

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 Britannia 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: 38 ✓

HELD AT: Oakville, Ontario

DATE: October 6, 1987

OFFICIAL REPORTERS

NETHERCUT & COMPANY LTD.

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(i)

I N D E X

WITNESSES

Page

ALFRED A. SOBANSKI, (Resumed)

8311

JAMES BEECHINOR, (Resumed)

8311

Cross-Examination by Ms. Vigod

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E X H I B I T S

Exhibit No.

Description

Page

WB-224

Water chemistry data.

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THE CONSOLIDATED HEARINGS BOARD

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BEFORE: H. H. Lancaster, Q.C. - Chairman

Dr. D.J. Kingham - Member

S. Tanner - Member



Nelhercut & Co. Ltd.

Toronto, Ontario

Hearing conducted at The Oakville
Granary Commercial Centre, 105 Robinson
Street, Oakville, Ontario, on Tuesday,
October 6, 1987.

VOLUME 38

APPEARANCES:

T.R. Lederer and
H.D. Hodgson

for the Regional
Municipality of Halton
(Proponent)

J.R. Tidball

for the Ministry of the
Environment

T. Vigod
J.F. Castrilli

for the West Burlington
Citizens Group

D. Estrin,
F.E. Leitch and
H. Dahme

for the Corporation of the
Town of Milton

S.R. Garrod and
A. Nurvo

for the Milton Area Citizens
Coalition and several
affected Milton area
landowners

R.B. Tuer, Q.C.
E.A. Cronk and
F. Perrier

for National Sewer Pipe
Limited

L.F. Longo

for Azova Investments
Limited

M.J. McQuaid, Q.C.
and C.J. Tzekas

for the City of Burlington

C. Mansfield

for the Ministry of Natural
Resources

P. Renaud

for Cumis



Nethercut & Co. Ltd.

Toronto, Ontario

APPEARANCES (Cont'd):

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C. Stevenson
P. Hancock

for Framgard Holdings,
Fosseri Investments
Limited, Seriphos
Investments Limited and
Topic Investments

J.H. Olah

for the Halton Region
Conservation Authority

* * * * *

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Official Reporters
185 Richmond St. W.
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Per: Peter McQueen



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Oakville, Ontario
October 6, 1987.

Upon commencing at 10:35 a.m.

DR. KINGHAM: Thank you, please be seated. Mr. McQuaid, I think we were finishing up with you last night.

MR. MCQUAID: Yes, I am finished. I want to rise and apologize. Unfortunately the lady only got half the message. She said I will be 20 minutes late, but I would be -- please carry on. My apologies to everyone.

DR. KINGHAM: We at least part of the message. Ms. Vigod or Mr. Lederer. Mr. Lederer, do you have something?

MR. LEDERER: I can't possibly start the day without hearing from you first. Sir, if you could just turn to Exhibit 7 for a moment, either volume, Exhibit 8, pardon me. And to the list of witnesses at the front. Mr. McQuaid and Ms. Vigod have indicated to us that they would have some difficulty in us proceeding with Mr. Feenstra as the next witness, and that has required us to do some juggling. As the Board will recall there is a guideline in place.

What we propose to do after Mr. Sobanski and Mr. Beechinor are finished is to call Mr. Crylser next as you will see, panel 10, and then to follow him with panel 14, EFW Resource Recycling, and then



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3 to follow that with panel 12 which is leachate
4 treatment toxicology and then to return in effect
5 to the order that we were dealing with with Mr. Feenstra
6 in following those three. Then to call Mr. Hiraishi,
7 then to call, that will be panel 11, and then to call
8 panel 13, an economic panel, Mr. Watson and Mr. Rinaldo

9 DR. KINGHAM: It might be a good idea
10 maybe if you just put that addendum maybe to the
11 Volume 2 list and we will all understand. If I
12 understood you, you were going to move to Mr. Cryslar
13 and then you were going to go down to EFW, panel 14,
14 and then bring in Mr. Feenstra.

15 MR. LEDERER: No, then panel 12, toxicology.

16 DR. KINGHAM: Then Mr. Feenstra had
17 Mr. Hiraishi and so on. I think we have that more
18 or less.

19 MR. LEDERER: I might just say one
20 other thing, sir. Mr. Hodgson and I last evening
21 played the eternal game of trying to figure out how
22 long this was going to go.

23 DR. KINGHAM: That was going to be
24 my next question.

25 MR. LEDERER: I can only tell you it
seems to change with every passing day. We were
attempting to be optimistic in this assessment.



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We were hopeful that Mr. Walker will be called to give evidence on or around November the 10th which would mean that our case hopefully would be finished some days thereafter. I indicate that now, and it could turn out to be quite wrong. Of course we are now going to want to see some indication of the evidence to be called. We have not seen a single report, a single witness statement. We have to respond in some fashion to everybody. I would hope that as we proceed towards the end of our case, that material would start to appear.

DR. KINGHAM: I was going to ask in fact, and you have provided the ideal lead for the question. How many more hearing days we are likely to require. I know it is a bit of a shot in the dark. You have told me now November 15th about probably by the time Mr. Walker has delivered his main evidence.

MR. LEDERER: Mr. Walker, he is a witness that is exceedingly unpredictable. I've tried to figure out the time period, we really don't know what other parties are interested in in his evidence, if anything. Perhaps he will be over in a day.

DR. KINGHAM: And then my question will



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4 be if every counsel here could give us some idea
5 of the length of time and number of witnesses, and
6 so on that are likely to follow from the 15th of
7 November. I wonder if I could just canvass counsel
8 and see if they can enlighten us. I will start with
9 Mr. Estrin.

10 MR. ESTRIN: Well, as a rough estimate
11 we know the number of witnesses we will be calling.
12 My guesstimate is as to the length of evidence and
13 cross-examination, we are looking at probably four
14 weeks.

15 MR. LEDERER: If we knew who the
16 witnesses are, if we know how many.

17 MR. ESTRIN: We have a hydrogeologist,
18 we have a modeller, we have a planner. We have an
19 expert in agricultural matters. We have a witness
20 dealing with birds and their attraction to the landfill
21 and the resultant hazards to aircraft. We may have
22 an economist, we may have a traffic expert. I think
23 that pretty well covers the list.

24 DR. KINGHAM: We do have a rule that
25 we would have witness statements 30 days before
witnesses are to appear. We will have to sort that
out in terms of who is likely to appear when and make
sure everybody has that. If anyone can exceed that



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3 period of notice I think everyone would appreciate it.

4 MR. ESTRIN: We certainly had that
5 in mind. Especially as it gets there, some assumption
6 is that our case will follow the Region's. I don't
7 know if that is necessarily final but on that assumption
8 we have certainly been striving our best to get the
9 reports in order. There is one report that
10 I think will possibly be available, certainly later
11 this week. We are certainly doing our best to get
12 them all in. If indeed Mr. Lederer's case is in
13 fact finished by the middle of November, we would be
14 ready to go. We may end up, hoping that this will
15 be the case, but maybe we may be out by a day or two,
16 but we're certainly striving our best to get these
17 reports.

18 DR. KINGHAM: I think your assumption
19 is quite correct, that given the Region's presentation
20 of the case, it has a slight preference for Site F.
21 You would be first off the mark in terms of bringing
22 forth their witnesses. Ms. Nurvo, do you ...

23 MS. NURVO: We haven't finalized
24 anything yet, but we will have at least one social
25 impact planner. There might be two separate people
plus several of the local residents. I would imagine
that we will be at least two weeks.



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3 MS. GOLDING: I'm afraid I have to
4 consult with Ms. Cronk. I will be speaking with her
5 at the break.

6 DR. KINGHAM: And Mr. McQuaid?

7 MR. McQUAID: Yes, Mr. Chairman. I'm
8 very much the same I guess as Mr. Estrin. I had
9 thought about six weeks. We are working on our
10 statements as well. Our Fridays are very much used
11 for that. In a short time I think we will be in a
12 position to file them.

13 MR. LEDERER: Do we know from Mr.
14 McQuaid, have some indication of the kind of witnesses?

15 MR. McQUAID: I would probably duplicate
16 -- very much like Mr. Estrin's.

17 DR. KINGHAM: Ms. Vigod?

18 MS. VIGOD: We will be calling three
19 witnesses, a hydrogeologist, social impact witnesses,
20 as well as a number of our clients. I guess the
21 fairest estimate would be two and a half to three
22 weeks.

23 DR. KINGHAM: Was the Court Reporter
24 able to get that? Mr. Tidball?

25 MR. TIDBALL: Mr. Chairman, I'm way down
the line at the end. Right now I will be definitely
calling three witnesses. The EA co-ordinator, a



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hydrogeologist and in fact a second hydrogeologist to speak to particular policy matters. I may or may not call one, possibly two witnesses to deal with design and operations. It would depend largely on Mr. Hiraishi's evidence. I think perhaps two weeks.

DR. KINGHAM: What we will do, is there anybody else, other counsel here I need to hear from? The MNR people?

MR. TIDBALL: The MNR people, I've been speaking to Ms. Mansfield. As far as I know she wants to call one or two witnesses, and if it is two I believe they will be together. I don't think you will be talking much more than a day or two.

DR. KINGHAM: Thank you, Mr. Tidball. I think we might work over these numbers during the break this morning and see what we come up with. It is quite a length of time that appears here. However we may have further discussion about it either later today or tomorrow. Mr. Lederer?

MR. LEDERER: Sir, I apologize, I should have said one other thing when we were reviewing the order of witnesses. The Ministry of Natural Resources reminded me of this. I have had



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over the last few weeks some discussions from time to time with Mr. Olah who you may remember represents the Halton Region Conservation Authority. He is anxious to hear Mr. Crysler give his evidence and we saw the possibility of Mr. Crysler giving evidence this week. Last night I attempted to get hold of him and I am told he is at a trial until Thursday. I am going to be in a difficult position if I call him to give evidence, call Mr. Crysler to give evidence with not having spoken to Mr. Olah. If that problem materializes ...

DR. KINGHAM: Okay, Mr. Lederer, and thank you all for you co-operation. I know you will all co-operate in getting the witness statements to us in sufficient time that everybody can get a good review. Ms. Vigod.

ALFRED A. SOBANSKI, (Resumed).

JAMES BEECHINOR, (Resumed)

CROSS-EXAMINATION BY MS. VIGOD:

Thank you, Mr. Chairman. Before I begin, I will be referring to a number of reports, some of the earlier reports, perhaps I could just list



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Sobanski, Beechinor
cr-ex (Vigod)

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4 them and then the Board could pull them ^{out} it. It
5 is Exhibit H-10, H-11, H-52, H-54, H-65, E-109 and
6 then we will be getting to 2C and the technical
7 reports.

