

CONSOLIDATED HEARINGS BOARD

IN THE MATTER OF Sections 2 and 3 and 6 (3) of the Consolidated Hearings Act, 1981, S.O. 1981, c.20;

— and —

IN THE MATTER OF Section 12(2) of the Environmental Assessment Act, R.S.O. 1980, c.140;

— and —

IN THE MATTER OF Sections 30, 35 and 38 of the Environmental Protection Act, R.S.O. 1980, c.141, as amended;

— and —

IN THE MATTER OF Sections 24 and 61 (2) of the Ontario Water Resources Act, R.S.O. 1980, c.361, as amended;

— and —

IN THE MATTER OF Section 28 (3) of, and Regulation 164 under, the Conservation Authorities Act, R.S.O. 1980, c.85, as amended;

— and —

IN THE MATTER OF Section 40(12) of the Planning Act, S.O. 1983, c.1, as amended; In connection with site plan control of the sanitary landfill site;

— and —

IN THE MATTER OF Section 22(1) of the Planning Act, 1983 In connection with a referral to this Board by the Honourable Bernard Grandmaitre, Minister of Municipal Affairs, on a request by the Regional Municipality of Halton to amend the Official Plan for the Town of Milton to redesignate a parcel of land comprising Part Lots 3 and 4, Concession 2 N.S. in the Town of Milton from "Agriculture" and "Conservation and Hazard Lands" to permit the construction, operation and maintenance of a landfill site, Minister's File No. 24-OP-0208-A01;

— and —

IN THE MATTER OF Section 34(11) of the Planning Act, 1983 In connection with an appeal to this Board by the Regional Municipality of Halton for an order directing an amendment to By-law 61-85 of the Town of Milton to rezone the lands situated at Lot 3 and part of Lot 4, Concession 2 N.S., in the Town of Milton from "Agriculture" to permit a regional sanitary landfill site and ancillary uses;

— and —

IN THE MATTER OF Section 15(1) of the Planning Act, R.S.O. 1980 ch.379 In connection with a referral by the Honourable Claude F. Bennett, Minister of Housing on a request by Tremaine Briannia Citizen's Group for consideration of part of the Official Plan for the Halton Planning Area with respect to Sections 1 to 5 inclusive, 7, 9 and 10 of Part III D3 Solid Waste Management, Minister's File No. OPC-0026;

— and —

IN THE MATTER OF Section 64 of the Ontario Municipal Board Act, R.S.O. 1980, c.347 as amended In connection with an application by the Regional Municipality of Halton for an order approving:

- a) the acquisition of land for the construction, operation and maintenance of a sanitary landfill site to contain 7.96 million cubic metres of waste in the Regional Municipality of Halton and to do so by one of two alternative methods as follows:
 - (i) landfilling at the site referred to in Halton's Environmental Assessment as Site F in the City of Burlington;
 - (ii) landfilling at the site commonly referred to in Halton's Environmental Assessment as Site D in the Town of Milton

at an estimated cost of \$12,775,000.00, and the borrowing of money by way of temporary advances not exceeding in the aggregate such estimated cost pending the sale of debentures, and

- (b) the issuance of necessary debentures to a maximum of \$12,775,000.00 for a term not to exceed fifteen years;

— and —

IN THE MATTER OF Section 193(5) and Paragraph 84 of Section 210 of the Municipal Act, R.S.O. 1980, c.302, as amended;

— and —

IN THE MATTER OF Sections 6, 7 and 8 of the Expropriations Act, R.S.O. 1980, c.148;

— and —

IN THE MATTER OF an undertaking of the Regional Municipality of Halton to provide facilities for the purpose of receiving, dumping and disposing of waste as required by section 137 of the REGIONAL MUNICIPALITY OF HALTON ACT, R.S.O. 1980, c.436, as amended, by acquiring the land for, constructing, operating and maintaining a landfill to contain 7.96 million cubic metres of waste in the Regional Municipality of Halton.

VOLUME: 191 (Pages 47350-47438)

HELD AT: Oakville, Ontario

DATE: November 3rd, 1988



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Toronto, Ontario

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BEFORE: H. H. Lancaster, Q.C. - Chairman
Dr. D.J. Kingham - Member



Hearing conducted at The Oakville
Granary Commercial Centre, 105 Robinson
Street, Oakville, Ontario, on
November 3, 1988.

VOLUME 191

APPEARANCES:

T.R. Lederer and
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Municipality of Halton
(Proponent)

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for the Ministry of the
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for the West Burlington
Citizens Group

D. Estrin,
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H. Dahme

for the Corporation of the
Town of Milton

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A. Nurvo

for the Milton Area Citizens
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affected Milton area
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Limited

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and C.J. Tzekas

for the City of Burlington

C. Mansfield

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Resources

P. Renaud

for Cumis Limited



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APPEARANCES (Cont'd):

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2

C. Stevenson
P. Hancock

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J.H. Olah

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Per: P. D. McQueen

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1 --- Upon commencing at 9:35 a.m.

2 ARGUMENT BY MR. MCQUAID (cont'd):

3 MR. LANCASTER: Good morning. Please be
4 seated.

5 MR. MCQUAID: Thank you Mr. Chairman,
6 Dr. Kingham. I would just like to go back to the two
7 documents that I filed at the end of the day yesterday.
8 The summaries that I had made of what I called liner
9 efficiency calculations.

10 DR. KINGHAM: Go ahead.

11 MR. MCQUAID: I wanted to just retrace a
12 question you put to me Dr. Kingham, but let me
13 backtrack for a moment. I will try and explain what it
14 is that this calculation sheet is doing. First of all
15 I was trying to relate the 20 and 60 per cent. You
16 recall the evidence that I had read in yesterday was
17 from a portion of Mr. Feenstra indicating that he did
18 not recommend a liner because the efficiency would be
19 only 20 to 60 per cent. So, I put this down as a
20 calculation or an indication of the calculation so I
21 would be clear that he was thinking in terms of 8
22 millimetres going through and the case of 10 or 20
23 effectively being the exfiltration rate. Then I just
24 carried that document forward further based on the
25 evidence we had heard from Mr. Bowen which I read to



1 the Board yesterday that it could be as high as 30 or
2 40 and to the evidence of Mr. Petrie that it could be
3 for design purposes, 50 would be appropriate. I
4 carried the mathematics, as it were, through. What
5 should be clear is that this amount, this exfiltration
6 rate in my mind, as I was trying to explain it and
7 maybe I didn't do it very well yesterday. The
8 exfiltration rate is the amount, as I understand it,
9 that a liner or not, and I can put it that way, at the
10 bottom of the landfill site and it is the amount that
11 has bypassed the leachate collection system. Whether
12 it is the Trow design or any other design that might be
13 thought of. The modified design. It is the amount
14 that is bypassing the leachate collection system and
15 therefore is going to be discharged to the shale, to
16 the environment because it is not being collected by
17 the leachate collection system. There will be, I think
18 you may recall gentlemen that the two, that there were
19 figures put forward that the Ministry of the
20 Environment design was 300 metres of infiltration that
21 the collection systems were to be designed to and there
22 was reference, I think, in the evidence to the fact
23 that there may be 150. That was in the CRA report but
24 that the design figure is 300. That means the leachate
25 collection system is collecting that amount, whatever



1 it is that you are designing to, but bypassing the
2 leachate collection system is the term we have been
3 using, exfiltration as I understand it. That first
4 column then, exfiltration rate on this liner efficiency
5 calculation is the amount that is bypassed, in my
6 submission at this point, the Trow leachate collection
7 system. Then if we were to go to B-691 as we reviewed
8 it yesterday, this is without the CRA design and sand
9 blanket. The evidence was 5 to 8 millimetres would get
10 through just a straight liner of the nature that is
11 shown on that document. The amount collected then in
12 that third column, I'm sorry, is the amount collected
13 by the liner. If it is of any assistance to the Board
14 you should write on that column the amount collected by
15 the liner. There already will be an amount collected
16 by the leachate collection system. Then, the fourth
17 column is the reduction of exfiltration through the
18 liner or the collection efficiency of the liner. When
19 I was doing this the night before last I put a couple
20 of headings on that. Just so the Board is clear it is
21 really saying what the efficiency of the liner, were it
22 to be installed would be.

23 DR. KINGHAM: Yes, we would have
24 understood that to be the reduction of exfiltration
25 from the landfill either as a landfill considered in



1 one case without a liner or now as a landfill plus
2 liner. Then the reduction of exfiltration of the
3 combination in the case of your percentage column.

4 MR. MCQUAID: That is right, yes. Then,
5 that second liner efficiency calculation with the 4 and
6 the 1 is of course the same calculation, 10 to 50, the
7 same calculation is done and this is based on the CRA
8 design which was explained as we read the evidence
9 yesterday and relates to the B-861, Design and
10 Operations Report of CRA.

11 Now, just a brief recap of where we were
12 as the evidence was developing, concentrating on
13 Site F. I had taken the Board through the evolution
14 and development of the hydrogeological characterization
15 of the site. I think it is fair to say that the
16 hydrogeologists were searching for resolution of the
17 paths on Site F. I have indicated to the Board that
18 there had been a history at Bayview that we had
19 reviewed. You had, as I explained yesterday, between
20 CRA, my submission, and the other Trow and
21 Dr. Charlesworth had a different philosophical outlook
22 as to what I characterized, as in the case of CRA
23 saying, let us put in the best available facility and
24 contain as much as possible as opposed to letting
25 leachate discharge to the environment. We have



1 reviewed the various documents and so on so we are at
2 the point then that in cross-examination of Mr. Petrie
3 and then when Mr. Feenstra came in and put his evidence
4 in reply on F the position of the Region by that point
5 had evolved to the point that instead of the original
6 Trow design as proposed by the Region, which I think by
7 memory was a 3 to 4 metre perimeter drain around the
8 facility, and Mr. Feenstra was recommending some sort
9 of other drain system. The reason I put it as some
10 sort of other drainage system is I would like to review
11 with the Board what his evidence was on that because in
12 my submission it is not clear as to whether he is
13 really recommending a deep perimeter drain system or
14 not.

15 Let me take you first of all to volume
16 174. I think it would be helpful, as well, just to
17 have open at the same time, Mr. Feenstra's witness
18 statement, H-936. You will recall yesterday that we
19 had, that I brought to the Board's attention that at
20 paragraphs 39 and 43 there was reference to a leachate
21 collection system which Mr. Feenstra seemed to have in
22 mind. Which he was testifying to. First, could I
23 refer you to 43416 and at line 10, sorry line 11:

24 "Q. That is what I wanted to turn to
25 right now, the perimeter drain. The



1 perimeter drain, as proposed by Trow, is
2 different from the perimeter drain which
3 you have given in your oral testimony in
4 reply; isn't that correct?

5 A. That is correct. The perimeter
6 drain, I believe, described in H-40A,
7 extended to a depth of three metres.

8 Along the southern portion of the site,
9 that would be situated entirely in till"
10 and then he went to, just continuing I guess with lines
11 24 and 25 he says:

12 "...I am not sure whether the sides of
13 the perimeter drain would be founded in
14 shale or in till"

15 so there is a difference in terms of depth and there
16 seems to be some uncertainty. I think the evidence was
17 it was just 3 to 4 metres in the till but perhaps I may
18 be able to pick that up later this morning. In any
19 event the Trow design was very different. Then going
20 over to page 43417 I asked him to look at the last page
21 in his witness statement, that Attachment 4 and I
22 directed his attention to HC-11 (sic) where there was
23 an 11 metre active zone at that particular point then I
24 asked him to look at the till and he initially said he
25 thought it was 5.7 metres. And then over at the top of



1 43418 he looked at drawing number 12 in the CRA Report
2 and he said:

3 "That is correct, eight metres at HC-5"
4 that is at lines 3 to 4. I would ask the Board if you
5 haven't already to make a note then that at the HC-5
6 there is 8 metres of till and 11 metres of what he
7 would characterize as the active zone.

