

RECEIVED MAR 12 1987

Dr. P. Boldrini
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March 4, 1987

Mr. Thomas R. Lederer
Osler, Oskin & Harcourt
Barristers & Solicitors
Box 50
First Canadian Place
Toronto, Ont.
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re: Halton Consolidated Hearing

Dear Mr. Lederer,

The purpose of this letter is twofold.

First of all, in spite of my written request of Feb.16, 1987 to Ms. Kathy Ash, and the ensuing phone conversations, I did not yet receive the Appendices to schedule B-D, nor the other volumes requested on Feb. 16 and 20, 1987. Incidentally, on Feb.16, 1987 the Appendices to B-D were also not available at the Burlington public library. I would greatly appreciate your providing me soon with the volumes indicated in my two letters to Ms.Ash. Please, use only the above address for your correspondence with me.

Secondly, you will find here my first information request with respect to your client's reports. It would be of great assistance if such information could be provided soon.

Your Sincerely,

P. Boldrini

/mm

Encl. six pages

cc: Mr. Sid A. Chumley
Mr. David Estrin & Fred Leitch, Esq., Q.C.
Stephen R. Garrod, Esq.
Michael McQuaid, Esq., Q.C.
John Tidball, Esq.
Robert Tuer, Esq.
Ms. Toby Vigod

Region of Halton Environmental Assessment; information request no.1

References: 1) Report "Comparative analysis...", January 1987.
2) Schedule M. Leachate treatability, September 9, 1986

- 1.1 "The degree of preference between the two sites is somewhat smaller than the number and priority of categories in which each site is preferred would suggest" (ref.1, pg.40, 2nd parag.). Put "the degree of preference between the two sites" into a figure. Is that figure 50.1%(49.9%), ... 51.1(48.9), ... 52.1(47.9), ... 53.1(46.9), ... or is it 50.01%(49.99%), ... 51.01(48.99), ... or any other figure included among the previous limits?
- 1.2 From 3.82 mill.tonnes of waste (7.96 mill.m^3), with the volume including a waste volume/cover ratio of 4:1 (ref.1, pg.6), I deduce 1.59 mill.m^3 of cover material, 6.37 mill.m^3 of waste and a 60% compaction rate. What is the compaction rate and the waste-volume/cover ratio at the present Burlington regional landfill?
- 1.3 The notice of the preliminary hearing stated that Halton is going to landfill: "Ashes, garbage, refuse, domestic waste, industrial solid waste and municipal waste". What are the total quantities for each of the six subcategories of waste to be landfilled?
- 1.4 Provide complete quantitative chemical analyses of the regional waste landfilled. Using any of the three methods available, estimate the future composition putting the relative values in a 9x 17 data grid made up of each item in a) by b):
 - a) paper, vegetable and animal household, garbage, plastics, glass, textiles, metals, residue, batteries.
 - b) mass, volume, loss on ignition, water content, energy content, carbon c., nitrogen c., fluorine c. phosphorous c., sulphur c., chlorine c., iron c., copper c., zinc c., cadmium c. mercury c., lead c. (all in weight units except volume and energy c.).
- 1.5 I will challenge some of your transformations between metric and imperial units (& their opposite). Please, check them.
- 1.6 Provide the amounts of leachate and gas emitted from the regional Burlington landfill in cubic metres/year and cubic metres/tonne of waste landfilled/year.
- 1.7 Provide the 1986 amounts for the 57+ materials listed in Table 1, as analyzed in the leachate of the regional Burlington landfill.
- 1.8 Provide the 1986 amounts for the 57+ materials listed in Table 1, as analyzed in the surface-, shallow-, deepoverburden-, and bed-rock-water of site "D" in Milton.

TABLE 1.

Water and leachate parameters for which MOE guidelines exist, as well as a method of analysis (for leachate).

