would be a Regosol. The term poor has no relevance in the document.”

“No reference was indicated as to where the physiographic subdivision names were obtained. Presumably these names came from the ‘Physiographic Subdivisions of Alberta Map’ compiled by Wayne Pettapiece in 1986.”

Beaverhill Lake was important to consider.⁵² The Board accepts the validity of Ms. Anderson's concerns about the incompleteness of the application.

[153] Alberta Environmental Protection Director Frank Cardinal indicated in a memo to Mr. Inkpen October 30, 1997 that it was clear from the application that the license issued under the *Water Resources Act* would need to be amended.⁵³ He said the amendments to the existing license would need to include an increase to the consumptive use of water including evaporation and the elimination of the works that allow discharge into Bible Creek.

[154] Mr. Lew Goddard with Community Health Services discussed Operator concerns with Mr. Shaw in a memo.⁵⁴ He made numerous references to past poor performance by the Operator and suggested this application and approval needed to be addressed in that light.⁵⁵ To that

“Why wasn't there a detailed inventory done on the surficial geology (Section 3.2.1, page 5) of the landfill area? It is very important to know exactly what type of deposits overlie the Section, and knowing that is it still a suitable site for a landfill?...”

“... How will the modifications to the surface and sub-surface flow from the landfill into ditches around the site, affect the soils in adjacent fields?”

“During the Closed Period (Section 5.1.2, page 22), will permanent wells be established to measure the water chemistry to make sure that harmful leachates are not entering the ground water even at this late date?”

⁵² Documents Subject of the Appeal, Tab 21, memo from Ms. Beverly Anderson, Regional Coordinator to Mr. Wayne Inkpen, Director, Environmental Regulatory Service, dated October 27, 1997, p.3 states:

“... The fact that the lake is only six miles from the landfill is significant.”

⁵³ Documents Subject of the Appeal, Tab 22, memo from Mr. Frank V. Cardinal, Director to Mr. Wayne Inkpen, Director, Environmental Regulatory Service, dated October 30, 1997.

⁵⁴ Documents Subject of the Appeal, Tab 23, letter from Lew Goddard, Community Health Services, Area 1, to Mr. John Shaw, Environmental Regulatory Services, dated November 25, 1997.

⁵⁵ Documents Subject of the Appeal, Tab 23, letter from Lew Goddard, Community Health Services, Area 1, to Mr. John Shaw, Environmental Regulatory Services, dated November 25, 1997, attachment “Application for Amendment to the Existing Operation Plan For the Ryley Regional Landfill Facility”, p. 2-3 states:

“... I suggest that this be studied very carefully in light of past performance.

effect he used very strong words like “I strongly recommend that you demand...” for dealing with the Operator/Commission. He also indicated design concerns that should be addressed with the engineer.⁵⁶ Mr. Goddard further indicated the old landfills probably contain hazardous wastes and suggested it be excavated to determine where the waste should finally be disposed of. He said it would be incumbent upon the management of both landfills to ensure there was no mix up in the disposal of different wastes. He also said, because the Ryley Regional Landfill is placed on the water table, that they should work to remedy justifiable concerns. The Board saw no evidence this had been taken into consideration. The Board concludes therefore Mr. Goddard properly believed the application was incomplete.

[155] The Board sees the above evidence as supporting a negative Operator track record that would imply very specific requirements should be in the Approval. This memo alone should have pointed the Director to section 6(2)(h) of the Approvals and Registrations Procedure Regulation.⁵⁷ The evidence does not indicate Mr. Inkpen did this. The Board notes numerous other

Surface water has gained access to the surrounding ditches and natural water drainage courses due to the inefficiencies of the operation, i.e. storing snow next to the county roadside ditch near the present entrance and scale house. On the east boundary, surface water from snow melt from the landfill property escaped into the roadside ditch and proceeded to cross private property. ...”

“...litter control was a problem often caused by the lack of managing the direction of the wind. ... It was not uncommon up to that point to see litter scattered across the quarter section to the north and west of the site. I strongly recommend that you demand the continual use of mobile and fixed litter control fences, and monitor it frequently. ...”

⁵⁶ Documents Subject of the Appeal, Tab 23, letter from Lew Goddard, Community Health Services, Area 1, to Mr. John Shaw, Environmental Regulatory Services, dated November 25, 1997, attachment “Application for Amendment to the Existing Operation Plan For the Ryley Regional Landfill Facility”, p. 2-3 states:

“... If a large amount of rainfall had occurred over a short period, this is the only situation which may create some diluted leachate and make it necessary to haul it away for final disposal. I suggest that you review this with the engineer.”

⁵⁷ Approvals and Registrations Procedure Regulation A.R. 113/93: section 6(2)(h) states:

6(2) A review may address the following matters, without limitation:

(h) The past performance of the applicant in ensuring environmental protection in respect of the activity.

indications the Director should have focused on section 6(2)(h). The Commission appears to be in violation of its development permit as modified by the Development Appeal Board in 1996. They failed to fully develop a berm with trees, grasses and a fence, install rumble bars or install a monitoring well on the Fenske home quarter. The Board can only conclude 6(2)(h) was not considered by the Director.

[156] Mr. Leskiw also expressed concerns about the environmental impact of the facility to the Director in a February 23, 1998 memo, after reviewing the supplementary material. He addresses several specific hydrogeologic concerns saying there was insufficient information to characterize the water table.⁵⁸ A full month later Mr. Leskiw still had five pages of specific concerns⁵⁹ and criticized the whole application⁶⁰ and his concern with it by stating. "I continue to

⁵⁸ Documents Subject of the Appeal, Tab 30, memo from Mr. Gene Leskiw to Mr. Wayne Inkpen, Director, dated February 23, 1998, p. 1 states

"...can they rewrite the rest of the report."

"The preamble re-enforces my assertion that the proponent technocrats have and are taking too narrow a view of the potential environmental impact of the facility."

"I do not consider the information provided in Figure 4.4 to be complete for making any conclusions (it is actually one person's interpretation of very limited field data)."

"Two shallow monitors do not tell the story."

"Any attempts to recontouring the water table as is done in Figure 1 is an experience in futility. There are not enough data points to begin with and if there were, the data needs to be collected and analyzed not only in the inter-well sense (i.e. location to location) but also within the data point itself (seasonal fluctuations/aberrations). There is not enough information for this site to give anyone any sense of confidence in characterizing the water table."

"I am confused between in-site permeability tables and hydraulic-conductivity tests and where is the distinction."