8 DR. KINGHAM: I'm sorry, did you say
9 H-65 and E-109?

10 MS. VIGOD: That is correct.

11 DR. KINGHAM: Let us just take a
12 few moments to be sure we have all of those.

13 You may proceed.

14 MS. VIGOD: Thank you, Mr. Chairman.

15 Again, Mr. Sobanski, Mr. Beechinor,
16 questions can be answered by either of you as you
17 see fit.

18 MR. SOBANSKI: I am still looking for
19 a couple of reports here.

20 DR. KINGHAM: I guess we don't all
21 have copies of the reports.

22 I wonder, Mr. Lederer,
23 while we are finally getting sorted out, perhaps
24 you could have your staff make an addition, or at least
25 two copies of that B-213. I think that is the only
copy in existence.

MR. LEDERER: This is the marked up
one.



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Sobanski, Beechinor
cr-ex (Vigod)

DR. KINGHAM: Since it is an exhibit,
we should at least each have one. Are we ready to
go now?

MS. VIGOD: We will be starting with
H-10 if that is of any assistance.

MR. SOBANSKI: Ms. Vigod, I just have
one bit of a problem. The list you gave us was H-10,
2A overview.

MS. VIGOD: That is correct.

MR. SOBANKI: I have H-65 as the
2A overview.

MS. VIGOD: The general overview base
analysis stage 2A is H-10, it is October 1983. The H-65
is a submission report.

MR. LEDERER: They are clearly quite
different.

MS. VIGOD: Q. Mr. Sobanski and
Mr. Beechinor, before I begin I was at a Chinese
restaurant last week and I received a fortune which
I thought was applicable to the time and the proceedings,
and the fortune reads "You should be pleased with
answers you are given now." So I am looking
forward to our discussion. I won't make it an exhibit.

Mr. Sobanski, you were asked some
questions earlier about the expansion hearing of the



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Sobanski, Beechinor
cr-ex (Vigod)

existing Burlington landfill. In that case alternative landfill sites were not examined. That is correct?

MR. SOBANSKI: A. I'm not sure whether they did or didn't. I don't know what work led up to the Burlington expansion.

Q. Well, the reports, certainly the Gartner Lee report you reviewed and certainly other reports clearly are dealing just with the site, the existing site.

A. I believe so, but I haven't read all of these reports in great detail. I don't know whether they deal with alternative sites. I doubt it for an expansion.

Q. Again we know the Bayview site was never subject to a public hearing and again there were no alternative sites examined in regard to that site?

A. Perhaps not. It was an old landfill.

* Q. I think we have discussed that this is the first environmental assessment involving the choosing of a landfill site which requires an examination of alternatives.

A. Yes.

Q. I would like to then discuss the



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Sobanski, Beechinor
cr-ex (Vigod)

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4 site selection process with you and if we could turn
5 to Exhibit H-10, and I believe you testified that
6 in stage 2A you were involved in the screening of
7 candidate areas in the entire Region.

8 A. Yes.

9 Q. If we could turn to page 4 of
10 that report, the first paragraph indicates that the
11 evaluation factors were primarily intended to screen
12 out areas of the Region that would not be suitable
13 for further consideration and landfilling. So this
14 is your first screen if you like?

15 A. Yes.

16 Q. At page 6 we begin to see the
17 types of factors that were considered and the physical
18 factors included the hydrogeology.

19 A. Yes, they did.

20 Q. Again, on page 9 in H-10 we
21 see at the bottom of that page "The system of
22 prioritizing implies some additional weight on
23 physical factors in the initial stage of site
24 selection process", and then "they will be given a
25 different weighting in subsequent stages." I think
it is quite clear that your prioritizing implied some
additional weight on these physical factors at first
instance. Is that correct?



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Sobanski, Beechinor
cr-ex (Vigod)

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4 A. This section of the report was
5 not written by us. This is Mr. Walker writing this
6 section of the report. It would be in many ways
7 if he talked exactly to what the words mean in terms
8 of how he is weighting things.

9 Q. So were you involved in discussions
10 as to this process?

11 A. Not in terms of the total
12 prioritization. Mr. Walker pretty well set this up.
13 We were to look at public health and safety from the
14 points of view of hydrogeology. *not defined*

15 Q. And so you didn't, did you have
16 input into the reasons why the physical factors or
17 hydrogeology might be given a prior weighting?

18 A. It is a long time ago now.
19 I suppose we would have had some discussion with it.
20 I think everybody recognized certainly the public
21 health and safety would receive the top priority. *

22 Q. Now, if we look at the physical
23 factors listed at page 11 we see that under first
24 factor attenuation capability. This was looking at
25 the ability to attenuate contaminants. If we see
in the last sentence "This approach does not apply
to quarries which must be engineered to provide
protection to groundwater resources in particular".



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Sobanski, Beechinor
cr-ex (Vigod)

Do you agree with that statement?

A. I do.

Q. Again I believe we have discussed that the finer grain soils are better natural attenuators than coarse grain soils and that led you to the till plains as being acceptable low impact capability. Is that correct?

A. Yes, from the point of view of having soils and their attenuation capability, that is correct.

Q. If we look at the next factor, overburden thickness. Again that is related to the amount of soil on the proposed landfill and we see that high potential impact has zero to five metres.

A. Yes.

Q. Again this criterion was not applied at this time to pits and quarries or otherwise they would have been in the high impact?

A. There were two streams of investigation undertaken from the very onset of the study. One was the sites and soils, and the other was sites in pits and quarries which are present in the area. There were two streams of investigation right from the very inception of the study.

Q. I believe we see reference to some



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Sobanski, Beechinor
cr-ex (Vigod)

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4 of that on page 17, if we could look at page 17.
5 First of all, under the factor engineerability,
6 would you believe, I'm looking at the top of page
7 17 "While engineerability would be of an important
8 consideration in the selection of alternative potential
9 sites, it was not considered directly in the
10 identification of those sites", so in other words that is
11 a factor that would come in later?

11 A. Yes, that is right.

12 Q. Moving on under landfilling
13 and quarries "Exposed rock areas may be considered
14 generally unsuitable for solid waste disposal."
15 Again, would you agree with that statement?

15 A. Yes.

16 Q. Again, at the bottom of that
17 paragraph, "The common disadvantage for using
18 quarries is that such areas may require extensive
19 engineering to control leachate and if sufficient
20 overburden cover material is lacking locally, a
21 landfilling operation may not be feasible", so
22 those are some of the considerations?

23 A. Yes, but I think you have to
24 consider as well the middle of that paragraph, the
25 advantage of using them was rehabilitation of damaged
land to avoid potential conflict with good agricultural



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Sobanski, Beechinor
cr-ex (Vigod)

land. We considered that these were significant advantages in Halton. Particularly because there was a general cry from the agricultural community regarding using farmland for landfilling purposes. We are looking at two things here. One is the potential that rock quarries may be less suitable for disposal because of some inherent hydrogeologic problems. (The other is rehabilitating them as the damaged lands that are involved or avoiding good agricultural lands.)

Q. On page 18, would you agree that the philosophy for siting a landfill in a quarry differs from the object of natural attenuation. So, in other words, there is not a compatible philosophy in the siting process?

A. Not necessarily in this case. I think the evidence that we have obtained through the study is that the shale may in fact, or it has in fact good attenuating capabilities. It essentially is a clay site. It is a clay with fractures in it. It is clay that has been lithified with carbonate solutions. It still is a clay, albeit lithified, that is turned to rock. So it has many of the properties that one might expect in clay itself. It has a relatively high organic carbon content. It had a



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Sobanski, Beechinor
cr-ex (Vigod)

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4 good carbonate content. It is comprised of clay
5 minerals which we look for for attenuation.

6 Q. Mr. Sobanski, I will be asking
7 you some questions later on the studies you did on
8 the shale for the purposes of attenuation. I am
9 just trying to understand the process at this point
10 in time. Now, my understanding is that you mapped
11 the low impact areas from your evaluation of physical
12 factors, then you overlaid the remaining evaluation
13 factors to determine the most suitable candidate
14 sites.

15 A. Would you repeat that, please?

16 Q. I believe you will see a reference
17 to this on page 30 of the report at the end of the
18 second paragraph that describes the overlay maps
19 and the process of mapping the areas of low impact
20 and then the hydrogeological areas of low impact and
21 then the other evaluation factors were mapped over
22 that.

23 A. Yes, I see. That is correct.
24 We provided the overlays for the hydrogeologic factors.

25 Q. On page 31, again the
evaluation factors, we have discussed briefly
attenuation capability, finer grain soils better than
coarser grain soils. Do you agree also with the



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statement on page 31 that it is desirable to locate a landfill in an environment that contains predictable and -- relatively uniform soil characteristics. That is at the bottom of the page.

A. Yes.

Q. And the next sentence on page 32 "Complex geological environments are judged to possess uncertain soil attenuation capabilities where detailed studies are unavailable."

A. Where detailed studies are unavailable; yes.

Q. Now, on page 51 we see a further explanation of the process. We see under point five, and these are clarifications of the Ministry's position, that part of the screening process would establish a minimum criteria for hydrogeological and geological factors by which the candidate areas would be evaluated prior to other criteria being applied. The purpose was to eliminate the potential for a very poorly located site environmentally becoming a high scoring site in this selection program because of other factors and ultimately not being able to obtain technical approval from the Ministry. So you would confirm that the approach taken was the hydrogeological criteria would be the minimum



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acceptable.

A. If you just might give me a minute to reread this. I believe there was, I'm not sure if this was written by us or Mr. Walker. It would appear that this is the result of a meeting with the Ministry of the Environment. So, it would indicate that that was an agreement that was reached.

Q. Were you informed of this?

MR. TANNER: Excuse me, Ms. Vigod, could you tell us what page you're on now?

MS. VIGOD: Page 51, point five, the Ministry's position.

Q. Were you kept apprised of the Ministry's position throughout this process?

MR. SOBANSKI: A. I believe so, yes. Mr. Walker was carrying out the main co-ordination with the Ministry of the Environment on the study process. But, I believe we were kept apprised.

Q. If you could just turn briefly to Exhibit H-52, the final work program and this is a bit difficult to find because there are no pages. Really that is Addendum 2, comments from external agencies on draft work program. If we look to, I guess page 4 in that addendum, do you have that?



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A. Yes, I do.

Q. Midway on the reoprt there is
an Addendum 2, it is a white page parked Addendum 2.
Comments from external agencies on draft work
program, page 52.

DR. KINGHAM: Page 52, and this is
in document H-52?

MS. VIGOD: The final work program,
the chart I am looking at, page 4 into that chart,
and there is a date October 15th, 1982, and a comment
by Mr. Paul Isles of the waste management approval
unit, and I believe there is a statement there that
hydrogeologic criteria must have a minimum acceptable
standard which all sites must meet.

MR. SOBANSKI: I'm sorry, could you
direct me to the date again?

DR. KINGHAM: October 15th. There
are a number of October 15th entries. I just want
to be specific as 1, 2, 3, the bottom of the fourth
page.

MS. VIGOD: That is correct.

Q. So, Mr. Sobanski, that was
where those comments from Mr. Isles were brought
in?

MR. SOBANSKI: A. Yes, that said



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agency comments, that is the third comment here
attributed to Mr. Isles.