8 Then at line 9 to 11 I asked him:

9 "... do I understand it, Trow would have
10 gone down three metres into the till for
11 their perimeter drain?

12 A. That is correct.

13 Q. You are now recommending, as I
14 would understand it, that we go down
15 eight metres of till plus 11 metres of
16 active zone, you go down 19 metres.

17 A. At that particular location, if
18 the drain were to go into that zone,
19 that would be the case."

20 So here he seems to be saying that the deep perimeter
21 drain which he is proposing would go as deep as 19
22 metres and, again carrying, assuming that at the
23 perimeter that it was 11 metres.

24 "Q. If it didn't go in there would
25 be ...



1 A. I am not exactly...

2 Q. ... discharge off-site"

3 We were both talking I guess. He said at line 24:

4 "Excuse me, I'm not exactly sure where

5 HC-5 is in relation to the site

6 boundary..."

7 and then he goes on to say:

8 "That is assuming there is eight metres

9 of till at the location of the perimeter

10 drain HC-5, I am not sure how close that

11 is, it may be 100 metres away.

12 Q. You are saying you would have to

13 know what the till was exactly at the

14 boundary? "

15 and he says:

16 "I am not sure how much thinner it gets"

17 Line 16:

18 "Q. You can't tell us how deep it

19 would be then in order to collect it

20 right now, because you don't know how

21 thick the till is.

22 A. That is correct."

23 Then this is where I say he was very unclear as to what

24 really he is recommending.

25 "Excuse me, I don't think I indicated



1 that the entire active zone would need
2 to be cut off. I believe in my direct
3 testimony, I indicated a depth of
4 perimeter drain of four to five metres
5 into the shale.
6 Q. All right, so you are saying the
7 till, if there is till at that point
8 plus four to five metres.
9 A. That is correct.
10 Q. If in fact the active zone, there
11 may be portions then of active zone that
12 are not cut off in which event there
13 would be discharge off-site.
14 A. That would depend on the actual
15 water level in the perimeter, that could
16 be maintained in the perimeter drain
17 itself, related to the water levels in
18 the underlying shale.
19 Obviously, even though the hydraulic
20 head, even though the perimeter drain
21 itself might not be situated to the base
22 of the active zone, if the hydraulic
23 head in the perimeter drains is below
24 the hydraulic head at the groundwater,
25 the base of the active zone, water from



1 deeper than the perimeter drain, would
2 also be drawn up into the perimeter
3 drain.

4 Q. I thought you had said that the
5 active zone is highly anisotropic.

6 A. It may be in some locations, yes.

7 Q. Wouldn't that have some bearing?

8 A. That would have some bearing.

9 Q. On what you just said. There would
10 be discharge below that.

11 A. There may be.

12 Q. Have you considered that or have
13 you dealt with that in giving your
14 opinion or is that just to be
15 discharged?

16 A. That is to be monitored and
17 certainly the migration of any
18 contaminants underneath the perimeter
19 drain would have to be monitored and the
20 possible effect of that considered."

21 Then I asked him if there had been any discussion of
22 this with Trow and I think over at the top of page
23 43423 I think there is reference to some discussion
24 with Mr. Hiraishi and then there was further discussion
25 at line 18 on page 43423:



1 "To the extent, as we have just been
2 discussing, the perimeter drain that you
3 have been proposing, you are
4 recommending, does not go below five
5 metres in the shale, would I be correct
6 there may still be ..."

7 and I tail off into monitoring and the answer at line
8 25:

9 "A. There is the potential, but it is
10 also our expectation that the majority
11 of the flow will be occurring in the
12 upper portions of the shale in most
13 situations, although there is certainly
14 the possibility that in some areas where
15 the active zone is thicker than the
16 depth of the perimeter drain that there
17 may be some underflow. That is a
18 possibility."

19 I just want to note the reference to the words "that is
20 a possibility".

21 "Q. That is dependent upon the
22 thickness the active zone and the
23 understanding that you have of how deep
24 that active zone is.

25 A. That would depend on the thickness



1 of the active zone, the depth of the
2 perimeter drain which in some areas
3 where the till cover is thinner , could
4 possibly be placed deeper if required,
5 deeper than five metres, that is. It
6 would also depend, to some degree on the
7 degree of anisotropy of the hydraulic
8 conductivity in the weathered shale.
9 If there is a significant degree of an
10 anisotropy in the weathered shale, the
11 perimeter drain would be more effective
12 at capturing that deeper flow and
13 preventing under-flow.

14 Q. Your design on the perimeter
15 drain, has this been put on paper
16 anywhere, summarized?

17 A. It has not, as far I am aware.
18 One of the first pieces of information
19 that would be required for a detailed
20 design of the perimeter drain system is
21 going to be the thickness of the till
22 cover in the area of the proposed
23 perimeter drain and additional borings
24 are certainly required.

25 Q. That is not referred to in your



1 witness statement, as I see it, Mr.
2 Feenstra; is it?

3 A. No, I don't discuss the detailed
4 design."

5 And we corrected the references to paragraph 21, yes,
6 there is references, we went to the paragraphs then
7 where there was reference to what he had indicated as,
8 was a toe drain leachate collection system as we saw it
9 in the witness statement at paragraph 43. He says that
10 should be the deep perimeter drain. Then over at page
11 43427 at line 15 I guess 13:

12 "Certainly for the final design,
13 additional work would have to be done.

14 Q. That is not discussed anywhere in
15 the material, is it?

16 A. No, it certainly is not. That is
17 a landfill design aspect as far as a
18 hydrogeologist is concerned.

19 Q. What is the program, just so as I
20 am clear I understand it, what is it you
21 are saying has to be done, or needs to
22 be done?

23 A. As a landfill designer, I can't
24 say precisely what needs to be done --
25 excuse me -- as not being a landfill



1 designer, I can't determine what needs
2 to be done, but certainly, to be able to
3 determine what elevation it is feasible
4 to put in the perimeter drain system in
5 the shallow bedrock, one has to
6 determine the till thickness along the
7 location of the perimeter drain system.
8 It has a great bearing on what kind of
9 construction techniques are used. It
10 might even lead one to the consideration
11 of reducing the base elevations."

12 He talks about some other aspects of that then we
13 talked about the necessity of whether a hydrogeologist
14 would be involved in determining what the depth is:

15 "That would also be useful information
16 that could be gathered most likely from
17 installation and testing of the
18 monitoring well system in the areas to
19 the southwest and southeastern side of
20 Site F."

21 That was earlier he had indicated there would be
22 discharge around HC-8 to the southeast and southwestern
23 side of Site F.

24 Now, the thrust of those remarks, in my
25 submission, in that discussion, exchange indicates that



1 there is an active zone yet undetermined southeast and
2 southwest. Further work needs to be undertaken,
3 additional borings are required to determine the
4 thickness of that zone and in my submission the design
5 or the involvement, what would be done is at best
6 sketchy. Mr. Feenstra seems to be admitting that he
7 will not address all the flow that may migrate off-
8 site. Gradients from the landfill are downward into
9 the underlying fractured rock as various witnesses have
10 testified. Mr. Petrie, Mr. Feenstra had hydraulic
11 conductivities in the order of 10^{-4} centimetres per
12 second. We have the situation where the depth of the
13 active zone has not been defined and I am not sure, I
14 don't think there are really criteria that anyone has
15 enunciated as to how it will be defined. No one has
16 said what will constitute an active zone or where the
17 cut up of the active zone might be. So, as it stands
18 today, in my submission, the site, the proposal
19 enunciated by Mr. Feenstra will allow for off-site
20 migration of contaminants in amounts unknown and ill-
21 defined such that surface water adjacent to and
22 downgradient from the site will be impacted to some
23 degree. As I say, the proposed engineering is sketchy
24 at best.

25 So, as the proposal before the Board by



1 the Region is constituted, there will be additional
2 studies of some nature to remove the sketchiness and
3 uncertainty associated with this Feenstra program.
4 But, there is no mechanism anyone has suggested that
5 would allow the City of Burlington or the West
6 Burlington Ratepayers to be involved in this further
7 discussion and investigation and design. Presumably it
8 will be an engineering solution decided upon by
9 somebody advising the Region and somebody at the
10 Ministry of the Environment in the Director's office.

11 When you stand back, in my submission,
12 and you look at the evolution and development of the
13 hydrogeology as it has occurred on this particular
14 site, whether it is the opinion of CRA and, in my
15 submission supported by Mr. Bowen concerns with respect
16 to uncertainties and complexities about the fractured
17 media site, Site F, the guesswork with respect to
18 exfiltration. One of the points I guess I should have
19 made when we started this morning was that there is an
20 interrelationship between that first column,
21 exfiltration rate, and what actually is going into a
22 leachate collection system whether there is a liner or
23 not. The difficulty that we have continually had is
24 that no one can really say what the exfiltration rate
25 is and yet it is very interconnected with the



1 efficiency of the leachate collection system. They are
2 interconnected. We are making estimates about that
3 effect, as it were, to aspects of the design. On this
4 aspect, as I have indicated earlier, at best we are
5 guessing. There has been indications of public
6 concern. There is a background of the City of
7 Burlington having difficulty with the Bayview site
8 particularly. I remind the Board also that in making
9 our submissions for a liner at Site F, were it to be
10 selected, Burlington Council, I mean c-i-l, is arguing
11 against its own interests economically. Burlington
12 accounts for approximately 42 per cent of the Region's
13 bills and effectively it is my submission asking on
14 behalf of its ratepayers and so on for a facility that
15 will achieve the best available technology at this
16 particular site. I ask the Board to take into account,
17 as well, although there is no evidence of direct
18 groundwater use, there is certainly indications of
19 surface water, potential surface water runoff.
20 Aldershot is a community of approximately 18,000 and
21 West Burlington people are the people representing the
22 north part of that community, the Aldershot community.
23 It is upgradient of a community of 18,000 people. In
24 the absence of any assurance of how the active zone is
25 to be determined, what will define an active zone, what



1 the depth of the perimeter drain really will be, no
2 ability to be involved in the decision-making
3 specifically. I am not suggesting at this point, Mr.
4 Chairman, Dr. Kingham, that we have another hearing on
5 that aspect of it. It is our submission that in the
6 absence of all that background that for Site F to be
7 approved it should be approved with the liner, an
8 underdrain system as proposed by CRA in B-681.

9 Now, I suppose on this aspect I would
10 refer to the best available technology, I refer to
11 Dr. Hughes case by case basis. I am saying in this
12 particular situation where we are asking, not for an
13 analysis of the situation based on a reasonable use
14 policy, but something better than that. We are asking
15 that that be based on the specifics that you have
16 heard, all the background I have been explaining for
17 the past day.

18 I wanted to, while we were at Site F, to
19 just finish up with a few items of reply related to the
20 analysis that was undertaken by CRA. One of the items
21 that Mr. Hodgson criticized Mr. Petrie for and I wanted
22 to set the record straight on this, he criticized
23 Mr. Petrie at one point in the transcript for not being
24 able to answer a simple question, a calculation with
25 respect to the flux through the liner that we were



1 discussing yesterday. At volume 114 page 27583
2 Mr. Hodgson read, I think it was something in the order
3 of 2, 3, 4 pages through, yes actually through to page
4 27586 where Mr. Petrie said, I'm at line 5:

5 "I beg your pardon, I believe I am in
6 error"

7 I took down that Mr. Hodgson then intimated that
8 Mr. Petrie couldn't do the calculation and he really
9 didn't get a complete answer until some time later when
10 B-691, which we discussed yesterday, was filed. This
11 was March 29th and B-691 went in sometime, I think it
12 was around April 8th. His indication was that Mr.
13 Petrie either couldn't or wasn't forthcoming with the
14 information. If I ask you to just notice from page
15 27586 onwards to 27588, particularly if I could refer
16 you to line 9 you will see that at that page the
17 calculation or over these pages the calculation
18 actually was done by Mr. Petrie and based on the
19 hypothesis that, the assumptions that were being put to
20 him at that point he calculated the flux through the
21 liner at 8.14 millimetres per annum at that point. You
22 will note that at line 11 to 13 Mr. Hodgson said:

23 "... I am sure we will have an
24 opportunity to discuss this subject in
25 the future but perhaps we could go back



1 to where it is we've left off this
2 morning at 12:30."