⁵⁹ Documents Subject of the Appeal, Tab 36, memo from Mr. Gene Leskiw to Mr. Wayne Inkpen, cc to John Shaw, dated April 23, 1998, attaching report "Review Comments of Supplementary Information to AEP Statement Ryley Landfill April 1998", p. 1-4 states:

"Groundwater performance standards need to be determined within the parameters of the existing operation. I don't accept the statement that this will be developed later on as leachate contaminates the site in the longer term, for

feel that all the information to characterize site hydrogeology/geology should be presented as requested in issue 7.22. All the information is terribly fragmented over several different documents. Also this document seems to make many changes/deletions to previous comments. I'm not sure what is and what isn't anymore."

[157] Mr. Epp also pointed out further gaps in the application that the Board must consider. Mr. Epp, in a memo to Mr. Williams dated May 5, 1997 had questions on the design in the application.⁶¹ He questioned the proper abandonment of destroyed monitoring wells that could provide a preferential pathway for leachate contaminated groundwater and the extent of sand deposits that could also affect leachate migration.⁶² Mr. Epp noted contradicting information about

purposes of deciding upon remediation."

"This conceptualization is over simplistic since there are numerous possibilities for contaminant transport during the course of active landfilling."

"Also section I-I Flow net, is not a flow net at all, but a flimsy attempt at portraying a possible concept?"

⁶⁰ Documents Subject of the Appeal, Tab 36, memo from Mr. Gene Leskiw to Mr. Wayne Inkpen, cc to John Shaw, dated April 23, 1998, attaching report "Review Comments of Supplementary Information to AEP Statement Ryley Landfill April 1998", p. 2 states:

"I don't feel comfortable with this 'it's not our job' rationalization. Where did the breakdown occur on the LES site?"

"The entire page is totally confusing. I don't know if the question is answered."

"Was the model calibrated on limited field data?"

⁶¹ Documents Subject of the Appeal, Tab 7, memo from Mr. T. Epp, Groundwater Protection Branch to Mr. Larry Williams, Northeast Boreal Region, dated May 5, 1997, p. 1 states:

"... Were these wells located and properly abandoned as per the well regulation? If not, the wells could provide a preferential pathway for leachate contaminated groundwater. How does Laidlaw plan to address this issue?"

⁶² Documents Subject of the Appeal, Tab 7, memo from Mr. T. Epp, Groundwater Protection Branch to Mr. Larry Williams, Northeast Boreal Region, dated May 5, 1997, p. 1-2 states:

"Information provided by Laidlaw and its consultant prior to this application has indicated that any investigation of the suspected meltwater channel did not identify coarse grained deposits normally associated with a meltwater channel. Monitor wells at locations 95-2, 3 and 4 intersected sand deposits and it is apparent that a meltwater channel does exist at this site. The extent of the sand

outward flow from the landfill.⁶³ Mr. Epp further asked for comment on any potential discharge points since groundwater flow is expected to be towards the southeast when previous studies showed discharge would be to the northeast. He asked for further information on buildup of the water table during post-closure and the landfill design associated with leachate.⁶⁴ He also suggests leachate quality data should be used from the Ryley site for modeling not from another site. He asked for more information on the model to predict leachate movement through the liner and for missing references. He indicated the clay liner needed to meet a minimum in situ permeability of 10^{-7} cm/s but 10^{-6} cm/s was in the application. Mr. Epp said they needed more information on groundwater monitoring and information on the flow of groundwater. The Board believes Mr. Epp raised serious concerns about the completeness, or even accuracy, of some aspects of the application⁶⁵.

deposits must be defined and any modelling of leachate migration in the subsurface modified to incorporate this information.”

“The most recent hydraulic conductivity data indicate that the surficial and bedrock deposits at this site have higher hydraulic conductivity values than originally determined. These K values are higher than the value stipulated in the code of Practice for landfills. Consequently Laidlaw must provide additional information to support the determination that the site design will allow the compliance conditions stipulated in the Code to be met at the compliance boundary. ...”

“... Laidlaw should provide information that the geometric mean is appropriate for characterizing hydrology of this site.”

“Not all the nested piezometers indicate an upward flow from bedrock to the surficial deposits. ... What implications does this downward flow have for groundwater monitoring?”

⁶³ Documents Subject of the Appeal, Tab 7, memo from Mr. T. Epp, Groundwater Protection Branch to Mr. Larry Williams, Northeast Boreal Region, dated May 5, 1997, p. 2 states:

“... I would prefer to see Laidlaw provide a new consistent hydrogeological evaluation of the site that reflects the latest data. ...”

⁶⁴ Documents Subject of the Appeal, Tab7, memo from Mr. T. Epp, Groundwater Protection Branch to Mr. Larry Williams, Northeast Boreal Region, dated May 5, 1997, p. 3 states:

“The report states that ‘the quantity of leachate generated by the landfill was shown...to not substantially change the landfill design’. This statement does not make sense. ...”

⁶⁵ Document Subject of the Appeal, Tab 7, memo from T. Epp, Groundwater Protection Branch to Mr. Larry Williams, Northeast Boreal Region, dated May 5, 1997, p. 4 states:

[158] Mr. Epp further discussed the poor condition and confusion of the application and the addendum material in a memo to Mr. Shaw. He said that a thorough review of the application and supporting material could not be undertaken due to the poor quality of the original submission. Mr. Epp further added that the addendum information provided by EBA did not address the issues raised or provide information that this is a suitable site for a landfill development. He pointed out that the site's natural attenuation capability appears to be limited and cannot be relied upon to prevent off site migration of leachate. Mr. Epp said the original assumptions regarding the landfill, particularly the hydrology and geology, were not valid and he did not recommend acceptance of the application.⁶⁶ Thus by April 1998, Mr. Epp was still concerned about the completeness of the

"Laidlaw should prepare a groundwater monitoring proposal reflecting the Code of Practice and the changes in flow direction and hydraulic conductivity of the different hydrostratigraphic units at the site.

"The report indicates that there is an upward flow gradient from the shale to the overlying sandstone. However, a comparison between water levels in the 'B' and 'A' series of wells indicates that the vertical gradient is mainly downward."

⁶⁶ Documents Subject of the Appeal, Tab 37, memo from Mr. Tony Epp, Groundwater Protection Branch to Mr. John Shaw, Northeast Boreal Parkland Region, dated April 28, 1998, p. 1-2 states:

"In my opinion, a thorough review of the application and its supporting material cannot be undertaken due to the poor quality of the original submission. The addendum reports provide discussion on a number of issues identified through your review; however, other issues may have arisen had the original submission been of better quality or had it been properly revised."