Q. If we can go back to 2A, on
H-10 and quote on the basis of the constraints
you produce at your map which is figure 6 and H-10,
and I believe you did do a blow-up of that. We
don't really need to refer to that. It is right
at the back of the report which identified the
candidate area as hydrogeologically favourable for
sanitary landfill. You will see that is the
description of the map in the lefthand corner.

A. I'm sorry, it was figure?

Q. Figure 6, it is following page 114.
Do you have that?

A. Yes, I do.

Q. That was the mapping of the
areas hydrogeologically favourable for sanitary
landfilling?

A. Yes, based on soil capability
studies.

Q. You would agree with me that
your mapping on these factors eliminated Site F
from consideration?

A. No. It doesn't eliminate Site F
because the quarries were treated separately throughout



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the study. This eliminates it as a soil site but it didn't eliminate it as a quarry site.

Q. Certainly this is not any, if you, in the areas consider it hydrogeologically favourable based on the soil attenuation, overburden thickness, Niagara Escarpment face, slope, drainage, infiltration, aquifers and buried aquifers. That is from the sources and information in that mapping. If you see the fine print on that.

A. That's right, but on figure 7 the following figure, the candidate areas, they are clearly outlined as including the major quarries.

Q. That is quarries candidate areas?

A. It contains both sets of information.

Q. You would agree though that site F would not have been chosen unless pits and quarries had been considered?

A. Yes, that is right.

Q. Again, at this point in time, just going back to page 11 in this report, we have seen, this is under the final evaluation factors that the selection ...

DR. KINGHAM: What page are you on?



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MS. VIGOD: Page 11 of the same
report, H-10.

Q. That the selection of pits
and quarries in potential areas for landfilling
involved a significantly different approach in the
application of some evaluation factors, and in
particular the hydrogeological factors.

A. I'm sorry, are you reading a
sentence there?

Q. Page 11, the final evaluation
factors, the first paragraph. Do you have that?

A. Yes, I do.

Q. That was the approach that you
were aware of?

A. Yes.

DR. KINGHAM: Our copy of that
document, by the way, has a blank which Mr. Lancaster
reminds me, you have just read the sentence on
page 11, "It should be noted at the selection of
pits and quarries for potential areas for landfilling ..."
and so on. And the next sentence has, "The
selection used for selecting pits and quarries is
in Section (blank)".

MS. VIGOD: My report is also
blank, but I believe you can find that, I believe it



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is page 17 that I had referred to earlier.

DR.KINGHAM: Can we just get that
clear?

MS. VIGOD: That is my guess.

DR. KINGHAM: In Section A-53. We
will put that tentatively, perhaps, Mr. Lederer.

MR. LEDERER: I will double-check
that. All the copies are blank. I'm relatively
certain that you have been referred to those pages
on the direct examination of Mr. Sobanski.

MS. VIGOD: Q. If we turn to page 52
and 53, we see that at this point in time, and I
am referring to the first section, the identification
of the quarries shown on your figure 7 should not
be misconstrued as evidence that these are necessarily
favourable sites for a sanitary landfill.

A. Yes, and it's says "That it
should be understood that these areas on the basis
of the overview analysis stand out as offering
potential. Site specific characteristics of the
individual pits and quarries will be examined
closely during the site specific stage of the study
which follows the overview stage."

Q. These were not evaluated on
these hydrogeological factors at this time?



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4 A. They weren't evaluated on the
factors, the screening factors, that is right.

5 Q. Again, the statement in that
6 second paragraph "It is true that much benefit might
7 be derived from the use of these non-agricultural
8 areas, but it must be recognized that such sites
9 may acquire considerable engineering to mitigate
10 less than desirable physical features." I believe
that repeats some of the earlier statements?

11 A. That is right.

12 DR. KINGHAM: This is page 53,
13 the first paragraph, and the first sentence in the
14 second paragraph.

15 MS. VIGOD: Q. If we turn to page
16 110 we see the screening process explained, and
17 that, would you agree?

18 MR. SOBANSKI: A. 110. Could you
just give us a moment to catch up with you.

19 Q. First of all.

20 A. Yes.

21 Q. First of all, if we look at
22 the first priority item, we see that that is to
23 avoid the disturbance or degradation of the
24 natural environment including landforms, natural
25 habitat, major aquifers, preservation and conservation



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areas.

A. Yes.

Q. The second priority was then to maintain and preserve natural resource areas in Halton where possible such as agricultural lands, recreation areas, aggregate resources and forestry areas.

A. Yes.

Q. As it goes on "The physical factors were ranked as a first priority item," and that is the hydrogeological factors as we have discussed, and then the other areas, second priority items including agricultural lands, recreation areas and the other priority items were then mapped on. Is that correct?

A. Yes, I think the first priority area when you talk about hydrogeology, you have to see what it said there, and that is major aquifers.

Q. That's right. I'm saying hydrogeology is the first priority.

A. Hydrogeology is included in the first priority.

Q. As we see on page 111, the bottom of that page which explains this process



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4 further, "That having eliminated all areas where
5 landfilling would be unacceptable from a hydro-
6 geological, biophysical and settlement area, then
7 the remaining areas of high impact for agricultural
8 capability was eliminated as a second priority area."

8 A. Yes.

9 Q. Now, so you would agree that on
10 the first priority item in fact F was eliminated from
11 the first priority?

12 A. No, F was never eliminated, it
13 was considered separately.

14 Q. So it was not by the screening
15 process, had F been looked at for hydrogeological
16 factors it would not have made the grade, but because it
17 was considered separately, it got into the picture,
18 is that what we are saying?

19 A. We had two streams of investigation
20 that went on. One was the pits and quarries because
21 they offered a certain potential for rehabilitating
22 damaged lands and overcoming problems with agriculture.
23 The second was the traditional landfill site which
24 in the end will occupy agricultural lands. Because
25 the best agricultural soils are also the ones that
are best for landfilling.

Q. As you were saying, the first



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4 priority item did include hydrogeology, and a second
5 priority was agriculture?

6 A. We never placed those criteria ,
7 elimination factors on the quarries. We had said
8 they would be considered separately throughout the
9 study on their own merits and they would have to be
10 looked at individually. They were there and they
11 are an alternative to the landfilling, the landfill
undertaking.

12 Q. Again, in the charts at the
13 back of the report, if we look at, this is a bit
14 difficult. Again, these are past the maps and you
15 will see Table 45 is NSP sites, pits and quarries
candidate area?

16 A. We are talking Appendix 4 right
17 at the very back? I'm sorry, or is it somewhere
18 else in here?

19 Q. It just past the maps we were
20 looking at. Past the maps at 114. There's two
maps and then a series of charts.

21 A. Yes, I see the charts here..

22 Q. You would agree that at that
23 point in time while the other impacts, starting at
24 biophysical factors were looked at there was no
25 screening or evaluation for hydrogeological factors?



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A. Not for hydrogeological factors.

We looked at it from physical factors, the point of view of where they were located, whether they were over aquifers to the best of our knowledge, based on other work that had been in the overlay process. We looked at them from the point of view of location and size, and that is summarized in Appendix 4. Many of them were found in general to be too small to serve as a landfill site, so consequently we did a screening process of initially 55 sites, and eliminated about 48 of them I believe from further consideration at that stage, and then decided to look at the larger quarries in the Phase 2B work.

Q. Mr. Sobanski, sorry, just to back up. Maybe I'm not, where is Appendix 4?

A. Appendix 4 is the last two pages in the report, Ms. Vigod.

Q. I see, okay. But in the charts that we are looking at now, if you go back three pages we see Table 41, candidate area district D which would include the future site D. They are the physical factors, six factors starting with attenuation capability are rated for that district, in fact the other districts?

A. That's right, and certainly we



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4 didn't have the quarries in that, but you will notice
5 in Appendix 4 we list the quarries. We were already
6 considering the location. Quarry 36 for example
7 was over an aquifer and a certain consideration was
8 already being given to those features in terms of
9 their environmental suitability. So we were
10 trying to start here at this stage to develop an
11 overview of the suitability of the pits and quarries
12 even in terms of their environmental setting.

13 Q. But certainly not in terms of
14 those six factors?

15 A. Not at this time in the first
16 screening levels since we have two, really we have
17 two steams going here. One with pits and quarries,
18 and the other with the traditional landfill sites
19 on agricultural lands we have two streams. They
20 are both covered here, but the more traditional ones
21 are covered in chart form and then this states a
22 general overview analysis, very general at this
23 stage, we did not really get specific with the
24 quarries.

25 Q. Right, now I would like just to
refer to page 65 for a moment which is a submission
to the Board, October '83, Phase 2, Stage 2A.

A. Yes.



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Q. If you turn to page 24 and 25.

A. Yes.

Q. You will see a submission.

DR. KINGHAM: You will have to give us
a little mechanical time, you know where you're going
and you have it tabbed, but you will have to give us
a little time.

MS. TANNER: Where are we?

MS. VIGOD: Page 24 and 25 of
Exhibit H-65.

Q. You will see there, you will
agree that there is a submission from the Tremaine-
Britannia Citizens Group dated September the 26th,
'83. Am I correct that that was a citizens group
opposing the Milton site?

MR. SOBANSKI: A. Given the area, yes.

Q. We see their comment on number 3,
the statement "Insufficient recognition is given to
the potential role of engineering in areas which
do not have a solid hydrogeological rating and have
been excluded for this reason". If we look at
page 25, the study team response to that comment,
do you see that on page 25?

A. Yes.

Q. Where it says, "It is true that



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an inferior, or for that matter a poor hydrogeologic site can be engineered to allow for the collection and treatment of leachate. However, if this process of site selection was to be used, then all areas of the Region would become equally suitable. We also premise the site selection process on the principle of protection of the natural environment as the first priority item. Consequently sites which can provide natural protection to groundwater sources were considered a significant factor in achieving the first objective." First of all, were you part of this study team response?

A. No, at this time it is hard to recall. This is some years ago.

Q. Do you agree with the philosophy as stated in that comment?

A. Yes, I do to a degree. I have a little difficulty in reading both the question and the answer. If you consider for the screening process at a screening level at the very beginnings of this process. If you take the assumption that we can engineer any site, then you could never arrive at a conclusion as to where the site would go. It would mean that any piece of land can be taken and engineered. I don't know how you would apply a



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4 screening process to start to eliminate areas from
5 the Region.

6 Q. So it is certainly a logical
7 process.

8 A. It would have to be. One could
9 make the assumption that any piece of land could
10 be engineered which is probably close to the truth.
11 Then you wouldn't have much of a basis for selection.
12 It would be very difficult to ever arrive at the
13 site. Certainly the hydrogeology wouldn't be an
important factor.

14 Q. I would like to know, so at the
15 end of stage 2A we had 45 candidate areas and the
16 seven pits and quarries. That is what I am now
17 going to start into stage 2B. If you would to page,
18 sorry, Exhibit H-11. If we could turn to page 8
19 which states the categories and evaluation factors
20 and we see on page 9 that public health and safety
21 is the first priority. That includes the impact
22 on groundwater and surface water and traffic safety
23 impact.