3 I think if we were to take the time, this is volume
4 114, really the subject was terminated at this point
5 and really not referred back until we got into volume
6 120 when Mr. Petrie gave the complete data-set and we
7 developed, he developed B-691.

8 Then there was another area of criticism
9 voiced a number of times by Mr. Hodgson was the use by
10 CRA's, criticism of the use by Trow of the FLONETS
11 modelling exercise and if I could refer you to, first
12 of all to volume 135 at page 32596. This is a summary
13 and if the Board can make a note this is really a
14 summary of the portion in the report dealing with the
15 modelling in section, part C, Section C.4.0 running
16 from page 116 through to page 137 of Exhibit B-617. At
17 this point in the transcript Mr. Petrie is just
18 summarizing what was being used. What it was being
19 used for. I refer to line 5:

20 "We have undertaken additional
21 simulations of Site F from using the
22 Trow model since we have been on the
23 stand and my initial conclusions
24 respecting the modelling exercise still
25 stand. The modelling is based on a



1 hydrostratigraphic interpretation with
2 which I cannot agree and therefore I
3 cannot place much credence on the
4 modelling results. Additional
5 simulations do not provide me with any
6 additional understanding of the site and
7 in my opinion the site is a complex site
8 and it cannot be reasonably modelled by
9 the Flonet model as applied and I cannot
10 place any interpretive weight on the
11 results generated from that model."

12 Now, as I understood what Mr. Petrie was
13 doing, he was concluding that the output from the model
14 which led Mr. Sobanski to conclusions regarding the
15 appropriateness of engineering methods and designs for
16 a landfill site or for landfill design of the site and
17 an estimation of exfiltration could not be supported by
18 use of the model, principally because CRA did,
19 principally the other work was undertaken because they
20 did not agree with the hydrostratigraphic delineation
21 of the site as provided by Trow. I would ask the Board
22 to note that neither Charlesworth, Bowen or Feenstra
23 have agreed with the hydrostratigraphic interpretation
24 of the site by Trow. The model was testing that
25 initial delineation put forward. It was to critique



1 the model as applied by Trow. Trow had provided, as
2 you will recall, two models of the site which gave a
3 measure of infiltration that ranged over one order of
4 magnitude and secondly they were saying it was the
5 rationale for engineering concepts for their perimeter
6 drain and so on. Trow placed reliance on those
7 modelling results as they did it. Now Mr. Hodgson in
8 cross-examination of Mr. Petrie and I just ask you to
9 note this, at volume 119 page 28788 criticized CRA for
10 only four and a half pages of text or indicated that
11 the Trow report only occupied four and a half pages of
12 text and two figures in the Trow report. I think the
13 thrust or intimation was that the model was not really
14 all that important. But Mr. Petrie at page 28789
15 indicated that on page 124 of H-40, that is I think
16 what we were looking at this point, Mr. Chairman, if we
17 could briefly look at the H-40 Page 124. That was
18 actually the computer simulation of the groundwater
19 flow system and you have at that particular page a
20 description, summary of the results of the modelling
21 and at page 127 there is a second section addressing
22 the modelling results. I might say in Mr., in Dr.
23 Charlesworth's report which is M-437 at (ii) I will
24 just read one sentence. This is (ii) in the Executive
25 Summary:



1 "Trow in their study of Site F placed
2 considerable emphasis on their computer
3 modelling. In the light of the results
4 contained concluded there is a
5 significant discharge zone from the
6 shale to the surface south of Highway
7 403."

8 Both Mr. Petrie and Dr. Charlesworth, as we see from
9 that sentence, understood that Trow had placed
10 considerable reliance on that modelling. Then,
11 Mr. Hodgson also criticized CRA for being I think, I
12 think he used the word unprofessional, in not advising
13 Mr. Sobanski of the error of the placement of the
14 highly fractured zone in the modelling exercise.

15 MR. HODGSON: I don't think, with great
16 respect, I made any submission in which I criticized
17 Mr. Petrie for not telling Mr. Sobanski something.

18 MR. MCQUAID: The question was put in
19 cross-examination, let us put it that way.

20 CRA, actually Mr. Petrie indicated he
21 would rerun the Trow model by placing the highly
22 fractured zone at the appropriate elevation. I don't
23 think any questions were really addressed to Mr. Petrie
24 on that model by Mr. Hodgson nor was the matter really
25 returned by him. In my submission CRA's review and



1 exercise of that modelling was not unhelpful. It was
2 not unprofessional and not inappropriate. It was an
3 examination by CRA to determine whether or not the
4 proposition put forward by Trow was of substance, could
5 be supported by the available data and in the end
6 result, in my submission, the modelling exercise did
7 indicate that it really was not of support and the Trow
8 hydrostratigraphy and their conclusions were not
9 appropriate.

10 Mr. Feenstra, in my submission, in reply
11 provided in essence similar conclusions. I refer you
12 to volume 170 at page 42317. At line 16, this is
13 volume 170. At line 16:

14 "The nature of the FLONET model is such
15 that very shallow groundwater flow,
16 groundwater flow into the shale at
17 depths of less than 5 or 10 metres
18 really can't be simulated because of,
19 what do you call it, the resolution or
20 the size of the finite element grid."

21 From this conclusion Mr. Feenstra is indicating that
22 the infiltration estimate from FLONET is not relevant
23 to the shallow or active flow system.

24 And then, at page 42320 at line 17 in
25 answer to a question from Dr. Kingham there is a



1 discussion about exfiltration and in my submission this
2 portion I am reading from line 17 indicates that the
3 exfiltration number generated by Trow is just not borne
4 out by the discussion we had about exfiltration into
5 deeper portions of the rock. There is a shift here as
6 you will see. In these remarks he is essence not
7 supporting the results generated from Trow generated
8 from the FLONET as they were applied by Trow to Site F.
9 Let me just read from line 17:

10 "DR. KINGHAM: You are saying if you put
11 in 5 to 10 metres at an unspecified
12 depth you would conclude 10 to 20
13 millimetres of exfiltration.
14 THE WITNESS: That is correct, yes.
15 The final opinion or interpretation of
16 the site of the site, Site F that I
17 would like to discuss is the estimate of
18 an exfiltration rate of 1.2 millimetres
19 per year which is discovered by Trow in
20 Exhibit H-221. As I indicated earlier,
21 this estimate comes from a FLONET model
22 estimate and this value probably
23 represents rather than total
24 exfiltration from the landfill, just
25 that portion of the flow that penetrates



1 deeper into the shale."

2 Now, that really isn't what Trow were saying in my
3 submission. That is Mr. Feenstra putting a completely
4 different interpretation on it. In my submission it is
5 implicit in these remarks by Mr. Feenstra that he is in
6 essence not supporting the results generated by Trow
7 from the FLONET model as they were implied by Trow to
8 Site F in the original evidence. All this really says,
9 as Mr. Petrie did in Exhibit 617, that the FLONET
10 model, as applied by Trow, really cannot be supported.

11 I would like to refer to one other
12 aspect of the submission from Mr. Hodgson with respect
13 to Site F and he asked or made submissions with respect
14 to an exhibit that was an earlier CRA Report H-675.
15 That was a report done with respect to Bayview and he
16 referred to the interpretation in that of various
17 methods that CRA were at that point proposing or
18 considering for the Bayview remedial work.

19 Just bear with me for a moment while I
20 get the references. The discussion about 675 with Mr.
21 Hodgson is found generally in the area I believe of
22 volume 118 page 28494 and following. In reply I have
23 to return to the discussion in volume 134 at page
24 32441, and I'm sorry, I should correct the reference I
25 made to that earlier, at page 28494 in volume 118. It



1 should be approximately 28478. You will see that
2 reference at the top of this portion of the reply, line
3 one of 32441 in volume 134. I asked him, I referred to
4 a page of that report and the estimate and referred him
5 at line 17:

6 " ' That was our estimate at that time. ' "

7 A. Yes.

8 Q. Could you indicate to the Board
9 whether those estimates, are they --
10 would they change in any respect with
11 the current information you have or are
12 they dated or are they of any
13 significance in the current context?

14 A. They are most certainly dated.
15 The estimates were based off taking the
16 information as provided by Gartner Lee
17 as in the exfiltration rates of the site
18 as factual and taking the interpretation
19 of the hydrogeology as we understood it
20 through the various researchers as
21 factual and our knowledge on the site
22 has increased greatly such that our
23 confidence on those numbers is greatly
24 reduced in order to be able to give such
25 a definitive number, It's quite



1 questionable. So, I don't think I can
2 really tell you what the number would
3 be, but I can certainly put a lot of
4 qualifiers on the number."

5 I would like to turn now, Mr. Chairman,
6 Dr. Kingham, to go back to the other thread of evidence
7 of the other site and to look at it where we were with
8 respect to evidence on Site D. I took you through the
9 first chronological review, the Trow evidence with
10 respect to Site D. Dr. Charlesworth, as I indicated
11 yesterday, voiced concern about uncertainties but
12 certainly did not condemn Site D. CRA reviewed Site D
13 in detail in their exhibit and I think the evidence was
14 that basically the CRA conclusion was consistent, the
15 Trow interpretation was consistent and then in
16 Mr. Bowen's exhibit WB-906 he also agreed, in my
17 submission, and said that he was basically, as a matter
18 of fact we will get to it in a moment what he said but
19 that D was a hydrogeologically suitable site and his
20 evidence was that it was preferable to F. That was the
21 situation that obtained down to the Feenstra
22 hypotheses, the three hypotheses in reply.

23 Volume 134 page 32392 I think I
24 indicated to the Board that in reply, that is
25 Mr. Petrie in reply answering my question as to whether



1 he had changed his views on Site D and he said at, as I
2 think I read to the Board yesterday, that, I guess it
3 is worth looking at. On page 32392, this is volume 134
4 just to pick up, as it were, what the evidence was. At
5 line 20 on page 32392:

6 "In summary, what I have learned through
7 this cross-examination respecting Site D
8 does not lead me to change my
9 conclusions. The site is predictable
10 and can be monitored and contingency
11 options can be implemented."

12 then he goes on to mention:

13 "... one type of contingency options,
14 purge wells in the granular units, and
15 there is the second kind, of purge well
16 within the waste pile or the refuse in
17 the event that the leachate head builds
18 up to higher than anticipated levels and
19 thirdly, within the weathered upper till
20 if some migration is identified at
21 levels of concern, that is relatively
22 easily remedied by some sort of
23 perimeter drain."

24 Then Mr. Bowen in his evidence, in his
25 report WB-906, if I could just ask you to turn to that



1 with respect to Site D, at page 10 of that particular
2 exhibit he begins in section 5.1:

3 "All investigators..."

4 and then he lists them:

5 "... are in agreement with the general
6 stratigraphic characterization of the
7 site, as presented by THCL."

8 "The broad agreement concerning site
9 lithology occurs since Site D consists
10 largely of soil materials which can
11 readily be identified on an original
12 basis.

13 There is some disagreement with respect
14 to the horizontal continuity of the
15 granular units, the permeability of the
16 various strata and the groundwater
17 gradients. It is noted that these
18 disagreements are more a matter of
19 degree than concept at this site.
20 It is our opinion that this again
21 emphasizes that the stratigraphy
22 at Site D is much more readily
23 characterized than that at Site F, and
24 suggests that additional investigation
25 can be conducted to characterize site



1 stratigraphy to the satisfaction of all
2 parties."