"With that in mind the addendum information provided by EBA Engineering Consultants Ltd. at times either does not address the issues raised, or else provides information that contradicts the applicant's position that this is a suitable site for landfill development. Discussions regarding the low permeability of the bedrock units and consequent slow rates of leachate migration are not supported by the hydraulic conductivity testing of the different hydrostratigraphic units underlying the site. Also reliance on the leachate collection system to control migration of leachate from cell 2 does not make sense particularly as this control mechanism is to be relied upon for the entire operational life of the landfill. In fact, EBA's contention that groundwater flow across the site is directed towards cell 2 is not supported by the flow net prepared for the site. The influence of the cell would appear to have only a localized influence on the groundwater flow. What mechanisms are in place to ensure the leachate collection system will remain operational and not become bio-fouled or damaged due to settling within the landfilled waste? Based on the discussions to date, the site's natural attenuation capability appears to be limited and cannot be relied upon to prevent offsite migration of leachate. However, no evaluation of the bedrock's natural attenuation capability has ever been undertaken. It seems odd that no discussion of the ability of the liner to control outward migration of leachate is provided in

application and accuracies with the material provided. The Board believed Mr. Epp was a credible reviewer of the application and addendum.

[159] The Board believes Mr. Shaw gave numerous statements indicating the application was incomplete and there were problems with it. In his report he said that was why “we made them do it over and over again until they got it right”.⁶⁷ The Board does not believe, given the evidence, that they did “get it right.” Mr. Shaw agreed they still had difficulty in figuring out what was happening with the site hydrology and further groundwater reports were ordered because they were unclear. He said by the time they issued the Approval they had a “good understanding in general” of the site characterization. He said they did not have an understanding of the “specific” groundwater monitoring program. He said he wanted to make it clear that “anywhere in the Approval that we require the submission of a plan it means that the plans in the application were not accepted for one reason or another”. In most cases he said there were “technical issues” not a question of “ingenuity or creativity in coming up, it’s just coming up with a plan rather than, shall we say, expressions of good intent”.

the addendum. Rather it seems that the effectiveness of the liner is compromised by the fact that it will be saturated throughout the operational and post-closure life of the landfill.”

“Discussions regarding the effect of groundwater quality from cell 2 seem premature as the effects from cell 1 and the abandoned landfill may mask the potential effects from cell 2. These two sources of groundwater contamination must be eliminated.”

“The application for the original landfill was based on information and assumptions that appeared to be supported by investigative effort at the time of the application. However, as the landfill expands and more information becomes available regarding site geology and hydrogeology as well as the affects of the first cell on groundwater quality, it appears that some of the original assumptions are not valid. ...”

⁶⁷ Letter from Mr. Grant Sprague to the Board dated July 21, 1998 enclosing Mr. John Shaw’s report “Overview of the Approval Process for the Beaver Regional Waste Services Management Commission Landfill at Ryley, Alberta Prepared for W. Inkpen”, p. 25 states:

“The hydrological interpretations in the application are often in conflict both with each other and with the data presented. Also, the many errors in transcribing data from original sources to the interpretive instruments of text, tables and figures in the application made it specially difficult to determine the validity or otherwise of the finding. ...”

[160] Mr. Inkpen said in an email to Mr. Shaw on July 3, 1997 that when he makes his decision on the application he will “at least” need to know several points and in a further email on July 8 he said he needed the answer to numerous questions.⁶⁸ But this did not happen.

⁶⁸ Written Submission of the Department dated March 8, 1999: July 3, 1997 e-mail from Wayne Inkpen to John Shaw:

- “- how the proposed design and operation conforms to the landfill code of practice
- how the stage one has performed
- how the stage two liner has performed
- what wastes the facility has received since Laidlaw has been the operator
- the results of all inspections that the regional health authorities and department have conducted
- the impact the facility will have on the water (surface and ground) fish and wildlife resources in the area, including Beaver Hill Lake
- what wastes the facility will receive, the amounts and the adequacy of the waste acceptance procedures
- the adequacy of the site assessment and characterizations
- do we and the commission have a clear understanding of the site hydrogeology now and as it will be affected by future site development
- are there any air emissions from the site that would adversely affect the surrounding region and residents
- the quality control program that will ensure that the landfill is built to the approved specifications
- the adequacy of the post closure care, gas management and emergency response programs
- an engineering assessment of the landfill and liner design in relation to the site conditions and the waste stream
- the need for this facility
- the adequacy of their environmental monitoring program
- all of the matters the director is required to address in section 6 of the Approvals and Registrations Procedure Regulation”

July 8, 1997 e-mail from Wayne Inkpen to John Shaw:

- “- How will the leachate react with the clay liner. Will any of the leachate generated from the type waste that will be deposited in the landfill reduce the effectiveness of the clay liner and if so by how much. I understand chlorides could have a impact and is this impact considered in the modeling
- The board’s decision indicated that there were pesticides in the groundwater at the storage site. Is this true and if so what are the reasons and levels and extent of the movement.
- Have there been any studies to monitor the performance of clay landfill liners. This was a issue with the hazardous waste landfill.
- Does the surface water at the landfill meet the department surface water quality objectives and how does it compare to the surface water in other containment structures in around Ryley.
- What would be a reasonable level of financial security for this facility and what formula should be used to determine the level.
- Is any surface water being released from the current site and what are the results

[161] The Board goes on to see that numerous other individuals had concerns and again indicated the application was incomplete. Mr. Williams said in a memo to Mr. Shaw that the application was confusing and therefore difficult to assess.⁶⁹ He commented on the lack of pertinent public consultation information of a recent vintage.⁷⁰ Mr. Williams further indicated specific information was lacking in the application to determine potential contaminant migration and leachate disposal as well as numerous other points on stormwater detention, protecting the constructed liner from freeze thaw damage and the development of how the cells will be filled.⁷¹ Mr.

of the testing before the water is released.

- What impact will the released waters, both surface and ground, have on Bible Creek and the users of the water in Bible Creek.
- How much groundwater is being collected in the interceptor trench, what's its quality and what effect is the dewatering having on the regional groundwater regime.
- What other Landfills does Western Canada Waste Systems (Laidlaw) operate and what is their track record at these sites.
- What other landfill designs are practical and acceptable for the type of wastes that the Commission plans on accepting at the site and how does the proposed design and operating system compare.
- Does the proposed reclamation plan for the site meet our reclamation standards both for cover and land use.
- How have our assumptions of the site hydrogeology changed over the years and should this reflect a change in the landfill design and operating plan. If there should have been changes have the appropriate changes been made.
- Has the Commission put forth any evidence that there is an economic need for this facility and that the facility is in the provincial interest."