24 A. Yes.

25 Q. The next level down, priority
B was the natural environment including
agricultural resources and vegetation communities,



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et cetera. Then we go on further down the priority list. "The impact of landfilling on agricultural land is considered an impact on the natural environment", as stated here.

A. Yes, that's right.

Q. Again, "That category was of less importance than the health and safety category".

A. Yes, that's right.

Q. Since you identified that pits and quarries were located in areas that were not part of that hydrogeological screening, doesn't it follow then that the sites would rank poorly in the category of public health and safety?

A. We didn't know. We didn't know whether they would rank poorly or not. We have said that site specific studies would be required on each of the sites to determine whether or not we felt that they could be safely engineered and whether they could be made environmentally safe.

Q. You would agree that every other site that entered into this phase 2B process had already gone through that, if you like, first crack screening on certain hydrogeological factors.

A. Yes, and so had the quarries gone through a first crack screening as shown in



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Appendix H I believe it was at the back.

Q. But not on those six factors?

A. You couldn't very well put them on those six factors because those six factors were related to soils.

Q. You would agree with me that as we go on in the process factors such as overburden cover and complexity of system were in fact used to evaluate quarries?

A. Eventually, but at that stage you see you don't have, you don't know the data. At the 2A level, it is too general to talk about complexity of flow systems. Ultimately that enters the analysis as you go to greater levels of detail and understand the site more specifically.

Q. You would agree that certainly back in the 2A phase those factors, certain characteristics were identified, for example overburden thickness of zero to five metres.

A. Yes, there is no question, as I have explained it, there were two streams of investigation, one was the quarries which did not meet these criteria, and the other was the general agricultural area which did meet the normal soil criteria. Certainly you can't compare the two on that basis.



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Q. Now, we see on page 3 of that Exhibit H-11, page 3. I'm reading the first paragraph, the second sentence. "It should be recognized that pits and quarry candidate areas ..."

A. I'm sorry, could you just direct me?

Q. Page 3, Exhibit H-11, the second sentence in the first paragraph.

A. Yes.

Q. "It should be recognized that pits and quarries candidate areas may present rather distinct hydrogeological and operating characteristics for sanitary landfill which must be considered on their own merits. However, the effect of pits and quarries on socio-economic and curltural environments were evaluated on an equal basis." Does this mean that exceptions will be made and the rules will be less stringent for the investigation of the hydrogeology at the site?

A. No, it means each site is going to be assessed on its own characteristics, and in other words it's a site specific study that will be directed to the individual quarry or pit itself.

Q. But again not on the same characteristics as the other sites?



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4 A. That's right, we've already
5 said that, that the two are not evaluated on soil
6 characteristics.

7 Q. I guess on page 9 where you
8 discuss in detail the public health and safety
9 factor of minimizing the potential for groundwater
10 and surface water pollution that you first list
11 the factor of hydraulic constraints.

12 A. I'm sorry. Hydrologic constraints
13 at the bottom?

14 Q. Yes. We see a sort of detailed
15 statement of the types of factors you were going to
16 evaluate. Soil interpretation, surface water, et
17 cetera.

18 A. Yes.

19 Q. Going on, we see three other
20 factors added, two other factors specific to pits
21 and quarries dealing with leachate generation,
22 do you see that?

23 A. Yes.

24 Q. That dealt with the compability
25 of potential landfilling and leachate control with
quarries, and then the potential for hydraulic
containment.

A. Yes.



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4 Q. The final factor, ability to
5 control leachate, I take it that that factor would
6 apply to both the traditional sites and your pits
7 and quarries?

8 A. I'm just checking Mr. Beechinor's ...

9 Q. I don't think much turns on it,
10 Mr. Sobanski. I'm just trying to establish if that
11 was a factor.

12 A. I'm trying to find out what this
13 relates to. If you could just give me a second.

14 MR. BEECHINOR: A. It takes a few
15 moments. Our report has been integrated into their
16 work, and it is difficult to define what was actually
17 our part, and what was their part.

18 Q. You can review the use of your
19 hydrogeological evaluation.

20 MR. SOBANSKI: A. We've reviewed
21 this all before of course, but I'm not instantly
22 familiar with all the reports. I think what Mr.
23 Beechinor and I are discussing here, he believes
24 that...

25 Q. Maybe I can help you out. Let
us look at the charts at the back. This was going
to be my next question, and if you want to come back
to that.



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4 A. No, I was trying to recall. We
5 had two functions in the 2B process. One was to
6 look in the field at the various sites that we
7 had selected in 2A and to see whether there were
8 any major impediments with respect to factors that
9 we had utilized in looking for the conventional
10 landfill site, if you can call it that. The other
11 was to look at the factors that may, that we
12 should consider in terms of the individual quarries
13 that had been identified in 2A. So, at this stage
14 we were, our teammates were playing some catch up on
15 the normal traditional landfill sites and on the
16 quarries. We at this stage were looking more at
17 the quarries. At the same time we investigaged and
18 looked at every piece of land that had come out of
19 the general or first analysis in 2A to see whether
20 or not there were any major impediments to
21 landfilling on those sites. As a result one area,
22 district G I believe it was, was ultimately dropped
23 from the process. Our main work in 2B was related
24 to a more detailed look at this level at the quarries
25 to sort of bring them up to the level of the 2A
investigation.

Q. If we look then at the charts.

MR. LEDERER: I -- the nature of the



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work that is undertaken by Trow at stage 2B was discussed in Mr. Sobanski's direct evidence and we find generally the response is at page 32 of H-11.

MS. VIGOD: I was really trying to establish where the factors, whether the factors applied to the traditional sites, or the pits and quarries, and I believe ...

MR. LEDERER: My only concern is that Mr. Beechinor and Mr. Sobanski said they were forced to jump around, and the specific responsibilities at this stage were specifically discussed, and the findings are found at those pages.

MS. VIGOD: The Board will have that reference.

Q. If we could turn to the final rating of the sub-areas at the back of the report. First of all, the second last page we see Table 24. Do you have that?

MR. SOBANSKI: A. Yes, I do.

Q. Could you confirm that site D 4-G which is the proposed site D is listed as low under hydraulic constraints.

A. Hydrologic.

Q. Hydrologic constraints. If we look on the last page, Table 25, you will see



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4 P and Q-1 which I believe is site F and you will
5 confirm that there is no rating there for hydrologic
6 constraints. Is that correct?

7 A. There is nothing at this stage
8 under hydrologic constraints.

9 Q. So we see then at ...

10 A. Again there are still uncertainties
11 in that area as to how to rate the sites.

12 Q. We see that the sites, pits
13 and quarries were rated in terms of these leachate
14 collections generation treatment constraints.

15 A. Yes.

16 Q. Were these other factors evaluated
17 because leachate production and escape is deemed to
18 be more critical at the quarry sites and requires
19 closer evaluation?

20 A. Yes, the leachate generation
21 and leachate collection constraints are in fact,
22 leachate treatment constraints are related to public
23 health and safety of course. They deal with handling
24 leachate and that in fact indirectly is related to
25 public health and safety. So it is being considered
at that level.

A. Am I correct that the leachate
collection and generation criteria is based mainly on



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4 the concept of drawing the water table down around
5 the quarry to provide a trap and to prevent off-site
6 flow.

7 A. To the degree possible, yes.

8 Q. I believe on page 34 where you
9 are discussing your analysis we see in fact the
10 factors listed I guess.

11 A. Yes, this is page 34?

12 Q. 34. The leachate, the four
13 factors under leachate generation, compatability,
14 and we see leachate collection constraints, the
15 third factor. "This factor was investigated to
16 determine if groundwater flow can be maintained
17 in a quarry to prevent significant leachate egress".

18 A. Yes.

19 Q. If the water level could not be
20 drawn down and a trap not created, the site would be
21 less desirable than in a system where that trap could
22 be created.

23 A. I'm sorry, could you repeat that
24 question please?

25 Q. If the water levels could be
drawn down and if a trap could be created, that would
be more desirable than in a site where a trap could
not be created.



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4 A. Not necessarily. If you are
5 going to have leakage from a site which of course occurs
6 at many landfill sites in the province, many landfill
7 sites are not designed as hydraulic traps. You could,
8 you can use them if you can demonstrate, I believe,
9 that acceptable environmental impacts can be met
10 in keeping with the Ministry's criteria for landfills,
11 the reasonable use criteria.

12 Q. You would agree though on this
13 evaluation factor you were looking to see in your
14 seven quarries which would create groundwater flow
15 towards ...

16 A. Yes, we were looking at that
17 factor.

18 Q. Did you, at this point of time,
19 you didn't drill any bore holes or do any pumping
20 tests to determine this?

21 A. No, that's right.

22 Q. Do I take it that your information
23 was obtained from records of pumping at the various
24 quarries and you were looking to see whether an
25 operator was pumping a large volume of water and
whether there was any impact on the surrounding
wells. Is that the kind of information you looked
at?



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4 A. Yes, that's right. We had
5 discussions with the operators. Mr. Beechinor
6 had the discussions with the operators. We discussed
7 with them whether or not they had created well
8 interference in the area when they had constructed
9 their quarries. Whether this could establish the gradients
10 were indeed into the site because wells
11 in the immediate area were interfered with.

12 Q. Did you have any information
13 at this point on site F which was not at the time
14 being used for a quarry?

15 A. Information, there was information
16 on site F. We were largely ignoring it to the best
17 of our ability. As I said, this site F has been
18 a problem to us all the way along because it was
19 already, a high level of investigation had been
20 carried out at the site for scientific research
21 by the University of Waterloo and by Morrison
22 Beatty and Gartner Lee. We attempted to keep in
23 our minds at all times not to take this site beyond
24 the others that were being considered at a very
25 general level. I don't know whether we succeeded
entirely. We obviously can't close our minds, but
we did not review the reports at that time. We knew
they were available but we did not review them at this



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Sobanski, Beechinor
cr-ex (Vigod)

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4 time to try to keep all sites at as equal a level of
5 investigation as we could.

6 Q. So even although those reports
7 later indicated the gradients were very strong and
8 that in fact you would not be able to make this
9 sort of a trap at the site, you did not take this
into account in your evaluation at this time?

10 A. Not at that time, I don't
11 believe we did.

12 Q. Now, as far as the other quarries,
13 and you would agree with me that certainly in a
14 dewatering process you want to lower your water to
15 the bottom of the quarry. That is the kind of situation
you would need to quarry.

16 A. Quarries of course operate in the
17 dry areas.

18 Q. For the operation of the landfill
19 you would agree that you might not need that entire
20 draw-down?

21 A. In certain conditions, that is
22 right, you wouldn't need that much draw-down to
maintain, say, a trap.

23 Q. Did you do that type of
24 evaluation on the other quarry sites to see whether
25 less pumpage was needed, or did you just find out



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Sobanski, Beechinor
cr-ex (Vigod)

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4 what was the situation as far as the existing quarry?

5 A. If we look at the table prior
6 to page 35 now we can see how we rated these various
7 sites at that time. The types of constraints, mapping
8 that we did.

9 Q. I guess my question is, how
10 did you determine the rating of low to moderate
11 under the leachate collection constraints for
12 site F. This is the potential for leachate egress
13 based on the principle of hydraulic containment?