1. Alkyl benzene sulphonate	29. DDT
2. Arsenic	30. Diazinon
3. Barium	31. Endrin
4. Boron	32. Heptachlor + hept.epoxide
5. Cadmuim	33. Lindane
6. Carbon chloroform extract	34. Methoxychlor
7. Chloride	35. Methyl parathion
8. Chromium	36. Parathion
9. Colour	37. Toxaphene
10. Copper	38. 2,4-D
11. Cyanide (free)	39. 2,4,5-TP
12. DOC and TOC ^{&}	40. G-BHC Hexachlorocyclohexane
13. Fluoride	41. pH
14. Hardness	42. Phenols
15. Iron	43. PCBs
16. Lead	44+ Radionuclides(see separ.MOE table)
17. Manganese	45+ Selenium
18. Mercury	46+ Silver
19. Methane	47+ Sodium
20. Nitrate nitrogen	48+ Sulphate
21. Nitrite "	49+ Sulphide
22. Nitrilotriacetic acid(NTA)	50+ Taste
23. Odour	51+ Total Kjeldhal nitrogen (TKN)
24. Organic nitrogen ^{&&}	52+ Temperature
PESTICIDES	53+ Trihalomethanes ^{\$}
25. Aldrin + Dieldrin	54+ Total Dissolved Solids (TDS)
26. Carbaryl	55+ Turbidity
27. Clordane	56+ Uranium
28. Total Organic Halogens(TOX) ^{\$\$}	57+ Zinc

&

DOC = Dissolve Organic Carbon; TOC Total Organic Carbon

&&

TKN minus ammonia nitrogen

\$

Chloroform, bromodichloromethane, chlorodibromomethane and bromomethane.

\$\$

A measure of all the organic halogenated compounds.

- 1.9 For each of the six subcategories of waste: c) ashes, garbage, refuse, domestic waste, industrial solid waste, municipal waste, fill out a a separate 6 x 4 data grid including for each item in c) the items in 1.9.x in answer to the ... questions:
 - 1.9.1 the total annual quantity of gas emitted at sites D & F for a 20 year period;
 - 1.9.2 the total annual quantity of leachate emitted at sites F & D for a 20 year period;
 - 1.9.3 the 50 components present in the highest amount in the gas emitted at sites D & F for a 20 year period;
 - 1.9.4 the 57+ components emitted in the highest amounts in leachate for a 20 year period, the 57+ components of Table 1 being the first to be tested, at sites F & D.
- 1.10 "The sites D & F had been found from the information available to have ... the greatest potential benefits (ref.1,og.3)". Provide a full and complete list of those benefits.
- 1.11 In appendix F of ref.1, I don't find any reference to the total suspended particulates (TSP) emitted by landfill D & F together with the landfill gas. The following questions refer only to these TSP: the most toxic and most feared ones by the people.
 - 1.11.1 What is the amount of TSP/year emitted at the present regional Burlington landfill?
 - 1.11.2 Provide a complete quantitative chemical analysis of the TSP emitted at the present regional Burlington landfill;
 - 1.11.3 Provide the estimated amount of TSP/year emitted at sites F & D;
 - 1.11.4 Provide the estimated chemical composition of the TSP emitted at sites D & F.
- 1.12 The following questions concern the use of odour suppressants.
 - 1.12.1 Is the region using any chemical odour suppressant at the present Burlington regional landfill?
 - 1.12.2 Do you use any other kind of odour suppressant?
 - 1.12.3 Do you plan to use any kind of odour suppressant, chemical or otherwise, at sites F & D?
- 1.13 Be advised that I will challenge these statements of ref.1,app.F:

"Because odours would only be emitted during operation of the landfill and the proposed operating procedures are the same for both sites, the odour emissions are assumed to be the same"(pg.4)

"No off-site occurrence of detectable odour are predicted for either Site D or F,..."(pg.5)

"The normal operating practice of covering the raw refuse at the end of each day is considered to be an adequate mitigative measure for odour emissions"(pg.5)

"This required that relatively crude assumptions be made concerning emission rates"(pg.6)

"Odours from migrating landfill gases are not expected to be detected at either site"(pg.6).