⁶⁹ Documents Subject of the Appeal, Tab 8, memo from Mr. L.A. Williams, Senior Regional Engineer to Mr. John Shaw, North East Boreal/Parkland dated May 23, 1997, p. 1 states:

"... My preliminary read of the application is that it is quite confusing and leaves one with a poor understanding of what they have done, what they plan to do and what remains to be done to demonstrate that the planned activities and methods are acceptable. ..."

⁷⁰ Documents Subject of the Appeal, Tab 8, memo from Mr. L.A. Williams, Senior Regional Engineer to Mr. John Shaw, North East Boreal/Parkland dated May 23, 1997, p. 1 states:

"1.11 refers to public consultation, however I note this is relevant to the original application and not this proposed amendment. The previous consultation was in 1992/93."

⁷¹ Documents Subject of the Appeal, Tab 8, memo from Mr. L.A. Williams, Senior Regional Engineer to Mr. John Shaw, North East Boreal/Parkland dated May 23, 1997, p. 2-3 states:

"4.7.2 – Stratigraphy – states that excavation has removed "much of the channel deposits" the question is how much, and how do they know it is enough to

Williams specifically said a groundwater monitoring plan was needed. The Board agrees that it is.

[162] Mr. Grover, Review Coordinator, Conservation and Reclamation Branch, Land Reclamation Division, Environmental Protection, pointed out to Mr. Shaw, in a June 2, 1997 memo that the applicant should be advised to comply with the Code of Practice for Landfills for topsoil replacement depth.⁷² Again, from what the Board has seen and read, the application was not complete.

[163] Thus each of these Department personnel, including Mr. Inkpen himself, clearly show that not only was the application incomplete but it dealt with information that was contradictory, calculations had been done incorrectly, data had been entered into text and tables with errors, information was used and presented in a confusing manner and information/data was missing. Mr. Shaw said that is why they made them do it over and over and over again until it was correct. The Director did not give convincing evidence that all the necessary gaps were filled. Nor did the Commission. The Appellants express a lack of confidence in such a process. The Board agrees with the Appellants.

[164] The Board sees that numerous people pointed out to Mr. Inkpen a plethora of problems with the application, yet Mr. Stein's review appeared to negate all these concerns. The Board fails to see convincing evidence from Mr. Stein that led to Mr. Inkpen's conclusions. Mr. Stein points out numerous problems Mr. Inkpen should have addressed. He says for example that "there were some incidents in some locations where you get some unexpected fracturing that occurs at some greater depth and it's difficult to trace". He said "You don't know how continuous those

"eliminate the risk associated with contaminant migration" as they have said?"

"7.2 – what are the alternatives for leachate disposal if recycle is not found to be acceptable?"

"...I found it a struggle to read through the application and keep focused on the intent."

⁷² Documents Subject of the Appeal, Tab 10, memo from Mr. Roshan L. Grover, Review Coordinator to Mr. John Shaw, ERS Regional Services, dated June 2, 1997.

areas are but with a landfill this size, one should be sure that nothing is getting out of the area and it should be monitored within the perimeters of the site". Mr. Stein noted numerous other problems with the application in his May 20, 1998 letter to Mr. Inkpen.⁷³ The Board is not convinced these problems were corrected.

[165] Mr. Stein eventually approved the site for a landfill operation on the condition that engineering solutions were strictly adhered to so the natural shortcomings of the site would be dealt with.⁷⁴ But as the Appellants point out, even the Commission did not agree with all of his work and said he only reviewed other people's documents. Yet he was the expert the Director relied on to

⁷³ Documents Subject of the Appeal, Tab 40, letter from Mr. Richard Stein, Alberta Geological Survey, Alberta Energy and Utilities Board, to Mr. Wayne Inkpen, Acting Regional Director, Parkland Region, dated May 20, 1998, p. 1-5 state:

"However, almost all the piezometers completed in the shale unit have very short screens (0.2 m) and I believe this would bias hydraulic conductivity determinations towards low values."

"I still suspect there are problems with the in-situ determination of K for the shale liner... That is, the method is prone to high errors at very low values of K."

"It appears, therefore, that the sandstone unit underlies the entire NE of 10, it has a high clay content and low K for a sandstone, but the hydraulic conductivity may be as much as 10 to 100 times as great as that of the overlying Bearpaw shale."

"It is my opinion that this unit has not been adequately evaluated with respect to its potential to carry contaminant off site."

"Whatever the cause, contaminants that reach the sandstone...could migrate off site..."

"...head in piezometer 96-5A is incorrectly reported ... head reading in piezometer 95-5A also appears to be unreliable... lithology appears to be incorrectly shown...flow lines appear to be constructed at incorrect angles..."

"The modelled version of groundwater flow still appears to be severely inaccurate."

⁷⁴ Documents Subject of the Appeal, Tab 40, letter from Mr. Richard Stein, Alberta Geological Survey, Alberta Energy and Utilities Board, to Mr. Wayne Inkpen, Acting Regional Director, Parkland Region, dated May 20, 1998, p. 6 states:

"In spite of these shortcomings,...the site is suitable for a landfill operation provided that the proposed engineering solutions are strictly adhered to."

deal with the application to overcome problems that his own staff had major concerns about. The Board sees no evidence he even reconsulted with his staff who earlier had major concerns. Mr. Stein raised questions and pointed out more inconsistencies and errors in the application. He even said a portion of the model appeared incorrect, the model which was used to develop “engineering solutions” which he said must be strictly adhered to. The Board saw evidence from numerous other experts that the “natural” features of the site were sufficient to make this a highly desirable landfill site. Numerous such statements appear earlier in this decision as well as in the written evidence ⁷⁵. This contradicts Mr. Stein’s final conclusions. This also concerns the Board and again points out the incompleteness of the application.

[166] The Board saw the Commission itself was not confident it could meet the requirements of the Approval, as voiced by Mr. Solberg.⁷⁶ Yet the Director thought they could and so issued the Approval. The Director and the Commission relied on statements from the Vegreville Health Unit in 1992/1993/1994 to indicate the landfill as it existed would be more of a problem to human health than the proposed technologically modern one, even though the latter would be much larger. This was not borne out with more recent assessments from any health board or health authority.

⁷⁵ Documents Subject of the Appeal, Tab 27, memo from Mr. Daryl Cole, Wildlife Technician, to Mr. Doug Yeremy, District Engineer, p. 1 states:

“There seems to be a lot of faith placed on the natural retention area in the northeast corner of the site.”

⁷⁶ Documents Subject of the Appeal, Tab 42, letter from Mr. Elston Solberg, Beaver Regional Waste Management Services Commission to Mr. John Shaw, Senior Engineer, dated May 21, 1998, p. 1-2 state:

“We may have some problems meeting pesticide criteria...”