3 Then he addressed contaminant transport in the next
4 section and first sentence:

5 "Firstly, it is important to recognize
6 that the hydraulic trap concept proposed
7 by THCL will prevent the off-site
8 migration of contaminants"

9 Then he went on to discuss the engineering details, the
10 last paragraph on page 10 a couple of modelling
11 exercises and he discussed that over the page on page
12 11 and then in the second last paragraph on page 11
13 having discussed or summarized the evidence with
14 respect to contaminant transport he said:

15 "It is our opinion that in the event of
16 failure of the hydraulic trap, leachate
17 migration from the site can be much more
18 readily predicted than that at Site F.
19 This is the result of several factors
20 including;
21 - better definition of site geology and
22 therefore of the contaminant pathway,
23 - a higher degree of predictability of
24 contaminant transport within porous
25 media, as compared to fractured media,



1 - the relatively slow (periods of tens
2 of years) rate at which contaminant
3 migration will occur, which will ensure
4 that adequate time is available to
5 effect appropriate contingency measures
6 - better ambient groundwater quality
7 which would permit use of conventional
8 monitoring parameters"

9 Then he talked about what would happen in the event of
10 failure of the trap and I referred the Board to that
11 yesterday. Then continuing over the top of page 12
12 addressed diffusion and then in conclusion he said:

13 "In conclusion, it is considered that
14 with appropriate monitoring operating
15 contingency plans complete containment
16 of contaminants within the Site D
17 boundaries can be assured."

18 Then just continuing down on page 12 he gave his
19 following, the final conclusion second paragraph under
20 Conclusions:

21 "Stratigraphic conditions at Site D have
22 been adequately characterized and the
23 contaminant path has been identified.
24 Using the hydraulic trap concept, the
25 landfill can be designed so that no off



1 site migration of contaminants will
2 occur. In the event of failure of the
3 trap, or other unforeseen circumstances,
4 then off site migration of contamination
5 is expected to be slow and predictable.
6 Migration and contaminants can be
7 detected by conventional monitoring
8 methods ...

9 In the event of failure of the hydraulic
10 trap, there is ample time to institute
11 proper remedial control measures."

12 He commented on the fact that the stratigraphic
13 conditions at Site F are not as well characterized as
14 those at Site D and then went on to indicate over at
15 page 13 in this final sentence:

16 "In conclusion, it is our opinion that
17 Site D presents a more suitable and
18 predictable hydrogeologic environment
19 for landfilling than Site F."

20 Now, that was the position of Mr. Bowen and he was not
21 challenged, in my submission, not cross-examined in
22 detail by the Region on those aspects with respect to
23 Site D nor with respect to the preference, the
24 preference between D and F. I ask the Board to
25 consider that when you are considering this aspect of



1 the selection between D or F.

2 I have deliberately taken the Board to
3 this position before the Feenstra hypotheses were
4 introduced in reply evidence. I have summarized the
5 evidence for you with respect to D or F. At that
6 particular juncture you had a situation in which the
7 various witnesses, as summarized by Mr. Bowen in his
8 document, were generally in agreement with the
9 stratigraphic conditions of the site as presented by
10 THCL. The position, if we recall back to
11 Mr. Feenstra's first evidence, the position with
12 respect to the Region's assessment of the preference
13 between Site D and F was summarized in Exhibit H-263.
14 If I could ask the Board to just turn that up. You
15 recall this is the summary of Mr. Feenstra's analysis
16 of the cross-examination that was put to him with
17 respect to evaluation on various scenarios. The first
18 scenario, as it were, the comments with respect to that
19 were I think put to him by Mr. Hodgson, I can't
20 remember exactly. Mr. Hodgson says no but in any
21 event, whoever put it to him, that is the summary that
22 came out of the evidence. The second scenario was put
23 to him by Ms. Cronk and the third scenario was the
24 situation that ultimately developed after there had
25 been cross-examination by me, particularly with respect



1 to the aspect that Site D, as proposed with the
2 hydraulic trap, was going to be a containment site in
3 that flows would be into the hydraulic trap which has
4 been discussed at some length. I refer the Board back
5 in the exhibits to that Exhibit B-259 where there is
6 really just no entry at all on the XY axis as to
7 contaminants because of the fact that the flow would be
8 into the hydraulic trap.

9 That was in summary the position before
10 Mr. Feenstra returned and you had a situation where, as
11 summarized on this chart, and I suppose I should add
12 for the Board, you may recall in the evidence that
13 Mr. Feenstra had really ruled out the second scenario
14 and thought that it should be examined, based on the
15 third scenario which was that there would be effective
16 engineering and contingencies in place. As all
17 practical matters, the third, the comments in the third
18 scenario would really apply.

19 Now, it is my submission, that for
20 reasons which I am going to explain, the Board should
21 determine the position before the Feenstra hypotheses
22 were put in and that they should not be accepted in
23 determination and deciding between Site D and Site F.
24 When Mr. Feenstra came in reply he filed his reply
25 document and he provided three new hypotheses to the



1 Board with respect to hydrogeologic conditions at Site
2 D. Those three hypotheses were one, fracturing in the
3 upper till, two, the shadow effect, and three,
4 fracturing resulting from excavation. I am going to
5 deal with them in the reverse order.

6 The third one, fracturing resulting from
7 excavation from heaving or whatever following
8 excavation. That is dealt with in volume 169 page
9 42120 beginning at line 18 and this is in volume 169
10 page 42120 at line 23 he says:

11 "Right now I am going to present some
12 concepts that are largely in the domain
13 of geotechnical engineering. As a
14 geologist, hydrogeologist I am quite
15 aware of the processes but I am not
16 capable of doing a detailed evaluation
17 of their significance of Site D, however
18 I thought it was appropriate at this
19 time to point out my concerns on this
20 particular point"

21 I just ask the Board when you are looking at the
22 Feenstra hypotheses to bear in mind that he is just
23 putting forward a concern. Not something that is in
24 his field. And bear in mind that we have evidence from
25 Trow that Site D was suitable. We had Mr. Hiraishi, a



1 subconsultant, we had Mr. Bowen a geotechnical engineer
2 who had been in attendance for portions of the
3 evidence. We had Dr. Rowe. Dr. Rowe in his evaluation
4 of Site D never indicated that excavation would in any
5 way cause him any concern regarding the integrity of
6 the materials. No question was put by Mr. Hodgson to
7 Mr. Bowen or any other witness that had geotechnical
8 background. So, we just have a concern of Mr. Feenstra
9 thrown out at this point in the proceeding. That is in
10 169. It is my submission, that given the timing at
11 which it was presented, the manner in which it is
12 presented, the ability of the Region to have, address
13 the issue, to have it put forward as just a concern --
14 "I thought it was appropriate to appropriate to point
15 out my concern". In my submission this hypotheses is
16 not worthy of any serious consideration by the Board in
17 reaching a decision between D and F. The decision
18 should not be based on this hypothesis.

19 The second hypothesis, the middle one
20 was what was referred to as the shadow effect or
21 summarized as the shadow effect. Now, can I refer the
22 Board first of all to volume 173. I want to, and 174
23 I'm going to be looking at both. The first aspect I
24 would like to discuss is related to this proposition as
25 I understand it. The shadow effect suggests, the



1 evidence is I submit, suggests the flow was downward.
2 There were some discussions about the absence of
3 tritium in the upper granular unit and in volume 173 at
4 page 43173 line number 7 Mr. Feenstra said:

5 "There are some locations on the site
6 where there is evidence of upward
7 gradients from the bedrock into the
8 overburden and in particular, I think it
9 has been stated that there are gradients
10 upwards from the bedrock up into the
11 lower granular unit. We don't have a
12 sufficient number of piezometers at the
13 same location in both the upper granular
14 unit and lower granular unit to make any
15 true determination of what the hydraulic
16 head differences are between the two"

17 And then he goes on to refer to some specific
18 references, H-39, Trow acknowledges:

19 " ... some upward gradients in some
20 areas. When one plots all the
21 information that is available, the
22 boreholes, I believe, HC-1-85, 2-86 and
23 4-85, show the strongest upward
24 gradients and they are right in the
25 middle of the site.



1 So one could generalize that the
2 gradients are predominantly downward and
3 can be correct for the majority of the
4 boreholes, but in a detailed
5 consideration of the site itself, I
6 think one has to take into account,
7 upward gradients in some locations. I
8 believe Trow acknowledges that there are
9 upward gradients at some locations but a
10 generalized discussion assumed there
11 were downward gradients from the ground
12 surface down to the bedrock.
13 It was on that basis that the
14 contaminant migration models were
15 performed."

16 At page 43182 line 9 I put the question to him:

17 "So, you are now sounding, it seems to
18 me, a note of alarm that these upward
19 gradients are going not to allow --
20 would not allow Site D to be approved.
21 A. On the contrary. On the contrary.
22 The upward gradients are of benefit with
23 respect to the potential decline in
24 water levels in the upper granular unit.
25 If there were no upward gradients, when



1 you cut off the recharge from above with
2 the installation of a landfill, you
3 would cut off the only source of
4 recharge. From that point of view it is
5 of benefit to have upward gradients."

6 Now at this point it is my submission Mr. Feenstra is
7 indicating that the shadow effect would be
8 insignificant in light of the upward gradients at the
9 site. In addition, I think Mr. Estrin related to the
10 Board a number of examples addressing permeability of
11 the lower till. They are found in cross-examination of
12 Mr. Petrie and there certainly is a reference I believe
13 in chief where Mr. Petrie indicated that the till
14 responded by producing water. The point of that is
15 that if there is permeability in the lower till that
16 would provide for the lateral migration of water into
17 the area beneath the site in the event that the reduced
18 recharge below the landfill caused the hydraulic trap
19 to fill.

20 DR. KINGHAM: Can I just stop you
21 briefly at that point. You just said a minute ago it
22 is your submission that Mr. Feenstra is arguing it is
23 insignificant if there are upward gradients. I see the
24 words:

25 "From that point of view it is of



1 benefit to have upward gradients."

2 Is there another reference?

3 MR. MCQUAID: No sir I'm saying based on
4 this answer, I'm saying based on this answer that the
5 shadow effect should be treated as insignificant. He
6 is saying that it will have a beneficial effect. I am
7 saying therefore it is my submission...

8 DR. KINGHAM: I thought you held
9 Mr. Feenstra's view.

10 MR. MCQUAID: I am saying the result of
11 that sir. I'm sorry if I launched into a submission
12 rather than a citation from the transcript. It is my
13 submission that Mr. Feenstra is really saying the
14 shadow effect would be insignificant in light of the
15 upward gradients at that site.

16 In the evidence, in my submission, there
17 are three mechanisms that indicate groundwater could be
18 replenished to the area beneath the shadow, as it is
19 characterized, there is upward flow from the bedrock
20 which we have just been discussing. Two, lateral flow
21 through the till. In addition, at volume 169 page
22 42130 line 21 Mr. Feenstra indicated that there would
23 be an ability to pump water from the sides and to
24 charge that area if it was necessary. He indicated
25 that could be done as well. But, I think we have to



1 put the shadow effect as well as, as I say, the
2 geotechnical hypotheses, and as we come to the third
3 one, in perspective because at 43190, actually let me
4 go to 43189 and I will go in sequence. Again we were
5 discussing the shadow effect at line 3, I said:

6 "You have discussed this with Trow?

7 A. Yes I have.

8 Q. Did they share your view or not?

9 A. Mr. Sobanski does not share my
10 view, no."

11 Then at page 43190 at line 9:

12 "At the present time we can't determine
13 the magnitude of that effect. I view
14 the likelihood of a significant effect,
15 a significant shadow effect to be
16 considerably lower than the likelihood
17 of fracturing in the unweathered zone"

18 Then backtracking to volume 172 page 42856. This is in
19 answer to a series of questions from Ms. Cronk. At
20 line 19, actually line 20:

21 "That gets into a difficult question
22 because, as I mentioned earlier, I am
23 not sure we would ever be at the stage
24 where we could confidently say there
25 would be no effect due to the landfill.