- 1.14 In view of what is stated in Appendix D of ref.1, provide:
 - 1.14.1 list of successes and failures of grass and/crop growing at closed landfill sites;
 - 1.14.2 list of successes and failures of tree growing at closed landfill sites;
 - 1.14.3 evidence that anaerobic soil, with foul odour and dark appearance, support crop-grass-plant growth;
 - 1.14.4 evidence of what delineates the aerobic from the anaerobic soil below closed landfill sites.
- 1.15 "A proposed agricultural afteruse at site "D" lends a moderating effect to otherwise high impacts on long term agricultural use on this site"(ref.1,pg.EX-5). I will challenge the statement.
- 1.16 I will challenge in detail the overall qualitative approach of Appendix A, after all the technical documentation is put into evidence and the answers to my questions are in.
- 1.17 "It appears that either site is viable and safe as a future sanitary landfill site"(ref.1, pg.40). I will challenge the misuse of "sanitary" and the overall conclusion that the two sites are "safe".
- 1.18 The original meaning of "to leach" is "to cause water or other liquid to percolate through something". Describe whether the meaning of leachate used throughout ref.2 is the same as above, defining the underground leachate, or whether it is limited only to surface leachate: the one produced by surface run-off.
- 1.19 With reference to the previous questions 1.6 and 1.7, provide the quantities and qualities of both underground and surface leachate.
- 1.20 "A detailed printout from the computer literature search and a summary listing of references for all of those articles attained and reviewed is on file at Pollutech"(ref.2, pg.2). I would like to obtain though you that printout.
- 1.21 On pg.63 of ref.2, it is stated that"... the EFW facility did not impact on the evaluation of site D versus site F, in terms of leachate treatability". Provide a detailed description of the impact which was used to decide that the EFW facility did not impact on that evaluation.
- 1.22 "Since representative samples could not be obtained from an existing EFW facility plant"(ref.2, pg.12). Provide a list of the existing EFW facilities contacted, the information requested and the answer obtained.

- 1.23 List the "approved methods" you used(ref.2, pg.4) in the analysis of leachate and how do they differ from those of regulation 309 of the Ontario Ministry of the Environment.
- 1.24 "Only those contaminants having levels above the method detection limit in anyone of the four landfill sites are included in this Table"
 - 1.24.0 Indicate which one is "this Table".
 - 1.24.1 Provide literature references where the machine detection limit is contrasted or compared with the method detection limit.
 - 1.24.2 Indicate whether summary Tables 1,2,and 3 come from one sample, three or more samples.
 - 1.24.3 List all the compounds that you tested in "this Table" which were below the method (machine) detection limit; indicate also the method (machine) detection limit for each compound. I will challenge the liberty you take of not reporting certain compounds under the limits.
 - 1.24.4 Explain why you violated your own rule of not reporting the compounds under the limits, in the case of benzene 1,2-dichloro and 1,3-dichloro (Summary Table 1).
 - 1.24.5 Did you test for compounds having molecular weights above and around 50,000 mol.units?
 - 1.24.6 Indicate the standards used in obtaining summary Table 1; provide also the detection limits for each compound not quantified there.
 - 1.24.7 On pg.5 of ref.2 you indicate PCB/Pesticides 0, 0, 0, 0 without mentioning the detection limits and whether you analyzed them together; no detection limit is also indicated in the 0,0,0,0 of sulphates in summary Table 3
 - 1.24.8 Provide information on why in summary Table 1,2,3 you report only about 18 of the parameters of my Table 1. What happened to the other 49; where they below, equal to or above the MOE guidelines?
- 1.25 "Samples of leachate ... analysed with respect to routine industrial or municipal waste contaminants, trace organic contaminants, and trace inorganics(metals)"(ref.4, pg.31). Provide the results.
- 1.26 "The initial characterization of the landfill leachate was made through standard wet chemistry analyses"(ref.2, pg.33). Provide the results of these analyses.
- 1.27 "Detailed analytical information on the quantity and quality of the leachates was provided by Pollutech to Can Tox (ref.2,pg.37). Provide the same information to me.
- 1.28 Ref.2, pg.40, 1st paragraph. Provide the list of substances involved here, their potential human health implications and the most serious health effects of them.