14 A. These are again referred to in
15 little boxes like 1, 1 and 1, 2. We can see there
16 that there is a reference to a matrix box, as we
17 discussed in direct evidence, that gives our rationale
18 for assigning that weight to that factor. Is there
19 an appendix to 2B?

20 Q. I believe there is.

21 DR. KINGHAM: Maybe this would be a
22 good time to take a short break. Find this
23 appendix if it exists and come back to address the
24 question.

25 MS. VIGOD: I believe it does exist
in 68.

DR. KINGHAM: Thank you, we will take
a break for 15 minutes.



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---Recess at 11:15 a.m.

---Upon resuming at 11:45 a.m.

DR. KINGHAM: Thank you, please be seated. We will try to reserve some time towards the end of the day, perhaps, perhaps just with counsel present, we could excuse the witnesses and the experts, to consider the numbers that came out this morning and see what we can do in terms of scheduling between now and the end of this hearing.

Did you get in touch with Ms. Cronk?

MS. GOLDING: Yes, Ms. Cronk has informed me that the identity on the number of her witnesses are uncertain at this point. It is possible she will call no witnesses, but this will depend on who Mr. Garrod calls and who the Town of Milton calls. If she does lead evidence, then she expects it will take no more than two weeks.

DR. KINGHAM: Coincidentally we had bracketed in two weeks. Mr. Lederer.

MR. LEDERER: All of this reshuffling of witnesses and time causes us some difficulty. I want to advise the Board that I phoned Mr. Walker's office last night and left a message for him and saying that in fact things are moving a little faster than we had indicated. I have a message back



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Sobanski, Beechinor
cr-ex (Vigod)

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4 from him this morning that he is going to be out of
5 the country from November 19th to 23rd which may
6 be a critical time. I have not spoken to him
7 personally, but I do advise the Board at this time.
8 My suspicion is the message has been left and it
9 is something we can get around. Given Mr. Walker
10 is the last witness, there will be nobody for us
to fill with at that point. We may have a problem.

11 DR. KINGHAM: That is something else
12 we might consider later in the day. If necessary,
13 we would explore the possibilities of maybe having
14 him in a different order. You may want to think
about that between now and the end.

15 MR. LEDERER: As I say, from the
16 Region's point of view there is no other order.
17 Mr. Walker is our last witness. It is unusual for
18 example if Mr. Estrin wants to starts calling his
19 witnesses, that is fine.

20 DR. KINGHAM: Very well. Ms. Vigod,
21 please.

22 MR. ESTRIN: May I say just with
23 respect to the discussion that is being contemplated
24 this afternoon, that I must leave here by 4:30
25 today. Therefore, if we are going to have a
discussion necessarily today ...



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Sobanski, Beechinor
cr-ex (Vigod)

DR. KINGHAM: We will allow ourselves half an hour perhaps starting at 4:00 o'clock, not to exceed 4:30.

MS. VIGOD: Thank you, Mr. Chairman.

Q. Mr. Sobanski, we were looking at the, first of all the summary chart in H-11, the evaluation of pits and quarries. I was asking you questions in regard to the rating of potential for leachate egress based on the principle of hydraulic containment. Your leachate collection constraint.

MR. SOBANSKI: A. Yes.

Q. I asked how you established a rating of low to moderate, and we were then going to look at the appendices.

A. Yes, we would have to look at the appendices to see what our thinking was at that stage of the work, that would have been actually late in 1983.

Q. If we could turn then to Exhibit H-68, the appendices and again these pages aren't numbered, but if we look at Appendix B which is near the front of the report and we start with pits and quarries on the National Sewer Pipe site. That is the third page of that chart under the, under the box, the third box, potential for leachate egress



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Sobanski, Beechinor
cr-ex (Vigod)

1 we see a rating of low to moderate.

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4 A. Yes.

5 Q. The comment there "hydraulic
6 containment could be achieved." Now, first of all,
7 as we have discussed, your information later on was
8 the gradients were too strong to achieve hydraulic
9 containment was not considered at this point. Is
10 that your evidence?

11 A. That's right. Our assumption,
12 we should say in this case it is an assumption. Our
13 assumption at that time was that hydraulic containment
14 could be achieved at this early stage of the
15 investigation. As I said, we had not reviewed the
16 reports. We were trying to avoid all of the reports
17 that were written on the site, and we were attempting
18 to keep this site at the same level of investigation
as the other sites in the study process.

19 Q. Now, Mr. Sobanski, first of all
20 can you confirm that there is no reference given there
21 as a source of information, whereas I believe in most
22 of your other, if not all of your other categories,
23 you have a reference listed. So there is no way from
24 this chart that we would know on what basis that
assumption or comment was reached.

25 A. No, it would have been, it would



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Sobanski, Beechinor
cr-ex (Sobanski)

probably have been based on digging the site and assuming that we could achieve hydraulic containment on the site. It was an assumption at the time.

Q. Mr. Sobanski, you have indicated that you did not review the other available report, and I would like to refer then to the top of this chart on the previous page where there is a reference to Morrison Beatty Phase 2 Report.

A. Yes, I see that.

Q. Do you see that?

A. Yes, I do.

Q. Now, certainly reference to that report, at that time Morrison Beatty had identified strong downward gradients at the site. Is that correct?

A. Yes, that is right. It would appear. It would appear that we have made selective use of the information and not gone too far with it, not far enough to look into the hydraulic containment system. Mr. Beechinor, do you have anything you recall on that?

MR. BEECHINOR: A. I am just trying to recall. I think there are a number of considerations that we used to make our assessment of the pits and quarries in the lefthand side of that table. We



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Sobanski, Beechinor
cr-ex (Vigod)

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4 used whatever information we could to help us
5 assess those considerations. In that case, for
6 instance, box 1.2, the consideration was quantity of
7 contaminated water produced based on the mining plan.
8 We referred to the Morrison Beatty report which gave
9 us an estimate of annual ex-filtration.

10 Q. You understand, as Mr. Sobanski
11 said, it appears you are using selective references, and
12 where we do have information on the vertical gradients
13 that would lead one to a different conclusion. I am
14 interested in why that was not considered whereas the
15 Morrison Beatty report was considered for another
16 aspect of the evaluation.

17 A. It is selective in the sense
18 that for all the pits and quarries we used the same
19 criteria or consideration to assess the sites. What-
20 ever information we needed to understand that
21 consideration with respect to the specific pit and
22 quarry we used.

23 Q. You felt you didn't want to use
24 any information in evaluating the hydraulic
25 containment?

26 A. At this time I would have to,
27 I am not clear at this point in time what rationale
28 for the fact that hydraulic containment could be



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Sobanski, Beechinor
cr-ex (Vigod)

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4 achieved, but we can check into that.

5 Q. And you would agree that the
6 ex-filtration rate you are considering in your
7 reference to Morrison Beatty is also directly
8 related to gradients. So in fact you would be
9 looking at some of the same material, sections of
10 that report.

11 A. I think they are just numbers
12 that came out the report. I don't think we are
13 necessarily looking at gradients.

14 Q. So you would agree with me though,
15 based on the information in that Morrison Beatty
16 report about the strong vertical gradient that your
17 rating under potential leachate egress would not be
18 low to moderate, it would more likely have been high
19 had that information been considered?

20 MR. SOBANSKI: A. We have still
21 rated it even there low to moderate because of the
22 uncertainties. We say "hydraulic containment could
23 be achieved". That could have given a rating of
24 nil if it was felt that that were applicable. At
25 this stage we didn't feel we had enough information
to tell. We felt that it could be achieved, but
we still rated it as low to moderate because of the
uncertainties.



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Sobanski, Beechinor
cr-ex (Vigod)

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Q. But you actually had data at that point that would have indicated that a trap would have been ...

A. I'm not sure. I would have to look back to the phase 2 report. It certainly wasn't something we used in this assessment obviously, because we have said here that we felt it could be achieved.

Q. If we just look over to the Nelson quarry rating where you ...

A. Which one is it, please?

DR. KINGHAM: Which one is that, please?

MS. VIGOD: Three.

Q. You have a hydraulic trap developed there where you have that information, and that is a low to medium rating.

MR. SOBANSKI: A. Yes.

Q. Again coming there with the information that a trap could be developed, you didn't give that a nil rating?

A. No, we didn't rate any of them nil because at this stage of the study our data base wasn't very good. The potential for leachate egress based on the principle of hydraulic containment, you



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Sobanski, Beechinor
cr-ex (Vigod)

1 just, until you are to go in and drill the sites and
2 find out which way gradients are, even under the
3 existing conditions, you can't be sure because Nelson
4 quarry for example is located right on the Niagara
5 Escarpment. So it's hydraulic potential within the
6 site is based on several things including the effect
7 of the escarpment itself on the east side. It could well
8 be that while you think you have contained the system
9 based on water well interference information, it may be
10 on the east side you don't have any containment at
11 all. So there is still some level of uncertainty
12 that would have to be looked into at a site specific
13 level.
14

15 Q. Certainly it appears at the
16 present time that your rating of this factor for
17 National Sewer Pipe was not based on the reports that
18 you did have available and that were used to establish
19 other ...

20 A. 3.7 comments on it. We used
21 as a source of information one of our, sorry, are we
22 talking National Sewer Pipe?

23 Q. Yes.

24 A. I am sorry.

25 Q. We are back to National Sewer
Pipe, and I just ask you to confirm that it appears



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Sobanski, Beechinor
cr-ex (Vigod)

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4 your determination of that grading for potential
5 of leachate egress was not based on information
6 contained in the reports that were used for other
7 purposes.

8 A. Apparently not.

9 Q. Now, I would just like to look
10 at that comparison of the National Sewer Pipe and
11 the Nelson quarry. First of all, would you confirm
12 that in the first factor which is a hydrologic
13 constraint, that National Sewer Pipe is rated low
14 to moderate, and Nelson quarry low? I am referring
15 to your summary chart. Back to H-11, Mr. Sobanski.

16 A. Yes, that's right.

17 Q. It appears now that that was your
18 one factor that you ranked for hydrologic constraint
19 at this time?

20 A. Yes, that's right.

21 Q. The rest of the factors deal with
22 leachate collection?

23 A. Yes.

24 Q. So we have Nelson quarry at the
25 lower rating at that point. If we look to the
next point leachate generation, quantity of contaminated
water produced on mining plan. We see here you've
ranked National Sewer Pipe low to moderate. If we



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Sobanski, Beechinor
cr-ex (Vigod)

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4 refer back to Exhibit H-68, the point we were just
5 looking at, your reference to Morrison Beatty. We
6 see there a comment relating to the ex-filtration
7 rate of the Bayview landfill. Mr. Sobanski, first of
8 all you would agree with me that in fact that comment
9 is not related to the factor of contaminated water produced
10 based on a mining plan, it is related to another
11 site and another factor, is that right?