“Some of the more common parameters have been tightened up (nitrogen to 0.16 from 0.5 and zinc to 0.05 from 0.3). We may have some problems meeting [sic] these.”

“Leachate must be extracted when it reaches 0.3 m above the liner. Given the present design this may be difficult to achieve”

“Under Section 4.3.6 (d) we would suggest this might read ‘untreated biomedical waste’.”

[167] It appears to the Board that the Director believed some of these gaps could be filled post-Approval. When questioned in the hearing the Director indicated it was not unusual to work intensively with an application (meaning approve) rather than return it to the Applicant as incomplete. The Appellants argue that since there are so many plans to follow the full array of information could not have been before the Director when he made his decision or even now for that matter. It would seem difficult to integrate economic decisions and environmental protection in early stages if much of the information is not available to make that decision. The Commission and the Director state that some of this does not make sense to do now, such as gas management because there is not enough gas being produced for a while to worry about. Yet the Appellants ask how they can believe the environment will be protected if those plans are not there, but rather “nice statements” about what is intended, are in the Approval.

[168] The Board agrees with Ms. Buss that the piecemeal approval process is an indication the application was incomplete. Certainly there should be room in the application to indicate that under the best predicted situations this is what will be done dealing with the current technology. The Commission and the Director relied on modeling for numerous other aspects of the landfill, why not for some of these areas as well. The Board suggests a clause in the Approval indicating that if actual measurement should differ from predicted results and if technology improves in the interim, the plan will be amended to include that situation. The Board agrees with the Appellants that in this regard the Approval is incomplete.

[169] The Director indicates these gaps were filled to the extent necessary to issue the Approval. Yet Mr. Epp of Alberta Environmental Protection raises a particular concern by saying “...other issues may have arisen had the original application been of better quality or had it been properly revised”.⁷⁷ This makes sense since the focus was on getting information to fill the gaps that could easily detract from the larger picture of the full application itself. The Board has serious concerns about this gap filling strategy.

⁷⁷

Documents Subject of the Appeal, Tab 37, memo from Mr. Tony Epp, Groundwater Protection Branch to Mr. John Shaw, Northeast Boreal Parkland Region, dated April 28, 1998, p. 1.

[170] Given the statements from the Director's own personnel, and from Mr. Solberg, the Board concludes there were clearly questions to address and gaps to fill in the application. Given the response of the Director under cross examination that many of these gaps were not filled with reports and or documented information/discussion/data, the Board must conclude that many gaps still exist. There is no indication from the presentation of evidence that these gaps were fully addressed.

[171] The Board submits that at a minimum the following information is still outstanding: a complete land conservation and reclamation plan; a gas management plan or model; an acceptable groundwater monitoring plan; a closure and post-closure plan; a soil management plan for soils with hydrocarbons; detailed site characterization for soils, hydrogeology, groundwater and surface water. Note that the Board often uses the word "complete". This is done deliberately since, for example, the Board does not believe that one paragraph in the application constitutes a complete reclamation plan or a couple of paragraphs constitutes a complete soil conservation plan. The Board becomes concerned when plans lack completeness and detail and when general phrases rather than details of when, where, who, how and what constitute the plan.⁷⁸

[172] The Director and the Commission were very forceful in saying many of the reports

⁷⁸ These statements were taken from various plans in the Application/Approval within the Documents Subject of the Appeal:

"Monitor on routine basis" in the Surface Water Retention Plan.

"If litter levels are unacceptable then further action will be required" in the Contingency Plans.

"Identify areas of vegetation stress" in the Gas Monitoring Plan.

"Periodically for both chemical and physical properties and monitoring of other parameters" "will be conducted to act as a management tool" in the Groundwater Monitoring Plan.

"Should it be necessary to control the emission of landfill gases, the system will be required in which the gases collected, used or flared off" in the Gas Management Plan.

"An action plan will be put in place if the downstream wells show signs of the presence of small concentrations of leachate after some years."

"The actions that will be judged appropriate at that time will depend on circumstances and the best demonstrated practice at that time."

and scientific papers presented as evidence in this hearing were not applicable since they were of a general nature and/or they were from sites very different from Ryley. Yet they relied on models and other papers to support their own decisions. They relied on general calculations for determination of noise levels and mitigative effects of berms. They often did not have data that were site specific either. Mr. Shaw states that the comment in the Toxcon Report about site specificity was just a “general precaution always made in such reports” and relied on his memory of it to make decisions related to this Approval. Yet he was quick to discredit the Hertzman and other reports and papers by saying they were not specific to Ryley. Mr. Shaw also said they had a “good understanding in general” of site hydrogeology by the time they issued the Approval but they still did not have an understanding of the “specific groundwater monitoring program”. The Board questions this approach. Is a general understanding of such an important component of a landfill expansion application sufficient to issue and an approval? The Director certainly needs to determine what “general” information is appropriate and what is not, but the Board, if it is to properly inform the Minister, must have more proof as to why this general information was sufficient. The Board has not been so convinced.

[173] The Board is also concerned with the apparent “bending of the rules” for the Commission and the lack of attention the Commission believes it needs to pay to standard Codes of Practice. The Board is not convinced that because the landfill will be regulated on a “performance basis” it should be so exempted from the Codes of Practice.

[174] Mr. Inkpen said the issues he needed to have addressed, had been addressed. In some instances there is documentation, reports, evidence to support his statement. Many times there is not; for example, he said he based his decisions on discussions with other people but he did not document it in his files. Counsel for one of the Appellants pointed out that it seems strange that a Director who said under oath that he rigorously documents his work has no notes on many of these issues that he could present to the Board. The Board concludes therefore that the Director did not have sufficient information to deem the application complete and thus make his decision according to the Approvals and Registrations Procedure Regulation. The Board further concludes all the information the Director said he needed to review the application is still not available although he

did get further information after issuing the Approval from Mr. Shaw and Mr. Moell.

C. Compliance With The Act

[175] The Board must foremost keep in mind the purpose of the Act “to support and promote the protection, enhancement and wise use of the environment” while recognizing several points.⁷⁹ These points have constantly been in the Board’s mind in its deliberations of these appeals.