1 I am not sure we could ever understand
2 the system well enough to say that with
3 a reasonable degree of confidence."

4 Then later on, and I'm sorry to jump back and forth but
5 at volume 173, if I could ask you to go back to that
6 43193, this was the final series of questions that I
7 put to Mr. Feenstra on this aspect. At the beginning
8 or the bottom portion of 43192 I was putting to him
9 effectively whether it is academic interest or whether
10 he was being practical in putting this forward and at
11 line 8 he said:

12 "I think in practical terms the case is
13 that one probably won't know what the
14 effect is until one builds the landfill.

15 DR. KINGHAM: I am sorry?

16 THE WITNESS: Until one actually
17 constructs the landfill and monitors"

18 What we are seeing there, is in my submission, an
19 admission that the concern that was being put forward,
20 the hypothesis that was being put forward was really of
21 an academic interest. It is something that nobody
22 would know until they build the landfill in his
23 submission. So, we have a hypothesis that is less
24 than, considerably lower than the likelihood of
25 fracturing in the unweathered zone. We have before



1 that in the order I am going, the reverse order or
2 after that as he put the evidence in, a matter of
3 concern. We have an indication here that one could
4 never study it to the degree that one could ascertain
5 what could happen conclusively. An impossible test at
6 the outset of the consideration of any landfill site in
7 this particular situation. It is my submission that
8 the second hypothesis, as Mr. Feenstra has put it here,
9 is really of an academic consideration. A concern has
10 been put forward for reasons, in my submission, of, I
11 suppose, of trying to assist the Board in the Regional
12 position, of the difference between Site D and Site F.
13 I believe we have to look at what the possible effects
14 of the shadow effect might be. If we were to look at
15 H-39 which is the Trow report, page 98 figure 9
16 provided the contaminant concentration for the
17 breakthrough profile for contaminants at the base of
18 the upper till under the condition for a failed
19 landfill. It was noted in evidence that the
20 contaminant breakthrough time of approximately 25
21 years. As I would submit, the shadow effect which
22 cannot be conclusively determined or studied, which is
23 obviously very subtle, one has lateral flow from the
24 till or upward groundwater flow from the bedrock,
25 probably, presumably, based on the evidence but we



1 would have 25 years before contaminants exiting the
2 base of the landfill would reach the base of the upper
3 till if this effect was of real significance. It is my
4 submission that by the measurement of water levels that
5 have been indicated, it could be monitored effectively,
6 that a very academic consideration was being brought
7 forward at the end of the proceeding, which in my
8 submission does not assist the Board in allowing for
9 the determination of the issue between the two sites
10 that are being proposed.

11 In my submission, as we are going
12 through this what seems to have been happening is, just
13 see if I can pick up a reference. Sir, I wonder, there
14 is a reference, I can't quite put my finger on it now.
15 I am at the point where I am going to go to the first,
16 the fracturing hypothesis and I am going to be a little
17 while with that one. I wonder if I could just ask for
18 a little earlier break than usual.

19 MR. LANCASTER: It's not that much
20 earlier, it is appropriate. Fifteen minutes.

21 --- Break

22 MR. LANCASTER: Please be seated.

23 MR. MCQUAID: Mr. Chairman, Dr. Kingham
24 at the break I was looking for a reference. I would
25 like to refer you to volume 174 page 43255 going over



1 to the top of 43256. The question at line 14:

2 "Q. Then, also if we carry it further,
3 given your hypothesis of upward flow in
4 certain portions of the site, again does
5 this not also suggest that it is not
6 unreasonable to assume that the shadow
7 effect won't affect the successful
8 operation of the hydraulic trap.

9 A. With evidence of a reasonably
10 permeable lower till and the evidence of
11 upward gradients at some locations, it
12 would certainly give a mechanism by
13 which the effect, or the shadowing
14 effect would be minimized that is
15 correct.

16 Given the information we have at the
17 present time, it is not possible to
18 quantify what that effect would be. It
19 is quite conceivable that the shadow
20 effect might not result in a significant
21 decline in the water level beneath the
22 site, but I have recommended that
23 because of the possibility that it may
24 occur that it should be monitored very
25 carefully."



1 Now, I ask the Board to note, we are dealing here, in
2 the first one that I dealt with that is the
3 geotechnical concern, at page 42121 of volume 169 line
4 4 to 6 and he felt it was appropriate to point out his
5 concerns on this particular point. Here, because of
6 the possibility that may occur it should be monitored.
7 I just ask the Board to bear that in mind that we have
8 the natural mechanisms we have just been discussing
9 before the break of upward flow from the bedrock or
10 lateral flow through the till. I would also refer you
11 on this aspect of the third mechanism or means by which
12 the shadow effect could be alleviated or overcome.

13 Paragraph 16 of H-936, the Witness Statement:

14 "In the event that drought or reduced
15 recharge due to the landfill result in
16 significant reductions in the
17 groundwater level in the UGU, rather
18 than purging contaminated groundwater
19 from the UGU, it may be possible to
20 maintain the hydraulic trap by
21 recharging the UGU by using a series of
22 injection wells. Water could be
23 obtained from piped Municipal supply or
24 from bedrock or basal overburden zones
25 to surcharge the UGU to maintain a



1 hydraulic head above that of the
2 leachate in the landfill"

3 So, the third means is by, as I have noted earlier in
4 reference to the evidence, by recharging or charging
5 the water to the UGU using these injection wells. I
6 just ask you to notice, as well, he goes on to express
7 a series of concerns about doing that. My submission
8 is, as we go into discussion of the first hypothesis in
9 the reverse order I am doing, that Mr. Feenstra in his
10 reply statement was increasingly, in my submission,
11 becoming overly cautious, overly academic about
12 concerns, any thought, possibilities, concerns, et
13 cetera that were coming to his mind.

14 Let me turn now to the fractures in the,
15 or fracture hypothesis. Now, the evidence was, and in
16 both his evidence and in his witness statement I think
17 the expression was used that there was a reasonable
18 possibility that the fractures extended through the
19 unweathered upper till at Site D. I think he noted in
20 his evidence and I think it is referred to in paragraph
21 3 that that had not been confirmed or even suggested by
22 the field data available. I will just pick that up.

23 Paragraph 3:

24 "The presence of fractures through the
25 unweathered Upper Till has not been



1 confirmed or even suggested by the field
2 data at Site D"

3 That is the beginning portion of his sentence. It would
4 appear to contradict the lack of tritium in the THCL
5 tritium nest and the lack of tritium in the UGU and the
6 lower granular unit pumping test discharge water.

7 Mr. Feenstra in his evidence, in the reply statement
8 with respect to the absence of tritium in the granular
9 units suggests that this observation could be explained
10 by the mixing of water in these granular units. That
11 is some of the water could be derived from the upward
12 flow from the bedrock. He made reference, expanded on
13 that in paragraph 15 of his witness statement where he
14 referred to Dr. Charlesworth and indicated there were
15 upper gradients from the bedrock into the lower
16 granular unit and the upper granular unit in some areas
17 of Site D.

18 Mr. Feenstra, in his evidence, indicated
19 he really didn't have sufficient data to distinguish
20 between the hydraulic head in the granular units. It
21 is my submission that all the hydrogeologists at this
22 hearing have indicated that downward flow dominates
23 across the upper till to the upper granular unit. It
24 would be my submission that this would suggest that
25 much of the water in the upper granular unit is derived



1 from above. The absence, in my submission, of tritium
2 in the upper granular unit therefore is a strong
3 indication or suggestion that the fracture hypothesis
4 cannot be supported. Mr. Feenstra indicated that the
5 possibility of fractures at Site D first occurred to
6 him during the cross-examination of Mr. Petrie by
7 Mr. Estrin where reference was made to Mr. Petrie's
8 work on the Maryhill Till in Waterloo. I just ask the
9 Board to note, I think there are a number of references
10 but there are certainly two. Volume 124 and volume
11 133. There were references by Mr. Petrie to caution
12 regarding the interpretation of the pumping test
13 results that were undertaken in that Maryhill Till.
14 Then at volume 124 page 29962 at line 9 he was asked by
15 Mr. Estrin:

16 "Are you now saying you don't place
17 greater reliance on pumping tests than
18 the other tests?

19 A. I believe pumping tests will
20 produce some data which reflect a
21 stressed physical condition in the
22 aquitard and I do not know how to
23 translate that to an in situ hydraulic
24 conductivity. I suggest that point has
25 not been researched in depth and there



1 might be a great variety of opinions
2 from various researchers."

3 Then Dr. Kingham you asked him to return to this
4 discussion in volume 133 at page 32096, 32096. I am
5 sorry that is where the discussion begins, going over
6 to page 32102 I think we pick up the summary and line 6
7 there is discussion about the use of numbers and at
8 line 11:

9 "The mathematics are there to use, but
10 there is some large measure of
11 uncertainty in what the numbers means,
12 and my response to a question in that
13 respect was that I feel it is more still
14 within the domain of research ... "

15 Then he goes on to indicate changes that might occur
16 and responses in aquifers and so on and then that was
17 continued over to page 32103 where it was summarized,
18 Dr. Kingham by you:

19 "... still close to the domain of
20 research in terms of the interpretation
21 of results of such a test ..."

22 Now, there were other references as well I believe
23 during the cross-examination of Mr. Estrin.

24 Mr. Feenstra also made reference, as the
25 Board will recall, to the Vandalia Till in Illinois.



1 However, I think when you look through the evidence
2 there was not a great deal of weight given to that
3 particular aspect of the matter.

4 The main support for the fracture
5 hypothesis was the research done by Mr. Ruland as
6 indicated in paragraph one of Mr. Feenstra's witness
7 statement where he refers to that particular paper and
8 indicates that the presence of tritium indicates
9 fractures might extend below the zone of weathering in
10 the Sarnia Till. In response to a series of questions
11 from Ms. Vigod, Mr. Feenstra indicated in volume 175 at
12 page 43536, there is an exchange on these pages going
13 over to the next page about what really Mr. Feenstra
14 had done, as to how the drilling had been done, what
15 techniques were used to instal the piezometers, whether
16 there had been examination of drill logs in each of the
17 piezometers sampled by Mr. Ruland. At page 43542
18 Ms. Vigod explored with Mr. Feenstra the fact that
19 Ms. Hewetson's thesis, another researcher thesis
20 document had also been reviewed by Dr. Cherry who had
21 supervised that work also. The point really I think
22 that comes from the use of Mr. Ruland's thesis, student
23 thesis, developing a hypothesis based on that work is
24 in the proceeding such as we have here. There has not
25 been any first or primary investigation of the work



1 that has been undertaken by the student, nor has there
2 been any confirmatory sampling undertaken at the site
3 to confirm the results reported by the student. In
4 volume 175 at page 43662 Dr. Kingham asked
5 Mr. Feenstra a question regarding the existence of
6 contaminants migrating laterally from liquid waste
7 lagoons in the Sarnia area. At line, I think lines 12
8 to 19 I think would just confirm that he was really not
9 aware of that, he really hadn't visited the sites:

10 "I'm not familiar with the actual waste
11 disposal units at the various plant
12 sites".