11 A. Yes, but there are other
12 considerations that go into this. The quantity of
13 contaminated water produced based on the mining plan
14 would be based on two factors. One is how much
15 infiltration you get which the Ministry fixes at
16 approximately one foot a year. The second is how
17 much water are you going to get from the surrounding
18 area as a result of making the hydraulic trap.
19 We have assumed hydraulic containment in both cases
20 here. We know that with the shale the infill of
21 water from the surrounding area is going to be very
22 small because of the low permeability of the materials.
23 The Nelson quarry is located in Dolomite limestone
24 which would give us a large influx of ground water from
25 the surrounding area. So consequently the quantity
of contaminated water based on the mining plan would
be relatively low based on the shale pit and relatively



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Sobanski, Beechinor
cr-ex (Vigod)

high based on the limestone quarry.

Q. First of all, you would agree that certainly in the case of a mining plan, you would be looking at an actual pumping which would of course involve a lot more water than the ex-filtration rate from a landfill site?

A. I'm sorry, I don't quite understand that.

Q. The comments on the NSP site based on ex-filtration, that is correct?

A. On Bayview?

Q. Yes.

A. Yes, that is on Bayview.

Q. That's right, and that is the only comment or assumption you have made in relation to the NSP site?

A. It is the only one that we have listed. It is not necessarily the only one we considered. That is all that's in the list. I have explained what we would expect at a shale quarry as opposed to a limestone quarry as well.

Q. Those that we discussed earlier, the amount of pumping or consideration needed to form the hydraulic trap, might be less than needed to dewater a quarry.



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Sobanski, Beechinor
cr-ex (Vigod)

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4 A. Yes, it might, but again you
5 would expect that a limestone Domolite type formation
6 would produce more water than a shale quarry.

7 Q. But really we are not comparing
8 these, it is a bit of an apple and oranges comparison
9 looking at an ex-filtration rate rather than a pumping
10 rate?

11 A. No, we are saying it was the
12 only information we had at the time. It is put in
13 for as Morrison Beatty, but I'm saying there is also
14 this other general consideration we would have had
15 in our mind though, although it isn't given in the
16 boxes. There would be a difference between the two
17 types of quarry in terms of how much water one would
18 have to deal with.

19 Q. But in both cases it might be,
20 certainly we know that in both cases it might be
21 significant enough to create either a hydraulic trap,
22 or indeed it might not?

23 A. Well, we assumed, we assumed that
24 it would. All I am suggesting is that that dolo stone
25 that we have on top of the escarpment is the best
aquifer in the province, the best rock aquifer there
is. We know that we would have to deal with a
fair amount of inflow into that type of a site. We



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Sobanski, Beechinor
cr-ex (Vigod)

also know that Queenston shale is one of the worst aquifers in the province. Consequently, we wouldn't have to deal with a lot of water coming into that site.

Q. Let us look at the next factor, the availability of cover material, and again in looking at NSP you are basing this on a comment from the owner and NSP.

DR. KINGHAM: Which item is that?

MS. VIGOD: Availability of cover.

Q. If you look at Nelson quarry again it is a similar rating but you would agree that in the Nelson quarry it would be soil rather than shale that you would be dealing with as cover.

MR. SOBANSKI: A. No, on site F we would be dealing with both. We have some till and we have some shale. The Nelson quarry would be soil for covering.

Q. But as we've discussed at this point in time we are looking at the fact of an 80 per cent shale versus 20 per cent till which are the numbers used in your 2C report.

A. I would have to look at that factor, but yes, there is shale used at one site and not at the other.



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Sobanski, Beechinor
cr-ex (Vigod)

Q. And soil is an easier cover material to use. You would agree with that?

A. Mr. Hiraishi I think should discuss the ease of using these two materials. He is the designer.

Q. You would agree that certainly in a comparison of these two sites at this point, certainly a soil cover would be an easier, more favourable cover than an 80 per cent shale cover?

A. Not necessarily. I have seen this shale worked. I have been out there when we have had a ripper in the material and it breaks up quite readily. We were in the little pit and used the big bulldozer and a ripper. He is able to turn that material into a relatively clayey looking substance just with his blade. The other thing that we were receiving from Mr. Tate was that this material weathers very well. Those cores looked very solid, Mr. Chairman, you might sometime take a piece of the red shale and put it into water and see what happens to it. My understanding is from what we were provided from Mr. Tate is that that material weathers to a clay-like substance over one winter due to the action of water and frost on the material. It easily crushes. It is not that



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cr-ex (Vigod)

difficult, I believe, a material to work with, but
Mr. Hiraishi will have to answer that.

Q. At this point in time you are
basing your comments on NSP's comments to you, and
certainly when you compare the shale to the soil
cover at the other site, there would be some ease
at least in the other cover?

A. What we are saying there actually
is the availability of the cover material. It is
said there that 100 per cent is available. It isn't
looking at the ease of operating with that cover. It
just says is there cover available, and it says yes,
there is 100 per cent available on the site.

Q. If we go now, the next category
we have the same rating of percentage of landfill
requirement that can be currently accommodated. If we
look at the adverse impact on mining operation, again
you have a low to moderate rating at NSP and a low
rating at Nelson. Now I would like to ask you a
question about the next factor, the compatibility
of the landfill operation with the proposed quarry
and use plan. I found Mr. Sobanski your statement
is that the NSP site would be compatible? Right?

A. Yes.

Q. If we look at the appendix,



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the reason given for it's compatability is that a
landfill operation is planned.

A. Yes.

Q. Now, first of all, were you
aware that the MNR approved after use for this site
is reforestation and not a landfill?

A. This was based simply on our
knowledge that NSP had an application in to put a
landfill on the site. Our proposal to put a landfill
on the site seemed to be compatible with NSP's
plans for the site.

Q. It's a bit of a circular
argument.

A. I understand that, yes, it is.

Q. Certainly the other pit and
quarry site...

MR. LEDERER: Let me just have this
qualified. If I understand what Ms. Vigod has
said she has suggested tht MNR, Ministry of Natural
Resources had some plan with respect to mining
and taking out the shale. So it is difficult to
understand what plan they could possibly have. If
it's been suggested they have one, I think we'd
better have some indication or evidence of that, or
some information from Ms. Vigod where she's getting



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Sobanski, Beechinor
cr-ex (Vigod)

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4 that idea from. It's not very productive given
5 the fact that logic just can't -- it can't be so.

6 MS. VIGOD: Mr. Lederer, my information
7 is the quarrying licence requires an end use and
8 reforestation, I believe our own quarrying licences
9 would have a similar end use. That is the information
10 I have.

11 MR. LEDERER: I'm sorry, I believe
12 in this case it seems a belief is generally not
13 enough. It's a general assumption that this is
14 what we're dealing with, given the nature of the
15 case that is not appropriate. In my respectful
16 submission, given the present situation of what
17 Ms. Vigod is relying on that simply is not good
18 enough.

19 MS. VIGOD: Q. Let me rephrase the
20 question then. Mr. Sobanski, did you examine
21 the quarrying licence to determine whether any
22 end use was specified in that licence?

23 MR. SOBANSKI: A. No, we didn't.
24 That isn't in our mandate.

25 Q. But you did, you were looking
at that factor on compatability of landfill operation
with closed quarry end use?

A. I wouldn't think that the quarry



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cr-ex (Vigod)

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4 end use is written in stone in any event; so to
5 speak.

6 Q. Perhaps, Mr. Sobanski, you
7 would agree that the same would apply to the Nelson
8 quarry and an end use might also not be written in stone.

9 A. I don't think it is. I think
10 you would probably make adjustments as time went on.
11 You could have it licenced and have an end use. The
12 end use could be, it could be an open hole with a
13 pond in it. It could be something elaborate. It
14 could be a landfill, a restoration of damaged lands.
15 Those are compatible uses for quarries.

16 Q. Let us just say in fairness
17 you would agree that there is no reason to rank
18 those compatability factors any different. In other
19 words either both quarries would have an end use
20 specified in their licence that could or could not be
21 changed, and in fact as we discussed your rating
22 outside that is based back on a circular argument
23 that perhaps because somebody wanted to make it
24 a landfill that was an end use.

25 MR. LEDERER: The presumption of the
question is that whatever certificate or licence
has been issued with respect to quarrying at the
Nelson quarry must be the same and type as any licence



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cr-ex (Vigod)

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4 which has been issued with respect to the NSP site.
5 There ought not to be such an assumption. These
6 licences for all I know could be quite different.

7 MS. VIGOD: Q. Could we at least agree,
8 Mr. Sobanski, the assumption that the quarry licence would
9 not have an end use of a landfill stated in it's
licence?

10 MR. LEDERER: You can't assume anything
11 like that. Any assumption is invalid in the situation
12 with respect. Who knows what is possible?

13 MS. VIGOD: Q. Mr. Lederer, I'll leave
14 it at this. Mr. Sobanski, you didn't investigate
15 the licence at the NSP site although you have looked
at the licence on a quarry site?

16 MR. BEECHINOR: A. It is my recollection
17 that we did meet with staff at MNR to review the
18 various licences. We also met to review the various --
19 with the various pit and quarry operators to ask
20 them what their desired after use was, and that to
21 a large extent is where that rating has come from.
22 If there was a specific after use in the licence that
23 was available at that time we made a comment. If
24 there isn't a specific after use noted for NSP, it
25 may have been the fact that when we were reviewing
the files we could not find a specific after use.



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MR. SOBANSKI: A. In any event at that time there was already an application filed for use of that site as a landfill. That was the use that NSP planned to put it to.

Q. But, of course, no approvals were granted?

A. No, but when you have an application you have a pretty strong indication that's what the corporation wants to use the land for.

MR. ESTRIN: Mr. Chairman, I don't want to interrupt at this cross-examination. The issue is that Ms. Vigod seems to be assuming, stating that she knows what is in the NSP licence, for the requirement for after use. I've attempted to get that information and not been successful. I wonder if she has it she could produce it to all of us.

MS. VIGOD: At this point of time I believe the City of Burlington does have a copy and I am informed that an after use is usually specified, and that after use is not landfilling. If we can leave it at this. I am finished on this point.

MR. ESTRIN: I think the suggestion has been made that reforestation is the approved land use. If that is the case, since we are dealing



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4 with the public, I suppose if there is a public document,
5 and I've made inquiries, Mr. Chairman, before the
6 hearing commenced to try to get it and been unsuccessful.
7 I wonder if we couldn't just have it available. I
8 don't want it to be an exhibit, but as a matter of
9 courtesy to everyone since that suggestion has been
10 put in the air I think it is appropriate that we
11 have it produced.

12 DR.KINGHAM: My recollection is that
13 Ms. Vigod had withdrawn from that specific and
14 posed a different question to the witness with regard
15 to their acknowledged end use. If the document
16 exists.

17 MS. VIGOD: I do not presently have
18 a copy. I believe all parties can approach the
19 MNR to inquire as to the availability of that licence.
20 I am satisfied to leave this line of questioning at
21 this point.

22 MR. LEDERER: Perhaps I might just
23 indicate I've just been informed that in fact the
24 Region has made an effort to get a hold of this
25 licence from the Ministry of Natural Resources,
and have been told they can't see it. I'm not sure
what the logic behind that is. We will hear that
from Ms. Mansfield when she returns.