- 1.29 Provide literature references where it is stated that phthalates are only found in leachate of older landfills and not in young ones(ref.2, pg.45; 53).
- 1.30 In ref.2, pg.47, last paragraph: "contaminants found in Halton leachate but not in the literature" are mentioned. Provide a full list of them.
- 1.31 "The major tasks undertaken by Pollutech during the study as part of this submission were as follows: - A detailed literature review... -Detailed characterization of landfill leachate produced in the regional municipality of Halton..." (ref.2, pg.1). On pg.31 of the same ref. something else is reported, not what is promised in the table of content.
Unless you provide me with full quantitative chemical analyses of the regional leachate, I will have to challenge your conclusions, namely:
 - 1.31.1 Your promised, detailed characterization is not there.
 - 1.31.2 You unduly introduce in the discussion parameters (e.g., ammonia) on pg.48 without providing its analytical data.
 - 1.31.3 You present data (Table 1) which are seriously incomplete, not controllable, without units, with omission of the worse parameters. Complete these data.
 - 1.31.4 You put paragraphs, like the one on top of pg.49, which are in need of explanation to avoid ambiguity.
 - 1.31.5 You make qualitative statements, like the last of pg. 49, giving them a pseudoquantitative meaning. However, at the same time, you avoid presenting the figures quantifying your statements. Quantify your statements.
 - 1.31.6 You present contradictory results (Tables 2-7) without any guarantee that what you did is correct. Furthermore, you artificially split your results and explanations inflating them with unqualified and unquantified suggestions, like the one at the bottom of pg.50. Quantify & qualify.
 - 1.31.7 Provide all the full and complete tables of the chemical analyses from which you took your pieces of information as reported from pg.48 to 52.
 - 1.31.8 Provide the missing inorganic data of Table 8.
 - 1.31.9 Tables from 8 to 22 are again incomplete, some of them illegible, like the title of table 14, many of the figures in the tables are also illegible, no calibration standard is ever presented, no specific method is indicated, no sampling method is suggested, and no literature reference is given for any of them. Complete the information.
 - 1.31.10 Provide all the chemical analytical data of the leachates used in the tests to prove the statements made in the three paragraphs of pg.70 of ref.2.

RECEIVED MAR 12 1987

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Ms. Yvonne Lane
Registrar
Joint Board
1 St. Clair Ave. West
5th floor
Toronto, Ont. M4V 1K7

March 10, 1987

re: Halton Consolidated Hearing

Madam Registrar,

I am writing to you for two reasons.

1) I strongly petition the Joint Board to arrange for a pre-hearing conference in the week preceding the hearing of May 5, 1987. I for one have to bring to the Board's attention something of unusual gravity and consequences, something which has probably never been put forward at such hearings before.

2) I wish to be consulted in the way and form the other parties normally do. Failure to do that put me in the condition of not being able to agree with the other parties temporary conclusions. E.g., I reject the agreement reached by the others, without my consent, concerning the order in which they intend to question the witnesses at the hearing.

Yours Sincerely,



P. Boldrini

cc: Mr. Sid A. Chumley
Mr. David Estrin & Fred Leitch, Esq., Q.C.
Stephen R. Garrod, Esq.
Michael McQuaid, Esq., Q.C.
Colin Stevenson, Esq.
John Tidball, Esq.
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March 11, 1987

Mr. Thomas R. Lederer
Osler, Oskin & Harcourt
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Box 50
First Canadian Place
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M5X 1B8

re: Halton Consolidated Hearing

Dear Mr. Lederer,

You will find here my second information request with respect to your client's reports. It would be of great assistance if such information is provided soon.

You will also find copy of my March 10, 1987 letter to the Registrar of the Consolidated Hearing asking for a pre-hearing conference.

Yours Sincerely,

P. Boldrini

Encl. 7 pages

cc: Mr. Sid A. Chumley
Mr. David Estrin & Fred Leitch, Esq., Q.C.
Stephen R. Garrod, Esq.
Michael McQuaid, Esq., Q.C.
Colin Stevenson, Esq.
John Tidball, Esq.
Robert Tuer, Esq.
Ms. Toby Vigod

Region of Halton Environmental Assessment; information request no.2

- References: 3) Schedule B-D. Hydrogeologic report. vol.1, Sept.1986
4) Schedule B-D. Hydrogeologic report. vol.2, Sept.1986
5) Schedule B-F. Hydrogeologic report. vol.1, Sept.1986
6) Schedule B-F. Hydrogeologic report. vol.2, Sept.1986

2.1 "General chemistry- Surface waters" (ref.4, App.11)

- 2.1.1 Do the first two pages of data refer to one analysis from the same sample, or from more than one sample?
- 2.1.2 Are these data all the parameters measured on the sample(s) or are there other parameters measured but not reported?
- 2.1.3 If there are more parameters measured, provide them.
- 2.1.4 On pg.22 of ref.3 it is stated that 10 samples were tested; provide the results measured in the 10 samples separately.