13 In my submission the lines of evidence advanced by
14 Mr. Feenstra in support of the hypothesis are weak and
15 tenuous. The field data, that is the absence of
16 tritium in the upper granular unit suggests that more
17 probably the overlying till is unfractured and of low
18 permeability. I am going to go to -- the Ruland work
19 that I was just mentioning consisted of one round of
20 tritium sampling taken from piezometers installed by
21 another student. Mr. Feenstra had not seen the
22 installation of those wells nor the geologic record of
23 that drilling. The wells have not, have yet to be
24 sampled a second time to confirm the initial tritium
25 data and two, the validity of extrapolating results



1 from Sarnia to the Site D area are very much in
2 question. I remind the Board that in, yesterday at the
3 outset when we were reviewing some of the evidence of
4 Mr. Sobanski and Trow I read to the Board a passage in
5 which he indicated that one, he was familiar with the
6 situation in Sarnia, he had actually been retained by
7 Tricil and he also indicated that there was a
8 difference in the clays between the two, between Sarnia
9 and Site F -- I'm sorry, Site D. That portion, as you
10 may recall, was volume 29 where he said the Sarnia
11 clays are different. At page 6220 and at line 20 he
12 says:

13 "A. Not entirely. The Sarnia clays are
14 different than here."

15 And he comments on desiccation and so on. He was
16 involved as a consultant at Tricil as I mentioned and
17 that is referred to at page 6223 and he indicated his
18 familiarity, he was as a consultant familiar with the
19 situation.

20 Now, in addition, at this point I would
21 just like to make these submissions to the Board.
22 There is no site-specific data and indeed the tritium
23 data appears, in my submission, to the contrary. I ask
24 the Board to take that into account.

25 Secondly, the hypothesis is based on



1 unconfirmed, unverified double-checked work performed
2 by a student. Third, in his reply statement, as we
3 have gone through the three hypotheses, it is my
4 submission that Mr. Feenstra is exercising an overly
5 amount of academic caution. He is into concerns and
6 possibilities and that these are really not of
7 assistance to the Board. I think it is fourthly, but I
8 am not sure, this hypothesis of fracturing in the
9 unweathered upper till was not supported by Trow.
10 Mr. Feenstra admitted that. Mr. Sobanski disagrees
11 with him on this particular aspect of the matter. That
12 is found in volume, it is page 43301. Volume 174 page
13 43301 at line 9 to 16:

14 "... hav(e) you discussed this Ruland
15 thesis or hypothesis with Trow, Mr.
16 Sobanski.

17 A. Yes I have.

18 Q. Does he agree or disagree with
19 you?

20 A. I would believe he disagrees with
21 me based on my most recent conversation"

22 We did not hear from Trow anything further than that.

23 In addition, fifthly, I submit that the
24 Board is entitled to look at the situation with respect
25 to the Feenstra hypothesis given the fact that there is



1 limited evidence on the record but the fact that a test
2 pit was undertaken by the Town of Milton in April of
3 1988 under the direction of Dr. Charlesworth. I would
4 like to just refer briefly to some of the events. They
5 are summarized in volume 170. That was the date we had
6 the argument of the motion, volume 170, August 30th. I
7 am just summarizing. It is summarized, let me put it
8 that way, some of the events -- have I got it wrong? --
9 I'm sorry. Volume 176, just to get the history and
10 this is where I summarize some of the events that were
11 taking place chronologically page 43781. At line 5:

12 "Mr. Leitch has indicated the test pit
13 was sunk on April 6th and April 7th of
14 this year."

15 And then at this point I was referring to some of the
16 events that took place after that, line 7:

17 "In April, April 11th to 21st,
18 Mr. Estrin cross-examined Mr. Petrie and
19 Mr. Crutcher. During the cross-
20 examination of Mr. Petrie
21 specifically..."

22 and then I quote some references:

23 " ... on April 12th, 1988, at page
24 29416. There were discussions about
25 test pits at Waterloo, in the Region of



1 Waterloo site.

2 At page 29419, there was reference to
3 vertical fracturing."

4 And this was the question of Mr. Estrin:

5 "I suggest to you, you can't reliably
6 determine the extent of vertical
7 fracturing or root holes fissuring from
8 a number of vertical boreholes; would
9 that be fair.

10 A. That would be fair."

11 Going over to the next reference as we see it on page
12 43782 Mr. Petrie said:

13 "I have not been provided with evidence
14 of fracturing at Site D in any way,
15 shape or form."

16 Then there was reference in the middle of page 43782,
17 the reference there is:

18 "As far as I am aware there are no test
19 pits at Site D."

20 Then I went on to comment that Mr. Bowen was in the
21 witness box on August 9th, the reply evidence of
22 Dr. Rowe, Mr. Gray was put in August 22nd and there was
23 no cross-examination of Mr. Feenstra on any results of
24 a test pit. There was reference that there had been
25 discussion, as we see at the bottom of page 43782 over



1 to 783, there had been some discussion of parts of
2 Mr. Feenstra's hypothesis with Dr. Rowe and the point
3 of really all of those references that I am bringing to
4 the Board is that in my submission you have a situation
5 in which a test pit was undertaken by the Town of
6 Milton under the direction of Dr. Charlesworth and no
7 evidence was forthcoming from April down to the point
8 that the motion was brought and of course at that point
9 the request was to put evidence in through, not through
10 Dr. Charlesworth but through another witness. I had
11 objected to the fact that that was one of the aspects,
12 that was one of the aspects I was objecting to. I ask
13 the Board to bear in mind that obviously that pit was
14 dug to find out what frailties or anomalies or whatever
15 you want to call it were in Site D. In fact Dr.
16 Charlesworth prior to that had made a great deal about
17 uncertainties resulting from the absence of
18 information. That test pit was done after that
19 evidence was in and we did not hear any positive
20 evidence in reply, in Milton's reply, nor in cross-
21 examination about the use of that evidence. It is my
22 submission that there is an inference, and it is
23 overwhelming, that the Town of Milton really did not
24 share the view of Mr. Feenstra that fracturing was a
25 problem. If it had shared that view the evidence would



1 have been produced before the attempt to bring it in
2 through Dr. Isles. That was introduced in such a way
3 in my submission that neither Dr. Rowe or
4 Dr. Charlesworth could be asked about it. If there had
5 been any results of hydrogeological significance, it is
6 my submission that Dr. Charlesworth would have been
7 produced and he would have testified to any concerns or
8 uncertainties if any test pits had been
9 hydrogeologically significant. The same is true for
10 Dr. Rowe.

11 Dr. Charlesworth said in his report he
12 didn't have enough information about Site D to finally
13 come, in my submission, to formulate an opinion. The
14 evidence is in fact that they dug a test pit and
15 obtained more information. We only know of the one
16 test pit that has been referred to. So, in my
17 submission, bearing in mind your assessment when you
18 are looking at Mr. Feenstra's hypothesis I ask you to
19 take into account the inferences I have indicated as
20 the fifth reason or fifth item that in my submission
21 the Feenstra hypothesis, by the actions of the Town of
22 Milton, really the Feenstra hypothesis has not been
23 supported.

24 Now, I would also ask you when you are
25 considering the hypothesis to consider one other matter



1 which I think is of significance and it comes from the
2 submissions that were made by Mr. Hodgson himself. It
3 amounts to this, that when the evidence of, sorry when
4 submissions were made by the Region you will recall
5 that there were the three means that Mr. Feenstra had
6 said you could remedy if there was fracturing in the
7 unweathered upper till. The first was monitoring and
8 some purge well arrangement. The second was piped
9 water and the third was a liner. Yet, when Mr. Hodgson
10 made his submissions to the Board with respect to that
11 matter he indicated that the Region was not in
12 agreement, effectively, with Mr. Feenstra on this
13 aspect of the matter and that the Board should not
14 accept the second or third contingencies. Now, my
15 submission to you is that based on that that in a sense
16 the Region itself is, at best, giving a limited
17 acceptance of their own witness's concern or
18 hypothesis. It would be my submission that the
19 presumption is that through the corporate assessment
20 that goes on with a solicitor such as Mr. Hodgson, that
21 the Region from internal sources or sources such as
22 Trow and so on, that there is an indication to this
23 Board that the Feenstra hypothesis should only be
24 accepted to a certain extent, that first extent of
25 monitoring to the point of the first contingency.



1 For all those reasons that I have
2 submitted to the Board, it is my submission, that what
3 Mr. Feenstra was really doing was at the end coming to
4 the Board with a series of concerns, possibilities,
5 worries, however you want to characterize them and
6 putting them to the Board. It is also my submission
7 that it would be really, if the Board were to decide on
8 the basis of this sort of evidence which we have been
9 describing and which we have heard, that the Board
10 itself and parties should not be saddled with evidence
11 of this nature in reply. It really is not helpful to
12 the Board or the parties, this is day 169 or 170 -- the
13 parties devoted the time and energy. It really means
14 that the parties can come in with concerns or worries,
15 create hypotheses or possibilities in reply after the
16 positions of the other parties have been established.
17 What it really comes down to is that for that reason
18 and for the reasons I have indicated it is my
19 submission that Mr. Feenstra was caught up, in a sense,
20 in the Region's case, was concerned about the worries
21 or everything that he could think of to be of
22 assistance but he went beyond the point of being of
23 assistance to the Board from an engineering point and
24 really was into the domain of worry and academic
25 research, in my submission.



1 So, when the Board is treating the
2 matter of selection between the two sites I ask the
3 Board to consider these aspects of the matter. Before
4 the Feenstra hypothesis was introduced the evidence,
5 summarized I think well by Mr. Bowen in his report, was
6 that at Site D you had what was characterized as a
7 containment site using the hydraulic trap. The flows
8 were into the site, the contaminants were into the site
9 and were to be treated in that particular manner. To
10 the extent therefore that there is no contaminant
11 released off the site and, as it were, the contaminants
12 are going into the site, that would in my submission be
13 a much preferable site. That is the point that was
14 raised by Mr. Bowen at the conclusion of his report,
15 WB-906, under conclusions:

16 "Stratigraphic conditions at Site D have
17 been adequately characterized and the
18 contaminant flow path has been
19 identified. Using the hydraulic trap
20 concept, the landfill can be designed so
21 that no off-site migration of
22 contaminants will occur. In the event
23 of failure of the trap, or other
24 unforeseen circumstances, then off-site
25 migration of contamination is expected



1 to be slow and predictable."

2 And so on. That was his view, conclusion that Site D
3 presents a more suitable and predictable
4 hydrogeological environment for a landfill than Site F
5 and you will recall that was also Mr. Petrie's view.
6 He indicated in reply that in his mind Site D was a
7 more preferable site than Site F. So when you are
8 examining the aspect of which of the sites, as
9 proposed, should be selected I ask the Board to
10 consider it on the basis of the situation before
11 Mr. Feenstra's three hypotheses were put to the Board.
12 I ask you to consider it on the basis of the evidence
13 that was submitted by Mr. Bowen and Mr. Petrie about
14 the preferability of that type of particular site as
15 the evidence developed. That evidence was, as
16 Mr. Bowen has indicated, the situation, the
17 investigators were in agreement with the general
18 stratigraphic characterization of the site. So, on
19 that first, I guess threshold issue, I am asking the
20 Board to make a finding that Site D should be preferred
21 based on the situation prior to the Feenstra
22 hypothesis. That would be my first request in terms of
23 the finding that should be made by the Board.

24 As I advanced the position of the City
25 of Burlington yesterday and this morning earlier, in



1 the eventuality that that was not your preference I
2 have indicated to the Board that on the second aspect
3 if Site F were to be chosen, that it would be our
4 submission that that site should be chosen but with the
5 leachate collection system and liner, as described in
6 Exhibit B-861. That for the reasons which I summarized
7 this morning. If you look at all the circumstances
8 that give rise to the City of Burlington being here, if
9 you look at all of the evidence, look at all of the, in
10 my view, incredible evolution and development of
11 hydrogeology, we have heard for example in the case of
12 the Hewetson thesis that there have been advances in
13 the pumping tests and the manner in which they have
14 gone just over the three to four to five year period,
15 that that evidence, that that thesis had been
16 developed. In other words the field is so fast
17 evolving we are in a situation where there may be
18 evolutions we don't know of within a short period as
19 well. If the Board were to, I am of course asking the
20 Board not to accept the Feenstra hypothesis, but that
21 would be a perfect demonstration here and I suppose in
22 a sense I am faulting Mr. Feenstra a little bit, but I
23 thought that he would treat his hypothesis of fractures
24 at Site D as being somewhat revolutionary. Here,
25 traditionally, everyone had thought that tills whether



1 they be at Sarnia or at Site D were not fractured. I
2 put to him, doesn't this have some important
3 significance? Shouldn't there be alarm bells ringing
4 throughout the province and he said "oh, no", he tried
5 to say the situation was I don't know if his word was
6 unique but maybe different. He considered there were
7 many other situations where there may be water bearing,
8 wells, situations and so on in similar type of strata
9 to the upper granular unit which was the assumption
10 here.