⁷⁹ Section 2 of the Act states:

The purpose of this Act is to support and promote the protection, enhancement and wise use of the environment while recognizing the following:

- (a) the protection of the environment is essential to the integrity of ecosystems and human health and to the well-being of society;
- (b) the need for Alberta’s economic growth and prosperity in an environmentally responsible manner and the need to integrate environmental protection and economic decisions in the earliest stages of planning;
- (c) the principle of sustainable development, which ensures that the use of resources and the environment today does not impair prospects for their use by future generations;
- (d) the importance of preventing and mitigating the environmental impact of development and of government policies, programs and decisions;
- (e) the need for Government leadership in areas of environmental research, technology and protection standards;
- (f) the shared responsibility of all Alberta Citizens for ensuring the protection, enhancement and wise use of the environment through individual actions;
- (g) the opportunities made available through this Act for citizens to provide advice on decisions affecting the environment;
- (h) the responsibility to work co-operatively with governments of other jurisdictions to prevent and minimize transboundary environmental impacts;
- (i) the responsibility of polluters to pay for the costs of their actions;
- (j) the important role of comprehensive and responsive action in administering this Act.

[176] Considering section 2(a), the Board heard from the Commission and the Director that this landfill expansion is necessary for the well being of society to deal with waste and landfills are presently a necessary evil as a means to dealing with that waste. They believe the landfill expansion can be constructed and operated in a way that will protect the environment while ensuring benefit to society. This also finds support in section 2(b) in that a landfill can be a positive economic venture, that as Mr. Solberg pointed out, can bring jobs and money into the community and thus for Alberta. It also finds support in section 2(d). As the Alberta population grows and advances technologically, various wastes will be generated and if they are not dealt with, they will lead to environmental pollution. Viewed this way, the landfill itself is a way of protecting the environment. Many of the Appellants on the other hand, testified their mental and physical health were affected by living in close proximity to the landfill. Thus suggesting the impacts to adjacent landowners from this large and growing facility have not been adequately addressed in the past and will continue to grow in the future.

[177] A question arising from these appeals is the necessity for the landfill expansion in this location. The Commission and the Department argue that the expanded landfill is necessary. There is a need for it as documented by the amount of waste in the region. No one gave specific evidence to show this although the Board can assume it is true because the waste came from somewhere. The Appellants argue that the unlawful acceptance of waste from Vancouver, especially the acceptance of sewage grit, would indicate there is not sufficient need in Alberta for the expanded landfill of the Approval.

[178] The acceptance of "questionable" produced sands might also be interpreted as indicative of not enough acceptable waste for the landfill. However, the Commission argued that this material was required as cover. There was much discussion in the hearing about the financial state of the landfill; no evidence was given to indicate its economic viability that would be consistent with the need for it in Alberta. Neither was clear evidence given to indicate there was no need for the expansion. The issue that clearly comes to the fore, when dealing with 2(b) is the incompleteness of the application. The Board does not believe environmental protection can be integrated with economic decisions when the monitoring, management and business plans are

lacking in any kind of detail on how that will be done.

[179] The evidence presented at this hearing is not conclusive in showing that the development will be properly mitigated as required in section 2(d) since many of the plans do not have sufficient detail to make that decision. Certainly that information was not forthcoming at the hearing although discussions and notes were alluded to by the Director. As indicated before, many of the plans on how to mitigate some of the issues are not even due for a period of time. The Appellants express little faith that the Director will even expediently review them as was evidenced with the length of time it took Department personnel to be aware of the sewage grit situation even though the Commission said it was in their annual and monthly reports as well as in newscasts and newspapers. A government decision to piecemeal an Approval does not give the Appellants a great deal of comfort. Nor does it satisfy the Board that 2(d) of the Act has been adhered to.

[180] It has been pointed out by the Appellants that the EPA limit for non-methane organic compounds had been reduced from 150 t to 50 t. Yet the Director said they did not intend to change their requirements and gave no explanation for that decision. There may be a very good reason for this decision but it was not made known at the hearing, and according to 2(e), the Board would expect more comment than what it got.

[181] Communication seems to be a big issue in not meeting section 2(f). The Board believes the communication efforts from all parties were not stellar. The Appellants said they did not always report incidents because they did not think anything would be done. The Commission said it was not approached by the Appellants and yet claimed to be proactive in dealing with issues. The Board will not spend time on this issue other than to say it is the responsibility of all parties to make communication efforts and to continue to do so to ensure section 2(f) is carried out.

[182] The Appellants have indicated that it is impossible to be involved in many of the decisions as per 2(g) if operating plans and management plans are required after the Approval has been issued. In many cases they will have no opportunity to view them or discuss them as they would be dealt with directly by the Director. The Board agrees with the Appellants and does not

believe this meets the obligations of the government to the citizens of Alberta associated with that section of the Act.

[183] Many Appellants focused on the Director not ordering an EIA in light of the fact that the information he said he relied on was from several years ago and dealt with a single cell landfill. Mr. Shaw, Mr. Inkpen and the Commission reiterate numerous times that there would be no new information arising from such an EIA. Surely this is wrong, due, among other things, to cumulative impacts. The Commission seemed to consider modeling the whole landfill, not just one cell addressed cumulative impacts. Cumulative effects in EIA focus on impacts from several different activities occurring in the same location. Assessing cumulative effects gives a more complete understanding of a project/development in the context of what already exists in the area; it takes the big picture into account. For example, odour might not be a big problem from a sewage lagoon or even a landfill, but if you have a sewage lagoon and a landfill and other odour emanating situations, the cumulative odour (that from all sources) might be unacceptable. No one presented any evidence that this was taken into consideration. Counsel for one of the Appellants also raised the issue that if the Commission compensated a farmer for loss of a cow then that admits there are serious effects from the landfill on livestock that should have been addressed in an EIA. Whether or not that is true, the Board agrees that no information was presented by the Director to strongly support his decision not to call an EIA.

[184] The Vancouver waste issue was raised numerous times at the hearing. Accepting out-of-province waste without permission from the Director suggests a complete lack of a guiding operational policy and a serious breach in communication with Alberta Environment, neither of which are comforting to the people of Alberta, including adjacent land owners. The Board submits this contravenes numerous points in section 2 of the Act, if not the Approval itself.

[185] Section 2(i) of the Act makes it the responsibility of polluters to pay for the costs of their actions. In this regard the Board submits that we are all responsible for landfills as waste is generated by each of us. The Appellants, however, claim they should not have to bear the brunt of the actions of many by living in the waste. They said a quarter section buffer on either side of the

landfill would solve this issue. Considering the nature and magnitude of this facility and ample precedents of purchasing lands for the public good, e.g. airports, transportation interchanges irrigation infrastructure and flood control dams, it is worth noting that the same principles are absent from this project.