2.2 "Detailed chemistry- Groundwater (ref.4, App.11)

- 2.2.1 Answer question 2.1.1, 2.1.2, 2.1.3 when referred to these three pages of data: 3rd, 4th, 5th of App.11.
- 2.2.2 How many samples were analyzed for each of the 10 well depths. Provide the results for each analysis separately.

2.3 The following questions refer to the heading in 2.1 and 2.2 above.

- 2.3.1 Who sampled these waters?
- 2.3.2 At which temperature were the pH and conductivity taken?
- 2.3.3 Provide the names of the persons who performed these analyses, the date and place where the analyses were performed.
- 2.3.4 Provide the name of the method used for each analysis.
- 2.3.5 Have the results of these analyses been checked; have they been rounded off or truncated?
- 2.3.6 Provide the list of the organic chemicals which have been searched, even if not founded, in these waters.
- 2.3.7 "The ionic balances of the water analyses indicated reasonably accurate chemical results. The charge balance error was less than 10%" (ref.3, pg.53). Provide for each of the 15 chemical analyses reported in App.11 of ref.4 (plus the other analyses requested here):
- The separate sums of cation- and anion-equivalents used to calculate the ionic balances.
 - The complete lists of the cations and anions used in the same calculations.

- 2.4 Ref.3, Table 8, pg.81. Provide copy of the original table(s) sent by Pollutech Ltd. to the compilers of Table 8.
- 2.5 Ref.3, Table 9, pg.82. Provide copy of the original Table(s) sent by Pollutech Ltd. to the compilers of Table 9.
- 2.6 I will challenge the entire par. of pg.83 of ref.3 using the same ref. of Reinhart et al.(1984) quoted in the page.
- 2.7 The following questions refer to the section: "Monitoring and reporting" of ref.3, pg.136 and onward.
 - 2.7.1 "Should the groundwater quality demonstrate evidence of an unacceptable level of impairment". Provide a list of parameters and their level (quantity) determining such impairment.
 - 2.7.2 "Monitoring chemistry vs.distance". Provide (parameters) and their levels entering in this chemical dynamic equation.
 - 2.7.4 "samples would be collected for detailed background quality analysis"(pg.138). Provide details for the detailed analysis.
 - 2.7.5 Last three lines of pg.138. These are only very few of the "landfill contaminants indicators" listed on pg. 79-118. Provide the full list of them.
- 2.8 How related are the two lists of pg.V & VI of ref.3?
- 2.9 The following questions refer to the tritium measurements.
 - 2.9.1 Provide the previously published measurements on the tritium presence at the two sites D & F.
 - 2.9.2 Are you aware of the objections to the quantitative use of the tritium dating method?
 - 2.9.3 I will challenge the quantitative validity of the calculations mentioned on pg.62-63 and reported in App.11 of ref.4.
 - 2.9.4 Why was tritium used and not other isotopes more stable?
- 2.10 On pg.X of ref.3 "non-adsorbed contaminants" and "weakly adsorbed organic contaminants" are mentioned. Provide a full list of both categories, using the data of App.11 of ref.4.
- 2.11 On pg.X of ref.3 it is stated: "The maximum chloride concentration at the property boundary was estimated to be 350 mg/L". Provide the data on how you arrived at such an estimate.
- 2.12 On pg.22 of ref.3 it is stated: "Prior to this sampling program, observation well waters were tested for pH, ... on two occasions". Provide the results of these measurements separately.
- 2.13 Provide the "Land-use activities potentially detrimental to water resources" which are quoted on pg. 53 of ref.3.