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cr-ex (Vigod)

DR. KINGHAM: Yes, I think we will reserve on that issue until Ms. Mansfield is present. Then we will see if we can follow it up then.

MS. VIGOD: We will leave that.

Q. On page 150 you set out your selection of candidate site, your rating process. This is in Exhibit H-11 and we see the first order of importance is public health and safety. Do you see that?

MR. SOBANSKI: A. I'm sorry. We are now into Mr. Walker's work.

Q. The first order of importance is public health and safety under sub-factor A-1 which is the hydrogeologic factor must be rated low impact in order to consider a landfill. I take it that under this factor site D was selected as having a low impact and we've looked at that already in the chart at the back of the ratings. D was rated low. Is that correct?

A. Which chart?

Q. The second last page under Table 24-D 4-G as we discussed earlier this morning, site D under hydrologic constraints we see the low rating there.

A. Yes.



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Q. That is that sub-factor A.1.

A. Yes.

Q. Now we lead on "In addition the low to moderate rating was considered acceptable in the case of pits and quarries". Now you would agree again that this is a different evaluation factor applied. I would just like to turn to back at that summary chart we were looking at, your page 35, just prior to page 35. Have you got that?

A. Yes, I do.

Q. We can see that of the pits and quarry sites under hydrologic constraints there are two sites in fact listed as a low rating, but yet NSP which was a low to moderate again was moved forward in the process. Do you see that?

A. Yes, I do, but it also applied to traffic as well I believe A, 2.

Q. To turn back to 150 as we just said.

DR. KINGHAM: To turn back to 150 in ...

MS. VIGOD: In H-11, I'm just flipping between that chart and page 150.

Q. Just to clarify Mr. Sobanski, we're talking about the factor A1 being a low impact.



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Sobanski, Beechinor
cr-ex (Vigod)

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3 A. That's right.

4 Q. My question is then, why, again
5 this is a difference in the selection system between
6 pits and quarries and the other sites, is that correct?

7 A. Yes, because they are being
8 handled differently, yes. But this is something
9 you should take up with Mr. Walker. He developed
10 this ranking system.

11 Q. Now, finally, Mr. Sobanski, I
12 would like to turn to your 2C studies and that is
13 Exhibit H-38 and the appendices H-38A. As we
14 have discussed previously, or in your evidence,
15 that at stage 2C study you examined six sites. There
16 was, you would agree that for some of the sites
17 there was existing information which has been
18 gathered in previous studies such as the results
19 of boring, bore holes, water level measurements and
20 water quality.

21 A. Yes, two sites were in that
22 category.

23 Q. Therefore in order to obtain
24 a comfortable level of information it was necessary
25 to conduct some new test drilling at some of these
sites and that meant -- and that at some sites most
of your information was obtained from field work



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Sobanski, Beechinor
cr-ex (Vigod)

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4 done by your firm while at others it was obtained
5 from work done by other firms, is that correct?

6 A. We, on sites A, B, C and D,
7 the work that was done on site was done by our firm.
8 On site E and F we utilized information derived
9 by others, Gartner Lee on site E, Morrison Beatty
10 and the University of Waterloo on site F. Again, trying
11 to keep them all at a comparable level of detail. We
12 did however at this stage drill both sites E and F.
13 We drilled site E to look for sandy units which had
14 been the subject of some dispute at the hearing for
15 that site. We drilled the till area on site F
16 because it was a gap of the information on that site
17 and no one had looked at the till to the north so
18 we did a preliminary look at the till on the north
19 end of site F.

20 Q. Do you generally consider that
21 a consistent level of detail and quality was obtained
22 for each of these sites?

23 A. I don't know. We tried to.
24 It is difficult, we think in general that we succeeded.
25 Certainly, the other sites, two of the sites had been
studied in a lot more detail than our preliminary look
at these sites by drilling. We attempted to do
that.



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Q. Now, through page 5 to 7 in this report, Exhibit H-38, you selected a number of criteria to valuate candidate sites. I would like to look at these in a bit of detail.

DR. KINGHAM: I'm sorry, did you say H-68?

MS. VIGOD: H-38, the 2C study.

DR. KINGHAM: That was not one of the ones we've extracted?

MS. VIGOD: I guess we've gone through some of the first layer reports. We will be looking at H-38 and H-38A, the 2C studies.

DR. KINGHAM: All right, thank you.

MS. VIGOD: We're on Exhibit H-38 starting at page 5, there are selection criteria listed.

Q. Mr. Sobanski, a number of these factors are similar to the ones used in your stage 2A review of the traditional landfills, is that correct?

A. That is correct.

Q. First, attenuation capacity and we have already discussed the fact that fine grain soils such as clays and silts are generally better at attenuating contaminants than are poor soils such as sand and gravel.



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A. Yes.

Q. I note that you don't mention here any attenuation capabilities of bedrock material yet of the six sites you were looking at you would agree that many had an overburden cover and a degree of attenuation in the bedrock would be an important factor?

A. Yes, but we would come to a different stage now of the study. This is a factor but now, this level of investigation, we have gone a step further. In the end we will be looking at mitigating deficiencies. At stage 2C we no longer drop sites. We are not dropping them the way we did before. Ultimately we do in the ranking process, but here now we have to look at mitigating the deficiencies we have seen. These six sites have survived two levels of screening and now we are coming down to what can we do with these sites as they stand.

Q. But at this point in time you were at least attempting to apply these characteristics?

A. We still applied the characteristics, but now if there are deficiencies we mitigate the deficiencies.

Q. You would agree with me that the



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attenuation capability of a fractured rock
environment is less than the attenuation capability
of a granular environment on your scale of ...

A. At this time it probably would
still be that. We aren't into the site specific
chemistry yet at site F.

Q. Just to turn the page on that
point, you see that in the second paragraph it is
desirable to prevent contaminants from migrating
into fractured rock and continuing on, contaminant
transport in fractured geologic material is
different than contaminant movement in a granular
medium.

A. Yes.

Q. Fractured geologic materials
are anisotropic with respect to the frequency of
fractures. As a result contaminant transport in
fractured rock is often not predictable and just
to finish the attenuation capability of a fractured rock
environment is less than the attenuation capability of a
granular environment. You would agree with those
statements?

A. We said them. I'm not sure
that after when we finished with these studies I
would necessarily agree with the attenuation capability



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4 is less in the granular environment. However, as
5 a general statement, which is what it was meant to
6 be, it is reasonable. It is a general statement.

7 Q. Really that statement is in
8 fact, perhaps could have been placed under your
9 attenuation capability dealing with, rather than
10 overburden thickness just in terms of what we are
11 really talking about.

12 A. It could have been talked about
13 in there, yes.

14 Q. Now, the next criterion is
15 geologic complexity, back at page 5 after attenuation
16 capability and you have indicated that it is
17 preferable to locate landfills ...

18 A. I'm sorry, I've lost you.

19 Q. Okay, back at page 5. The
20 second factor after attenuation capabilities,
21 geologic complexity.

22 A. Yes.

23 Q. Here you are evaluating that
24 it is preferable to locate landfills in environments
25 that contain relatively uniform soil characteristics
so potential contamination migration can be
assessed.

A. Yes.



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cr-ex (Vigod)

Q. Again, we turn to the third factor of overburden thickness which I guess we can say thicker is better than thinner. We have discussed this, the other paragraph with regard to rock.

Complexity groundwater flow systems, would it be fair to say that this criterion seems to relate whether the site is located in an area of groundwater recharge, discharge or lateral flow, and you're indicating is it is preferable to locate in an area of discharge or lateral flow?

A. Yes, at this overview level of statement, this is what we considered.

Q. Okay, now, in reviewing this section, selection of these six, sorry, seven criteria, would you agree that there is some overlap in some of the criteria, the fact that a buried aquifer complex is really a specific case of a type of distribution aquifer?

A. Yes, there are some overlap in the factors, but it isn't particularly important in terms of ranking because we don't use a numeric ranking system.

Q. Geologic complexity and complexity of groundwater flow may also be related?



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A. There are some overlaps, yes.

Q. I have some questions as to
how you got your rankings. I'm just wondering,
Mr. Chairman, if we should break now?

DR. KINGHAM: We could do so. Sure.
And we will, will an hour and fifteen minutes be
sufficient for everybody, we will resume at a quarter
to two.

---Luncheon recess at 12:30 p.m.

---Upon resuming at 2:00 p.m.

DR. KINGHAM: Thank you, please be
seated.

Ms. Vigod.

MS. VIGOD: Q. Okay, Mr. Sobanski ...

MR. KINGHAM: Is there any way you can
move that microphone a little closer to the lecturn
without interfering with you?

MS. VIGOD: Is that better?

DR. KINGHAM: It helps us, that's
much better, it helps us to pick up page numbers.

MS. VIGOD: Q. Okay, now just before
I get back into the 2C process, we have been talking
about the two tracks of evaluation, the pits and
quarries and the traditional landfill sites. I was
wondering, who's idea was this to pursue this process?



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Was it yours or Mr. Walker's?

MR. BEECHINOR: A. What was the question again?

Q. Who's idea was it to pursue this process of looking at pits and quarries separate from your traditional landfill factors?

MR. SOBANSKI: A. I think, Mr. Walker would have to answer that. It arose very, very early in the whole process. It was there from the inception. I personally wasn't involved in those very early formulated meetings having been involved more in the technical side of it. I don't recall just how it came up. I believe, my recollection was I was told it came out of meetings that were held, and public meetings that had been held that people were complaining about this, and it was decided to follow the two routes. My own feeling on it is that, I think that it is where you have the option available to you, I personally feel it should be looked at. That if you have quarries in an area that it is an option that should be investigated as an alternative to the other types of sites.

Q. In terms of your, the usual route of looking for a natural attenuation site in glacial tills, in this particular Halton situation,



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4 Mr. Walker after these meetings came to you and said
5 we are going to follow the two tracks. Is that
6 approximately right?

7 A. I'm not sure of that. I couldn't
8 say that. We may well have been intimately
9 involved in putting that forward. As I say,
10 personally, I think that way the sites are available
11 they should be looked at and assessed in the manner
12 that we have looked at this. If they aren't
13 suitable, then they will fall out of the process
14 somewhere along the line. If they are, they will
15 end up at the position that we are at in this hearing
16 of considering one of them for a landfill.

17 Q. But you would have, was it
18 your decision to evaluate those sites on different
19 hydrogeological considerations?

20 A. They are not being considered
21 on different hydrogeological considerations. The
22 public health and safety is still the overall aspect
23 of our assessment here. They had to follow two
24 different courses because hydrogeologically they
25 are dissimilar. In the end they come together.
In the final assessment on the basis of the public
health and safety factor can you indeed make a
safe landfill at either type of site?



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cr-ex (Vigod)

Q. I think we have dealt with
this this morning again.

Now, let us look at your evaluation
during site 2C. On page 81 we see your evaluation
charts.

DR. KINGHAM: Excuse me.

MS. VIGOD: I'm sorry, H-38, page 81.