11 I guess I am saying, in my submission,
12 what you heard, and this is a very major change in
13 hydrogeology, in conventional wisdom of
14 hydrogeologists. For reasons which we all get caught
15 up in these proceedings and so on, but I think for
16 reasons of the proceeding Mr. Feenstra came forward
17 with these concerns. I am saying they do not have the
18 support, the engineering data, scientific data that
19 they should be adopted as the basis for major decisions
20 of the Board in this particular proceeding. I submit
21 to the Board that if you were to adopt those you must
22 also apply that same sort of sense of fast moving
23 developments potentially to Site F as well. For those
24 reasons I am saying that you then would consider, in my
25 submission, the best available technology that could be



1 inserted to ensure the residents of Burlington and that
2 would, in my submission, be by the introduction of a
3 liner such as postulated in B-861.

4 Those are my submissions on the two
5 basic matters of hydrogeology. We are at the position
6 right now Mr. Chairman where Mr. Tzekas is on his way
7 out to finish up some of the planning. We were going
8 to discuss the cost aspects over the luncheon break and
9 make those submissions to you after lunch. Then we are
10 working very hard on getting a response with respect to
11 an order on conditions, a response to the Minister of
12 the Environment. On that particular aspect I will have
13 to get an update. We were about 70 per cent finished.
14 We were trying to get some input. One of the problems
15 we have encountered is Mr. Mereu is with another firm
16 rather than CRA. He has left CRA since he gave
17 evidence. He is with another firm in Waterloo. We are
18 working with CRA and we also wanted to get his input as
19 well. It may be tomorrow before we have a full typed
20 version of the conditions. So, what I would like to
21 ask at this point is that we would have an early break
22 for lunch at this point and, Mr. Tzekas and I will then
23 confer and after lunch he will finish up and then, at
24 worst, we may have the conditions this afternoon but at
25 worst it may be some time tomorrow.



1 MR. LANCASTER: All right we can adjourn
2 now and I think under those circumstances we will
3 adjourn until 1:30. You won't be prepared to start
4 until tomorrow in any event. We are going to have a
5 short afternoon it appears unless you are going to be
6 long on the conditions. We will adjourn until 1:30.

7 --- Luncheon 11:56

8 --- Upon resuming 1:35

9 MR. LANCASTER: Please be seated.

10 ARGUMENT TZEKAS (Cont'd.)

11 MR. TZEKAS: Thank you Mr. Chairman and
12 Dr. Kingham. There are two remaining matters that I
13 would like to touch on briefly. The first deals with
14 planning issues and what I intend to do really is wrap
15 up, if you will, the planning perspectives which I
16 suggest the Board should adopt in this case. In doing
17 that I will be reviewing very briefly the planning
18 evidence that was given by some of the planners on
19 behalf of the Town of Milton and Milton residents and
20 so on.

21 Then, I would like to deal even more
22 briefly with the issue of costs and make some
23 suggestions to you as to how that issue should be taken
24 into account in your deliberations.

25 Firstly, with respect to the planning



issues I would like to turn to something that

1 Mr. Griffiths said in his argument to you. He gave a
2 very eloquent review of the planning process and its
3 interrelationship with the environmental process in a
4 hearing like this. The analogy that he asked you to
5 consider was that of a planner in the role of a playing
6 coach. That is someone who could give both planning
7 opinions and co-ordinate the overall process. That is
8 really a position which I think is defensible in light
9 of the proposition that has been accepted by many that
10 the environmental assessment process is essentially a
11 planning process.

12 It is unfortunate, however, that in
13 light of that perspective that Mr. Griffiths put to you
14 that NSP and indeed the Milton interest didn't see fit
15 to call such a person. My submission to you is that
16 none of the planners who gave evidence on behalf of
17 Milton, or Milton interests really occupied that role.
18 Here there were only two planners who had that
19 particular function. The first was Mr. Walker and the
20 second was Mr. MacNaughton. They are really the only
21 ones who had this role and the only ones who were able
22 to look at the problem from that overview perspective.
23 Now, those two planners, their final conclusions with
24 respect to this matter were firstly for Mr. Walker that
25 the sites were very, very close from this overall



1 perspective. I think the expression by a nose came out
2 in the transcript somewhere. With respect to
3 Mr. MacNaughton his preference, after consideration of
4 all of the factors that he took into account, was that
5 really there was no clear preference. As I say, these
6 are the only planning opinions expressed by those who
7 had been able to overview the entire situation.

8 Now, Mr. Kauffman was one of the
9 planners brought forward by the Milton interest. He
10 did bring some information to the Board. In my
11 submission however, his analysis could hardly be
12 described as the kind of analysis contemplated by the
13 Environmental Assessment Act or indeed even the
14 Planning Act. The Board will recall that what
15 Mr. Kauffman did was to look at the question of impacts
16 from a fail-safe viewpoint. That was an expression he
17 used and the transcript reference is page 24220. In
18 bringing his opinion to you he did not review any of
19 the Region's reports or technical studies. Indeed, he
20 did not even look to the actual impacts that might be
21 anticipated at either site as a result of this process.
22 What he focussed on instead was the issue of potential
23 impacts. At page 24221 of the transcript Mr. Lederer
24 asked Mr. Kauffman:

25 "Everything is potential impact in your
comparability analysis?"



And the answer he gave was:

1 "Yes".

2 One need only look at page 11 of the report to confirm
3 that information. Every impact is assessed in terms of
4 its potential.

5 If I may, I would like to read the Board
6 two very brief excerpts from the cross-examinations
7 that were conducted of Mr. Kauffman that I think
8 confirm this. The first at page 24210 in cross-
9 examination by Mr. Lederer, Mr. Kauffman was asked:

10 "Q. You undertook no specific study to
11 determine the actual possibility of any
12 impact taking place and in fact, as I
13 understand your evidence, you didn't
14 even review the Region's reports with
15 respect to those potential impacts did
16 you?

17 A. No."

18 Then, at page 24343 I cross-examined Mr. Kauffman by
19 asking him this question at the top of that page:

20 "Q. But you made no effort, I take it,
21 and your approach didn't even involve
22 you thinking about what the degree of
23 risk was. You were simply listing it,
24 you were simply giving us a shopping
25 list of everything that might reasonably



go wrong.

A. Yes, that is correct."

Now, another problem, in my submission, with Mr. Kauffman's view was his very narrow focus and to some extent he adopted that very narrow focus by looking at the Ministry of the Environment's Policy Guidelines for land use on or near landfills. The impression I got from the evidence, Mr. Chairman and Dr. Kingham, was that these guidelines were of some use to Mr. Kauffman in his development of a comparative or, if you will, a site selection process. If my impression of that evidence is correct I submit to you that he has misused those guidelines. There was substantial cross-examination on this. I do not intend to take the Board through it but I would refer you to a point in Mr. Stagl's evidence at page 22809 where he confirms that the policies are not aimed at site selection. They really deal with the situation of an existing landfill site and the prospect of having other uses come to the site, if you will. In any event, part of the cross-examination that was conducted of Mr. Kauffman on the point was that you would have to do individual studies in each case to determine what precisely the impacts were. Those weren't done by Mr. Kauffman.

So, in his concentration on the



1 immediate abutters, as he labelled them, and on-site
2 properties that set the stage for his analysis and it
3 resulted in the conclusions that he arrived at.

4 In dealing with even that limited scope
5 or that limited framework it should be recalled that
6 Mr. Kauffman did a very substantial amount of work at
7 Site D. He for example did interviews, he took
8 photographs, he did field work, he examined aerial
9 photographs and so on. At Site F he did not even
10 interview those within his study area. So, there was a
11 very wide discrepancy in the level of work that
12 Mr. Kauffman did between the two sites. Even if you
13 accept that there is some validity to approaching the
14 study as he did.

15 In my submission to you, the summary of
16 the residents' concerns that was prepared by
17 Mr. Kauffman in respect of Site D may be of some
18 convenience to the Board. However, I respectfully
19 submit, that his planning opinion in respect of which
20 of these two sites should be selected should be given
21 very little weight because of the narrowness of its
22 focus firstly, and secondly because of the fact that
23 his focus was entirely on what potentially might happen
24 as opposed to trying to come to grips with what one
25 might reasonably expect to happen as a result of the
construction of either of these two sites.



1 Mr. Stagl was a witness who gave
2 evidence on behalf of the Town of Milton. The stated
3 purpose of his report, that is Exhibit M-529, was to
4 analyze the policy framework which he believed might
5 have some effect at Sites D and F. He did that by
6 looking at matters such as the Transport Canada
7 Guidelines on land use within the vicinity of airports,
8 the Parkway Belt West Plan and the Municipal Official
9 Plans and Zoning By-Laws which he felt might apply.
10 He acknowledged that his assessment or the kind of
11 thing he was out to do was not an environmental
12 assessment as contemplated by that Act. The reference
13 there is 22814. Like Mr. Kauffman he did not seek to
14 do a qualitative analysis to determine how significant
15 the guidelines actually were to these particular sites.
16 One small extract of the transcript that I would like
17 to read to the Board is at page 22770. Just to set the
18 question. I had been dealing with Mr. Stagl about the
19 Transport Canada Guideline. I had been asking him
20 whether he took into account any of the reports that
21 had been done by the experts, whether he looked at what
22 might actually be expected or anticipated in terms of
23 the risk and how it might be mitigated and so on. The
24 end result was this question and answer. I put to him
25 at line 14 on page 22770:

"I take it then though that this is



1 something that we are going to run into
2 again and again in your report. The
3 guideline is there, it is described and
4 you apply it to these particular sites.
5 Am I fair in saying that having done
6 that you do not seek to make the
7 qualitative analysis about how
8 significant the guideline is to the two
9 sites for comparison purposes?

A. That is a fair statement."

10 That indeed was Mr. Stagl's approach throughout. I
11 again do not intend to take the Board through all of
12 the references that exist on this particular issue but
13 it is clear that what Mr. Stagl was doing was saying
14 well, there is a guideline there. That applies to one
15 site but it doesn't apply to the other without asking
16 himself the follow-up question which is how significant
17 is that, what meaning does it have in the actual site
18 selection process. It is that final step that he did
19 not take. It is really that final step which is
20 important.

21 In assessing the fairness with which
22 Mr. Stagl approached the problem I would also ask the
23 Board to recall that he concluded that having a
24 landfill site right next to a park is a perfectly
25 compatible set of uses in both the short term and the



1 long term. That was based on a question and answer at
2 22779 beginning at line 20. That was in my cross-
3 examination of Mr. Stagl. He also concluded that
4 landfilling was not inconsistent with the kinds of
5 industrial uses contemplated within the special
6 complementary use area. That is at page 22791
7 beginning at line 10. I was questioning him,
8 Mr. Chairman, as to this notion that the Parkway Belt
9 sanctions a landfill site and therefore you can put it
10 anywhere within the Parkway Belt and be in compliance
11 with that particular planning policy. I suggested to
12 him that it might be more appropriate to consider for
13 example the fact that this landfill site was being
14 proposed to fit within an existing park and a park that
15 was going to be in operation at some point during the
16 life of the site. And those were the answers that
17 Mr. Stagl gave me on those particular issues.