D. Conclusion

[186] The Board is understanding of the fact society has not yet developed an ideal solution to deal with the enormous quantities of waste being produced on a daily basis. While great strides have been made to reduce and recycle waste, no replacement has been found for landfills. On the other hand the people of Alberta can point with pride to world leadership in the development of appropriate legislation and processes to assess the environmental impacts of proposed public and private sector projects, and prepare and implement the appropriate course of action. Two of the fundamental cornerstones leading to our current situation are the tremendous efforts made to involve the public throughout the process, and the need to include economic considerations as well as environmental issues on a continuing basis.

[187] The establishment of the Beaver Regional Waste Management Services Commission was a reactive response primarily to solve a significant and growing need to dispose of waste being generated by the City of Edmonton and surrounding region. No one can deny the controversy and complexity of this issue but after over a decade of debate neither was a solution forthcoming. At a very early point in the evaluation process the Director had to make a fundamental decision on the need to conduct an EIA. He chose not to do so on the basis that it was really just an extension to an existing facility albeit only serving the needs of the tiny Village of Ryley and all the impacts were known. It is at this point in time that the Board believes the train left the tracks and the costly and stressful appeal process for all concerned became reality.

[188] Without an EIA the proponent and those broadly or directly impacted lost an array of valuable tools designed to assist in making informed decisions. So the Director using a procedure to approve or not to approve lost the ability to apply a transparent and readily discernible process

for evaluation and decision. It did not evaluate the site relative to other options; it did not consider cumulative impacts of other similar projects in the immediate area; it did not assess impacts to adjacent landowners as the project grew in size, it did not deal with the real and obvious economic impacts to adjacent land owners, it did not conduct a proper financial analysis to identify the real costs and benefits, and finally it did not develop appropriate mitigative measures to ameliorate adverse impacts. In fact the decision was at the very worst an abuse of process and at the very least a quantum leap backward in a standard to which Albertans have become accustomed to and demand.

[189] It appears obvious that the issues related to a major project of this type are complex and cross provincial-departmental jurisdictions. The Board deems it prudent that efforts be made in the future to deal with all the issues in a single approval. As referenced previously in this report, there are precedents for this coordinated approach being applied in the case of other types of large projects considered in the best interests of the public.

[190] In short, the Director has relied on a disjointed pathway supporting a single site decision, making the process fraught with a tendency to pass on certain responsibilities to other agencies, departments and boards. In addition with the support of the Director and in spite of the current appeal process, the Commission has proceeded with the construction of the works covered under the Approval. Balancing all of the evidence, the Board is of the belief that there has been an attempt to address many of the issues and concerns generated by this project. The Board also believes that there is probably a need for this type of facility. However, these realities do not compensate for the fact that concerns for the construction and operation of the site remain and the impact to adjacent land owners and the environment have not been resolved.

[191] The Board believes, as stated previously in this report, that communication between the Commission and the community has been very poor. Recommendation 5 of the Board on the next page, provides an opportunity for the Community and the Commission to begin the slow process of rebuilding trust and mutual concern for the environment. Consultation, be it in small groups or larger public groups, will provide an opportunity for the Commission to present factual, complete details of the proposed project and for the Community to have their concerns addressed

and to develop a better understanding of the project itself.

[192] The Board would be remiss in its legislative responsibility if it did not allow the Appellants' appeals. The Board believes it has been conclusively shown that the Director did not have a complete application in that sections 3(1)(b), (e), (h), (i), (j), (l), (m), (n), (o), (p), (q) and (s) of the Approvals and Registrations Procedure Regulation⁸⁰ were either not complete or lacked sufficient detail in our opinion to be assessed. The Board further submits that sections 6 (2)(a), (b), (c), (d), (e), (g), and (h) of the Approvals and Registrations Procedure Regulation were not adequately addressed in the Director's review of the application -- though we recognize the discretion in section 6. The Board believes that on the balance of evidence, the Appellants discharged the burden of proof to allow the Board to reach these conclusions.

VIII. COSTS

[193] A Cost Decision will follow.

IX. RECOMMENDATIONS

[194] The Board recommends that the Appeals be allowed, to the following extent:

1. The Commission shall re-submit a complete and detailed application to the Director addressing all of the issues brought forward in the appeal process and all of the issues and questions previously raised by the Director, his staff and associates, including particularly a detailed and complete operation, monitoring and management plans. Specifically see paragraphs 21, 24, 26-29, 31-35, 37-42, 44, 45, 52, 58, 60, 61, 66, 72, 74, 78, 79, 81, 83-91, 98, 99, 102, 107, 108, 118, 127, 130, 131, 137-140, 143-148, 150, 152-174, 177-185, 190, 191 in this Report.

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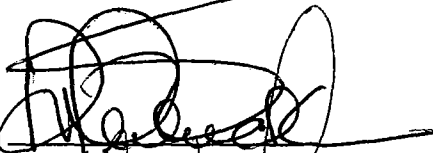
Approvals and Registrations Procedure Regulation, A.R. 113/93.

2. Any contradictory data/information/interpretations shall be dealt with and rationale for acceptance of one contradictory point over another shall be clearly presented by the Commission. Specifically see paragraphs 28, 37, 39, 43-45, 50, 51, 54-56, 67, 77, 112, 115, 141, 156, 165 in this Report.
3. All of the material issuing from the above Recommendations 1 and 2, inclusive, shall be compiled in one document to form the Amended Application/Approval.
4. All of the above Recommendations 1 to 3, inclusive, shall be completed by August 1, 2000 or the Approval shall be terminated. (The Board believes sufficient time has been allocated for completion of Recommendations 1 and 2, since the Commission and the Department said all such information was currently available.)
5. The above compiled Amended Application/Approval shall be discussed with health and local officials to ensure all requirements have been met. All parties to this Environmental Appeal Board hearing shall have meaningful opportunity to make informed constructive comments on the compiled Amended Application/Approval before it is submitted to the Director for his decision.
6. The completed Amended Application/Approval developed after all Recommendations 1 to 5, inclusive, have been addressed, shall be forwarded to all parties to this Environmental Appeal Board hearing.

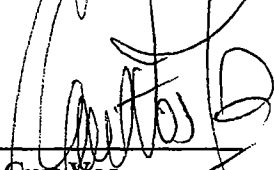
Dated, July 13, 1999, at Edmonton, Alberta.



Dr. M. Anne Naeth



Mr. Ron V. Pelluck



Dr. Curt Vos



ALBERTA ENVIRONMENT

Office of the Minister

MINISTERIAL ORDER

I, Gary Mar, Minister of Environment, pursuant to Section 92 of the *Environmental Protection and Enhancement Act* hereby order:

That the decision of Director W. Inkpen to issue Approval No. 20754-00-01 on May 29, 1998, to Beaver Regional Waste Management Services Commission amending Approval No. W1075, be varied as set out in Appendix I.