- 2.14 The questions which follow refer to ref.5 & 6.
- 2.14.0 Provide an answer to questions 2.4, 2.5, 2.6, 2.7, 2.9, 2.10, 2.11 as they refer to ref.5-6.
 - 2.14.1 "These measurements which were made on three occasions are shown in Drawing 4"(ref.5, pg.45).Provide the full results.
 - 2.14.2 Provide the ionic balance calculations of the analyses of App.12, ref.6, in the same way asked in 2.3.7.
 - 2.14.3 Provide the full and complete analyses of the surface water chemistry -Indian Creek (ref.6, App.12), namely the amount of calcium, magnesium, sodium and potassium which (see question 2.7.5) are landfill contaminant indicators.
 - 2.14.4 A misterious word "residue" appears in the first page of the water chemistry of the Indian Creek (ref.6, App.12): provide the explanation for it, e.g. what is it supposed to contain, how is it determined, its meaning, etc.
 - 2.14.5 "Elevated contaminant indicators... such as conductivity, chloride, phenolics and BOD...". Provide the exact data you are referring^{to} here, including the list of all contaminant indicators and their amounts, their reference.
 - 2.14.6 "The presence of organic carbon can serve to retard the migration of organic substances through the mechanism of sorption"(ref.5, pg.21). Provide the scientific basis for this statement.
 - 2.14.7 "... well water was tested for pH... on two occasions: Nov. 1985 and Ja.1986". Provide the results separately.
 - 2.14.8 "To establish background surface water and and ground-water quality, five surface water and thirty groundwater samples were tested..."(ref.5, pg.23). Does this mean that the five surface water analyses of App.12 and the 30 ground-water analyses were measured only once for each sample?
 - 2.14.9 Where are explained all the chemical analyses mentioned on pg.24 of ref.5?
- 2.15 The questions which follow refer only to ref.5: pg. only is quoted.
- 2.15.1 I will challenge the content of the last sentence on pg.65.
 - 2.15.2 "Chloride concentrations exceeding 10,000 mg/L were measured. This distribution... would indicate a slightly less mature flow system near surface....". Provide references & a clear explanation of mature flow system, near surface (how near in metres?), more mature geochemical facies, dominant both near surface and at depth off site.(pg.66).

- 2.15.3 Provide the name of the person who approved pg.66, I will challenge that person on "diffusion of chlorides", "mature chemical nature", etc.
- 2.15.4 Provide copy of the Gartner Lee Associates Ltd. report which is quoted in support of your pg.68.
- 2.15.5 Indicate where the results of well HC15-86 are in App.12. (pg.68).
- 2.15.6 Provide a rational explanation why something found in ppt amounts should be also found in ppb (pg.69, top).
- 2.15.7 I challenge the statement: "The recharge rate was also calculated by the computer model". Provide the input data for such a model (pg.74).
- 2.15.8 "non-reactive contaminants", "conservative contaminants" (pg.76). Explain and provide the list of them.
- 2.15.9 "non-reactive dissolved contaminants"; explain and list them. (pg.79).
- 2.15.10 It is false that: "dispersion is a mechanism that does not have a clear theoretical basis" (pg.79-81). What is necessary to grasp such a basis is to know chemistry and physics.
- 2.15.11 The ref. Cherry (1979) does not exist in the list (pg.80). Provide it.
- 2.15.12 "A non-adsorbed contaminant ($R=1$) such as chloride which travels at the same rate as the groundwater". Provide a list of the others having the same property (pg.103).
- 2.15.13 "heavy metal contaminants are expected to be strongly adsorbed and virtually immobile at site F" (pg.103). Provide a scientific reference for it or a practical measurement.
- 2.15.14 I challenge the premises of this model, especially last six lines of pg.116.
- 2.15.15 I challenge the introduction of such a speculative model, when in Burlington you have better and concrete practical examples to study and measure (pg.118-122).
- 2.15.16 As bad examples found in the list of references, I list:
1st ref.: gives only the volume of the journal, not the pg.
2nd " date, journal, volume and page are missing;
4th " pg. is missing;
7th " no journal vol. is given.
- 2.15.17 "The amount of deleterious substances such as gypsum" (pg.22). Why is gypsum deleterious? What other substances are also so deleterious at sites D & F?