18 Now, Mr. Stagl did support the
19 interpretation in the Food Land Guidelines that has
20 been put to you by Milton's Council. He was one of the
21 planners who did support that view. Mr. Chairman, I
22 bring that to your attention. I am not going to
23 reargue that issue. I think you have my submissions on
24 that point. I would like again though in assessing the
25 fairness which Mr. Stagl brought to his particular
exercise to ask the Board to keep this in mind when



considering his discussion of the Food Land Guidelines.

1 In Mr. Stagl's report he has not mentioned at all the
2 Mineral Aggregate Resource Policy. It is also
3 important to note that in dealing with natural
4 environment issues he did not even mention the
5 biophysical resource. There are other examples of that
6 in other areas. For example in the social area
7 Mr. Stagl does mention traffic impacts at Site D but
8 not at all at Site F. It is as if they just don't
9 exist there.

10 One of the other central points of
11 Mr. Stagl's theory was that the siting of this
12 particular landfill at proposed Site D was inconsistent
13 with the Milton Zoning By-Law. Mr. Chairman, I will
14 just refer you to a few pages in the transcript where
15 that issue was discussed fairly succinctly. They are
16 pages 22819 to 22822. That was my cross-examination of
17 Mr. Stagl on that issue. Now, it was Mr. Stagl's view
18 that a by-law did not contemplate or permit, if you
19 will, the establishment of a landfill within the
20 agricultural zone. Both Mr. Lederer and I spent a very
21 long time discussing that issue with Mr. Stagl. I
22 don't, at this point, intend to review the specifics.
23 Mr. Stagl didn't change his mind as a result of our
24 cross-examinations. His opinion or interpretation of
25 the by-law is there for your use. I would point out



that it was not an interpretation that Mr. Kentridge supported. Mr. Kentridge indicated and I quote here:

"Milton Zoning By-Law designates Site D as agriculture and does not permit a landfill as a specific permitted use. However, the by-law does allow public uses in an agricultural zone and a landfill would be allowed if approved. An amendment to the by-law may not be required. Similarly an Official Plan Amendment would not be necessary as the zoning by-law is deemed to conform to the Official Plan as set out in section 24(4) of the Planning Act."

Having given you that quote I'm sorry to say that in typing I don't have a reference. That may be from a report. I will track down that reference for you Mr. Chairman.

In dealing with Mr. Kentridge's report it is to be noted that his position was one of general agreement with the conclusions reached by Mr. Peter Walker. That is stated in the transcript, I'm sorry in the introduction to his report. Like Mr. Kauffman and like Mr. Stagl to some extent, Mr. Kentridge focussed his study by concentrating on first of all the on-site and areas and the immediately adjacent properties.



1 Secondly he looked at the situation from a worst case
2 scenario. To that extent he was, in my view,
3 consistent with Mr. Kauffman.

4 At page 23492 I began a fairly long
5 cross-examination of Mr. Kentridge. We were dealing
6 with a particular example in that cross-examination,
7 the bird issue. I indicated to him, would it make a
8 difference to you, for example, if the prospect of a
9 strike was one in a million as opposed to one in a
10 hundred or one in a thousand. What came out of that
11 was that it wouldn't have made a difference to his
12 report. We went through the same exercise with the
13 other impacts, the other issues. In particular with
14 the issues of hydrogeology. With Mr. Kentridge, the
15 thesis that he put forward, as I heard him, was that it
16 was appropriate to look at the worst case scenario
17 because it is something that might happen and that's
18 what he based his planning opinion on. In my
19 respectful submission, it is appropriate to look at the
20 worst case scenario, there is no question that that is
21 an issue that must concern the Board, but it is also
22 appropriate in dealing with that issue to modify it by
23 the amount of risk or the percentage chance that that
24 kind of worst case scenario has of actually realizing
25 itself. If the impacts, based on the experts reports,
are just not likely to be there I think it skews the



analysis to focus on the worst case scenario.

1 Finally, there was planning evidence
2 presented at this Hearing by Mr. Bacon on behalf of
3 National Sewer Pipe. Mr. Bacon gave some very
4 elaborate evidence and very detailed evidence in
5 particular about the history of the matter as it
6 affected his client. He spoke at great length about
7 Site F and its suitability to a landfill site. In
8 assessing that particular evidence, Mr. Chairman, I
9 would, however, suggest that you keep in mind that
10 Mr. Bacon had, for many many years prior to being
11 called as a witness in this proceeding, he had been
12 retained by NSP to promote his client's interest and
13 its case. That was the creation of a landfill on its
14 property. In my respectful submission, that is
15 essentially the role he adopted here. It can be, to
16 some extent, assessed in light of the request that NSP
17 has brought to this Board in terms of the four findings
18 of fact it would like this Board to make. Mr. Bacon
19 did promote the findings of those facts, if you will,
20 during the course of his evidence. I would ask the
21 Board to consider how relevant those findings really
22 are to your determination.

23 Mr. Bacon did offer a comparison of the
24 two sites but his comparison was, in my submission,
25 very unbalanced. He had done an enormous amount of



1 work in respect of Site F. He had done very little
2 work in respect of Site D. In my submission the
3 analysis and his comparison was really nothing more
4 than a footnote to his main presentation. Again, that
5 is something the Board should keep in mind in weighing
6 the evidence that Mr. Bacon gave you and in deciding
7 how helpful it is to the problem that is before you.
8 That is the selection or the comparison of these two
9 sites.

10 It is for those reasons, Mr. Chairman,
11 that I believe it would be inappropriate and it is
12 inappropriate to do what Mr. Leitch has suggested that
13 you do in argument, in his argument, and that is to
14 simply count heads. He indicated to you or made the
15 statement that five planners had this opinion and one
16 had something else or four and one, I'm not sure what
17 the exact numbers were, but I took from that the
18 implication that it was somehow appropriate for the
19 Board in reaching its conclusions to go through that
20 kind of exercise. I am not certain whether it is
21 appropriate in any circumstance for the Board to do
22 that but respectfully I say that is a useless exercise
23 in the circumstances of this case because each of the
24 planners set out with different goals, with different
25 focusses, with different instructions. To simply say
at the end of the day that you compare the evidence to



1 one or group them all together and take a vote is just
2 not right.

3 The planners who gave evidence on behalf
4 of the Milton interest in my respectful submission all
5 carried with them very serious limitations in their
6 perspectives and in their analysis. In my view, those
7 limited perspectives and that limited analysis should
8 lead the Board to give their evidence limited value in
9 its assessment of which site is appropriate. It really
10 goes back to what Mr. Griffiths suggested about the
11 importance of a planner acting as a player-coach and
12 being able to synthesize really, all of the
13 information. As I say, there were only two witnesses
14 who occupied that position, Messrs. Walker and
15 MacNaughton. It should be noted of course that
16 Mr. Walker had the benefit of all of the Region's
17 studies and being able to interact with their experts
18 on a regular basis. That is not something that Mr.
19 MacNaughton could do.

20 On the other hand, Mr. Walker's
21 perspectives were essentially formed at a time before
22 the hearing of the evidence in this proceeding. He was
23 not called back to restate his views or give you any
24 suggestion as to how they might have been altered by
25 the evidence that was presented here. It is those two
opinions, Mr. Chairman, which I recommend to you as



1 being the most important for you to consider when
2 deciding the planning issues and the social
3 environmental issues that relate to this particular
4 case.

5 I would like to turn very briefly to the
6 issue of costs. I had indicated to the Board yesterday
7 that this particular issue was one that could be taken
8 into account. It is not an issue of what might be
9 called primary importance, but if there is ambivalence
10 as to which site is the preferred site I believe that
11 all of the experts have suggested that this is a matter
12 that the Board can take into account in its decision
13 making.

14 I reviewed with the Board yesterday the
15 possible impacts or the possible differences that an
16 expropriation might have in these two scenarios and I
17 suggested to you that the potential is there and you
18 can't do more than that, the potential is there in
19 respect of those costs to have a very significant
20 impact in the expropriation of Site F.

21 There were two other areas I would just
22 like to comment on very very briefly. The first was
23 the cost differentials that were suggested by
24 Mr. Stevens in his after-use analysis and by
25 Dr. Kitchen in his after-use analysis. The argument
that was put to you by Mr. Lederer, as I understood it,



1 was along the lines that in each case Mr. Stevens'
2 figures had been confirmed as being reasonable with
3 Dr. Kitchen. If the Board reviews the cross-
4 examination that was conducted by Mr. Lederer of
5 Mr. Kitchen they will find many many instances where
6 that concession is made. The question then becomes,
7 and Mr. Lederer put it to you, as I understood it,
8 having determined that Mr. Stevens was involved in an
9 exercise that might be said to be reasonable. The
10 implication I got from that was that the Board could
11 stop its deliberations at that point. I agree that the
12 question of whether the Region's consultant in this
13 case has been reasonable is a threshold question the
14 Board must ask and we say that, based on Mr. Kitchen's
15 evidence, we don't take objection to that finding that
16 Mr. Stevens was reasonable. That with respect, does
17 not end the Board's obligation. The Board must weigh
18 the evidence it heard as between Dr. Kitchen on the one
19 hand and Mr. Stevens on the other and determine which
20 of those it finds more reasonable. It is entitled to
21 pick the best evidence, the evidence that appears to it
22 to be the most cogent. It is entitled to go beyond
23 that threshold question of whether or not the Region's
24 experts were involved in reasonable planning.

25 Finally, there is the evidence of
Mr. Blay on the traffic issues. That should be



1 juxtaposed to the evidence given by Mr. McLeod. In
2 doing that, Mr. Chairman I would simply ask you to
3 recall that Mr. Blay was a very experienced witness in
4 this area and it was his view that going into the field
5 and determining lengths of roadway by actually driving
6 or determining lengths or time distances by actually
7 travelling them was the most appropriate way of
8 proceeding in this particular case. Mr. McLeod did the
9 exercise in a slightly different way and in my
10 respectful submission the Board should prefer the
11 evidence of Mr. Blay on those points. It is Mr. Blay's
12 evidence of course and Dr. Kitchen's and to some extent
13 Mr. O'Brien's has to be added to that, but it is their
14 evidence that went into the analysis that Mr. Stamm did
15 with respect to costs. For the reasons I have given it
16 follows that Mr. Stamm's analysis should be the
17 preferred analysis with respect to that issue. If that
18 issue is of significance to the Board that is the
19 evidence which I suggest be adopted.

20 Those, Mr. Chairman, Dr. Kingham are my
21 submissions on the matter.

22 MR. LANCASTER: Thank you Mr. Tzekas.
23 Is Mr. McQuaid going to come back this afternoon to
24 address the conditions?

25 MR. TZEKAS: We are having some trouble
getting them typed sir. Amongst other things,



1 Mr. Mereu has left Conestoga Rovers. We are trying to
2 do this by fax and we are not being as successful as we
3 had hoped. We believe that those conditions will be
4 typed and ready tomorrow. I can present them very very
5 briefly. They are not very radical departures from
6 what was put forward by the Ministry of the Environment
7 with the exception, of course, of issues such as a
8 liner but you have already heard our arguments on those
9 issues. I am not going to restate the argument. I
10 will simply flag the differences for you and I think it
11 will be very easy for the Board to follow where we
12 differ from the MOE.

13 DR. LANCASTER: Do you have any time
14 estimates?

15 MR. TZEKAS: I think that whole exercise
16 could be done in about 15 minutes.

17 DR. LANCASTER: And you will be ready
18 tomorrow morning hopefully. We will go on to rebuttals
19 on Monday and Tuesday. We will adjourn until 9:30
20 tomorrow.

21 --- Adjourned at 2:09

22 CERTIFIED CORRECT:

23
24

P. D. McQueen

25 (Page 47600 Follows)