DATED at the City of Edmonton, in the Province of Alberta, this 25 day of August, 1999

Honourable Gary Mar,
Minister of Environment

APPENDIX I

1. *Article 3.1.1 of the Amending Approval is deleted in its entirety and the following is substituted therefore:*

3.1.1 If construction of at least one stage has not commenced by December 31, 2001, the approval holder shall apply for an amendment to this approval unless otherwise authorized by the Director.

2. *The addition of the following:*

3.7.6 The approval holder shall develop and submit to the Director a Land Conservation Plan for the landfill that is satisfactory to the Director prior to further construction of the landfill, and in any event, by August 1, 2000.

3.7.7 Prior to making a decision in respect of the Land Conservation Plan proposed for use by the approval holder, the Director shall request comments on the Plan from the following parties:

- (a) all parties to Environmental Appeal EAB Appeal No. 98-231 - 98-233-R; and*
- (b) any other party the Director considers appropriate.*

3.7.8 Prior to making a decision in respect of Land Conservation Plan proposed for use by the approval holder, the Director shall require the applicant to hold meetings in the Village of Ryley in order that the public may obtain information from the applicant respecting the Plan.

3.7.9 The approval holder shall correct any deficiencies in the Land Conservation Plan as specified by the Director and implement the Plan as authorized in writing by the Director.

3.7.10 Any change to the Land Conservation Plan shall be submitted to the Director for written authorization prior to the change being included in the Plan.

3. *Article 5.1.1 of the Amending Approval is deleted in its entirety and the following is substituted therefore:*

5.1.1 The approval holder shall develop and submit to the Director a Closure and Post-Closure Care Plan for the landfill that is satisfactory to the Director prior to further construction of the landfill, and in any event, by August 1, 2000.

4. *The addition of the following:*

5.1.1A Prior to making a decision in respect of the Closure and Post-Closure Care Plan proposed for use by the approval holder, the Director shall request comments on the Plan from the following parties:

- (a) all parties to Environmental Appeal EAB Appeal No. 98-231 - 98-233-R; and*
- (b) any other party the Director considers appropriate.*

5.1.1B *Prior to making a decision in respect of Closure and Post-Closure Care Plan proposed for use by the approval holder, the Director shall require the applicant to hold meetings in the Village of Ryley in order that the public may obtain information from the applicant respecting the Plan.*

5. *The addition of the following:*

4.1.1 *The approval holder shall develop and submit to the Director a Gas Management Plan for the landfill that is satisfactory to the Director prior to further construction of the landfill, and in any event, by August 1, 2000.*

4.1.2 *Prior to making a decision in respect of the Gas Management Plan proposed for use by the approval holder, the Director shall request comments on the Plan from the following parties:*

(a) *all parties to Environmental Appeal EAB Appeal No. 98-231 - 98-233-R; and*

(b) *any other party the Director considers appropriate.*

4.1.3 *Prior to making a decision in respect of Gas Management Plan proposed for use by the approval holder, the Director shall require the applicant to hold meetings in the Village of Ryley in order that the public may obtain information from the applicant respecting the Plan.*

4.1.4 *The approval holder shall correct any deficiencies in the Gas Management Plan as specified by the Director and implement the Plan as authorized in writing by the Director.*

4.1.5 *Any change to the Gas Management Plan shall be submitted to the Director for written authorization prior to the change being included in the Plan.*

6. *Article 4.5.1 of the Amending Approval is deleted in its entirety and the following is substituted therefore:*

4.5.1 *The approval holder shall develop and submit to the Director a Soil Management Program for the landfill that is satisfactory to the Director prior to further construction of the landfill, and in any event, by August 1, 2000.*

7. *The addition of the following:*

4.5.1A *Prior to making a decision in respect of the Soil Management Program proposed for use by the approval holder, the Director shall request comments on the Program from the following parties:*

(a) *all parties to Environmental Appeal EAB Appeal No. 98-231 - 98-233-R; and*

(b) *any other party the Director considers appropriate.*

4.5.1B *Prior to making a decision in respect of Soil Management Program proposed for use by the approval holder, the Director shall require the applicant to hold meetings in the Village of Ryley in order that the public may obtain information from the applicant respecting the Program.*

8. *The deletion of Article 4.5.3 of the Amending Approval.*

9. Article 4.4.1 of the Amending Approval is deleted in its entirety and is replaced by the following:

4.4.1 The approval holder shall develop and submit to the Director a Groundwater Monitoring Program for the landfill that is satisfactory to the Director prior to the further construction of the landfill, and in any event, by August 1, 2000, which shall include, but is not limited to the following:

- (a) a hydrogeologic description and interpretation of the landfill;*
- (b) a map and description of surface water drainage patterns for the landfill;*
- (c) a lithologic description and maps, including cross-sections, of the surficial and the upper bedrock geologic materials at the landfill to a depth of at least 30 metres below the ground surface;*
- (d) maps and cross-sections showing depth to water table, patterns of groundwater movement, hydraulic head contours and hydraulic gradients at the landfill;*
- (e) the hydraulic conductivity of all surficial and bedrock materials at the landfill;*
- (f) a map showing the location of existing and additional proposed groundwater monitor wells at the landfill;*
- (g) lithologs of all boreholes drilled at the landfill, and geophysical logs of all boreholes drilled with rotary drills;*
- (h) construction details of existing groundwater monitor wells;*
- (i) a rationale for proposed groundwater monitor well locations and proposed completion depths of those wells;*
- (j) a list of parameters to be monitored and the performance standards and monitoring frequency for each groundwater monitor well or group of groundwater monitor wells at the landfill;*
- (k) a rationale for proposed groundwater monitor well locations and proposed completion depths of those wells;*
- (l) a description of groundwater monitor well development protocols;*
- (m) a description of the groundwater sampling and analytical QA/QC procedures; and*
- (n) any other information relevant to groundwater quality at the landfill.*

4.4.1A Prior to making a decision in respect of the Groundwater Monitoring Program proposed for use by the approval holder, the Director shall request comments on the Program from the following parties:

- (a) all parties to Environmental Appeal Board Appeal No. 98-231 - 98-233-R; and*
- (b) any other party the Director considers appropriate.*

4.4.1B Prior to making a decision in respect of Groundwater Monitoring Program proposed for use by the approval holder, the Director shall require the applicant to hold meetings in the Village of Ryley in order that the public may obtain information from the applicant respecting the Program.

10. *Article 4.4.2 of the Amending Approval is deleted in its entirety.*