- 2.16 Hydraulic conductivity is abundantly used. E.g.,
- pg.48, last par. "The mean hydraulic conductivity..." Explain of which "mean" we are talking here and whether is a measured, estimated or assumed value?
- pg.50 Two values are given: one is assumed, the other is assigned. Are assumed and assigned synonyms of guessed?
- pg.12 "The Hvorsley (1951) method was used to estimate..." Explain the meaning of the estimate.
- pg.51 Three quotations: the first is not clear who measured it, the second is not clear who "indicated" it, the 3rd is an unqualified (measured vs. assumed) quotation.

Provide a full and complete Table with all the values of hydraulic conductivity mentioned, specifying whether they are guessed or measured values. Explain also why you used the geometric mean, instead of one of the other means. Finally, where are the values of App.11 of ref.6 explained in ref.5?

- 2.17 The following three questions refer to the present regional landfill in Burlington.
- 2.17.1 What is the maximum temperature of the water beneath the landfill and are there isotherm maps of it in the horizontal and vertical directions?
- 2.17.2 What is the density of leachate and water beneath the landfill and are there isodensity maps: vertical and horizontal, of it?
- 2.17.3 What is the highest amount of TDS (total dissolved solids) beneath the landfill and are there iso-TDS vertical or horizontal maps?
- 2.18 For all the chemical analyses presented, and suggested, in ref.1, 2, 3, 4, 5, 6 provide:
- proof that the analysis is correct and reasonable;
 - whether or not the results presented constitute all the results searched for;
 - in case of results which were searched for, but are not presented, provide them now;
 - the method followed in the analysis & its precision;
 - checks and standards used in each analysis, their accuracy;
 - person who sampled, the temperature measured, date of sampling;
 - who performed the analysis, where and when;
 - for the pH measurements, provide the standardization method;
 - for the other measurements, provide the intermediate passages before arriving at the result;
 - the interpretation of the results, their references;
 - relevant intra- & inter-parameter relationship: e.g., when samples at different depths were analyzed, provide the list of parameter interrelations;

- a data representation allowing direct recognition of variations, indication of concurrent chemical processes and anomalies;
 - when ion-exchange is claimed, provide proof of it on a Durov diagram. Prove also when reverse ion-exchange occurs. Provide the same kind of proof for recharging waters and for end-point waters;
 - I will challenge all representation of results in ppm or ppb, unless they are accompanied by their measured density & temp.;
 - provide the TDS figure (total dissolved solids) or, in its absence, the density of the solution & its temp.
 - I will challenge the ambiguities, such as: analyses written without specifying the units of measurement, expressions such as nitrate or phosphate without mentioning if they are nitrate nitrogen or phosphate phosphorous, etc.
 - provide a list of the values which were calculated in these analyses, as opposed to those measured; carbonates-bicarbonates, alkalinity-hardness, etc.;
 - provide the analyses of the parameters listed in my Table 1 & explain the reason why they were not measured, when they are not given;
- 2.19 Provide proof that leachate in site D & F will be equal or different from each other. Where is this question considered?
- 2.20 Explain the arbitrary use of the chemical vocabulary. Some of your language looks like that of chemistry, but does not have the same meaning as in chemistry: analysis of organic chemistry, background chemistry, detailed chemistry, chemical composition, general chemistry.
- 2.21 I will challenge your presumption that you did assess and predict the long-term effects on water resources as a consequence of landfilling at sites D & F.
- 2.22 I will also challenge your conclusion that you identified measures to minimize the adverse impacts to water resources at sites F & D.
- 2.23 In ref.6 there are pages with insufficient or no identification or explanations. E.g., the last page of App.12 has no well identification, location, sample, analyst, laboratory, etc. In this form, it does not mean anything. Provide explanations on what this page is and on what it is supposed to prove. The same can be said of the previous four pages to the last of App.12; for them too, provide clarifications.
- 2.24 Considering surface-, shallow- and deep-groundwater, provide a list of the closest chemical parameters and properties shared by site D & F. Also provide a list of the most divergent chemical parameters and properties opposing site F & D.