Q. Now, under attenuation capability
you indicate that site F has a moderate to high
constraint due to shallow soil cover. Now, it is
my understanding that when the site is developed
there will be in fact no soil cover on the site,
is that correct?

MR. SOBANSKI: A. No, not entirely.
We have been bandying a number about somewhere in
the order of 70-30.

Q. My understanding is with the
engineering of this soil there will be a deep cut
at the north end of this site and the soil will be
stripped out.

A. I don't believe the soil will
all be stripped out, the north end ends in till
and the south end also ends in till.

Q. In the same category under
attenuation capability. If we look at your site C



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Sobanski, Beechinor
cr-ex (Vigod)

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evaluation under the same factor, and that is just
on page 75. Do you see that?

A. Yes.

Q. You have a ranking of high.

A. Yes.

Q. Now, just turning back to page
51 which is your detailed description of site F.
We see, at this point in your evaluation, at the
bottom of page 51.

A. Yes.

Q. That approximately 80 per cent
of the site, "Approximately 80 per cent of the site
lacks an appreciable overburden cover."

A. Yes.

Q. If we look at your evaluation
at site C, page 32.

A. Yes.

Q. We see that the top paragraph
"The overburden thickness varies one to seven metres
with most of the area having less than five metres."

A. Yes.

Q. In both cases you would agree
the bedrock consists of the same unit, red Queenston
shale?

A. Yes.



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cr-ex (Vigod)

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4 Q. Given the similarity in these
5 two evaluations, would it not be reasonable to say
6 that site F has a higher restraint with respect to
7 attenuation at this point in your evaluation?

8 A. The difference between the site
9 as we saw them, this is when you had a bit more of
10 a data base together, is that on site C we were
11 having to move the site essentially all to the
12 western side because of the presence of the creek
13 on the east side of the site. So consequently what
14 we were doing was when we were coming out of the,
15 we were coming out of any appreciable overburden at
16 all on this particular site, on site C. We were
17 moving essentially on to rock with very thin soil
18 cover.

19 Q. But there would still be, most
20 of the area would have still some, less than five
21 metres. Whereas as site F there is 80 per cent that
22 did not have any overburden, any appreciable
23 overburden.

24 A. On site C, if we look at
25 figure C-5, most of the landfill is going to be
located on overburden that is five metres or less,
which means that in fact the base of the landfill
site for the conceptualized model would have been



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mainly on shale.

Q. That would be the same with site F? I am just getting at aren't they basically the same kind of material?

A. Believe me, the reason I am hesitating a bit, we thought these tables out very carefully. This was done some years ago already and I am trying to remember why we had placed a difference on the two.

I think again it isn't entirely evident from the comments. They are somewhat similar but I think we had put a well in on the north end of the site and found a substantial thickness of glacial till on the northern part of the property. We still, what we did, because there was more soil on this particular site, at least in one area, we have ranked it as moderate to high. It still has a high rating. It is in that range. If you choose to call it high, well, that is what the table says as well. We just felt there may be a little more till available on this site for our design than there was on the other site.

Q. Is there not much difference there?

A. No a hugh difference, but we



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only say that there might be a small difference
and consequently said moderate to high. The
high is still in there.

Q. Let us look at another factor.

Examine the complexity of groundwater and again...

A. A complexity of groundwater flow system.

Q. That is

again looking at, first of all, page 81 where we
have again a moderate to high constraint and there
you cite the recharge conditions and fracture flow
as uncertainties, although you indicate the steep
gradients make the flow path more predictable.

A. Yes.

Q. Again, if we just look at
site C, at the same factor back on page 75, we
just have a reference to a high constraint, again
based only on the uncertainties of fracture flow.
Can we just turn back into the body of the report
on page 33. You have indicated, let me just find
this, the third paragraph, "Except for observation
well C-5, a discharge gradient, increasing
hydraulic head with increasing depth, was measured
during the study." Do you see that?

A. Yes.

Q. Using your original basic
judgment criteria, you have said that a lateral flow



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cr-ex (Vigod)

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3 or discharge area is preferrable to a
4 recharge area. That was your original criterion
5 in this report?

6 A. That's right.

7 Q. So both sites are situated on
8 a shale bedrock, the site which would be on a prominent
9 recharge area would be less preferrable. That would be
site F.

10 A. I believe the reason we rated
11 it the way it is, if you look at figure C-7 which
12 is the water table map, we can see that on that
13 site which ended up on the west side, in fact we
14 have a semi-radial flow system at this location.
15 One takes it off to Joshua's Creek on the east,
16 and there is also a component of flow to the south.
17 So that when we get into the ratings, on site C
18 fracture flow has many uncertainties, but there
19 could have been another title put in there that
we have a semi-radial flow condition and we rated
it as high.

20 Q. Again though site F also has
21 recharge and discharge conditions on site and the
22 flow is also complicated by fractured rock.

23 A. Indeed, and again when we talk
24 about site F, what we are saying is that the steep
25 gradients however make the flow pattern more predictable.



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cr-ex (Vigod)

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4 That is it would be lineated southward, and we have
5 called it moderate to high saying that we don't
6 think the flow system is quite as complicated on
7 this site as on the other site. Again I point out
8 that the rating is still high. What we have done
9 is we have said that the flow system has more
lineation to it. It is a plus factor.

10 Q. If you look at the water
11 chemistry, one of the primary reasons you have
12 presented for selecting site F is that the water
13 quality in the shale is naturally poor. High in
chlorides and sulphates.

14 A. Yes.

15 Q. I would like to look just at
16 the chemistry.

17 A. I think that was one of our
18 considerations in rating sites.

19 Q. I have prepared just for the
20 ease of reading this a chart of the water chemistry,
21 water chemistry taken from your appendices at the
back of your H-38. I have provided you with a copy.

22 A. Yes.

23 DR. KINGHAM: Is this from an existing
24 exhibit then?

25 MS. VIGOD: Q. Mr. Sobanski, Mr.



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Sobanski, Beechinor
cr-ex (Vigod)

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4 Beechinor, could you confirm this is taken from
5 the various appendices in H-38A and just tabulated
6 in a chart form. So in other words, if we look,
7 for example, at H-38A, I will just find this.
8 For example, Appendix B-5 on site B we will see
9 groundwater chemistry appendix, and it is from those
10 appendices that those chlorides and sulphates are
11 taken. Is that correct?

12 MR. SOBANSKI: A. Yes, that is right.

13 Q. You confirm then the depth in
14 shale metres is taken from the various appendices
15 dealing with the well construction details. So in
16 other words all of this data is found in your H-38A
17 report, and just tabulated on one sheet?

18 A. I can't speak to all of it. I
19 haven't looked at all of this information on this
20 drawing, on this figure. As to depth in shale
21 in metres, et cetera. We haven't looked at that.

22 Q. I would like to go through some
23 of this. If you look for example, on, for example,
24 if we look at site F, the depth in shale, if we
25 look at GL-3 which is your well with the chemistry,
and we can see that ...

A. I'm sorry, GL-3?

Q. I am sorry. Looking at site F,



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cr-ex (Vigod).

OW4-14.

A. Yes.

Q. If we look for the elevation,
Appendix F-2, Morrison Beatty Construction Details,
we see 4-14.

A. I have a little problem with the
number here, it doesn't seem to check. It says that
that bore hole is 15 metres. I'm not sure, perhaps
the consultant has picked the top of the screen
interval there. I'm not just sure what he has done
there.

Q. 12.2 would be the top of the
screen, is that correct?

A. Yes, it would.

Q. Let us, first of all, let us
just look at the chemistry results, and at site A
five wells were looked at. That is correct?

DR. KINGHAM: Would you like to
mark this then?

MS. VIGOD: Yes.

KINGHAM: WB-224.

EXHIBIT NO. WB-224: Water chemistry data.

MS. VIGOD: Q. If you look at WB-224
at site A five wells were looked at for chemistry.

MR. SOBANSKI: A. Correct.



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cr-ex (Vigod)

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Q. Four out of five chemistry results are in the overburden? And if we looked at page 19 in H-38, this is right at the bottom of that page, do you see that at the bottom? The last sentence, "Most residents on the candidate site obtain water from large diameter bored wells that penetrate the upper weathered portion of the Queenston shale." Even though the most important aquifer is in the shale, you did four out of five of the chemistry tests in the overburden, that is correct?

A. We conducted tests on five wells, yes.

Q. Four in the overburden even though you have stated in the report that the major aquifer was in the shale?

A. We are talking about A now?

Q. Yes.

A. Yes, but you recall we had a basic criterion here that we were only drilling to 15 metres. We weren't drilling to rock in all of these holes unless we happened to encounter it before 15 metres.

Q. In this particular, at this depth, none of these exceeded any of the MOE guidelines, is that correct?



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A. None of these ?

Q. The ratings of chlorides or
sulphates for site A.

A. That is correct.

Q. Then, if we just look at the
appendices dealing with the local wells at site A.

A. What are we referring to now?

Q. That would be your appendices,
it is A-7 in H-38A, do you see those wells?

A. Yes, these wells are newer
candidates, I'd say B and C. We had a combination
here of the various wells.

Q. You would confirm that some of
the wells are in either saline or mineralized,
are described as saline or mineralized?

A. Salty for well number 10 for
example, figure, number 13 is sulferous, number 20
is mineralized. Number 51 is sulferous. 54 is
salty, 58 is mineral, and there are more salty and
mineralized wells, 89, 91, 92, and then the remainder
are reported as fresh.

Q. In a number of these salty wells
for example 91, 92 are going back to mineralized
wells are in the shale?

A. There are also some fresh ones



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cr-ex (Vigod)

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4 in the shale. About 10 per cent of, my colleague
5 advises me that eight out of the 90. About 10 per
6 cent of them are reporting this poor quality water
7 in this particular area. Many of the wells that
8 are called fresh are also in the shale. Fresh isn't,
9 fresh isn't as good as chemical results of course.
10 That is palatability according to the driller. It
11 may be that the people who are using them now may
12 differ with him. I don't know.

12 Q. I would just like to look at,
13 in relation to site A, and I believe it applies to
14 B and C, the charts in H-38, page 76. Do you see
15 that?

15 A. I have page 76.

16 Q. Under the ease of supply
17 restoration, there is a reference to a reservoir
18 to be constructed at 6th Line and Burnhamthorpe
19 Road.

20 A. Yes.

21 Q. If we return though to the
22 body of the report, page 30, we are looking at
23 potential impacts.

23 A. Yes.

24 Q. We see "The shale bedrock is
25 the sole source of water for residents in this area."



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Sobanski, Beechinor
cr-ex (Vigod)

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4 A. Yes.

5 Q. Was the fact that the reservoir
6 may replace local wells was not mentioned in your
7 evaluation of impacts?

8 A. Yes, well, the thing is, I
9 think here there is a bit of a problem. The site
10 would go in in very short order, but when that
11 reservoir may become available is another matter.

12 Q. You do state that the reservoir
13 was to be constructed?

14 A. Our civil engineers advised us
15 that they are in expansion plans for the future.
16 There was plans for a reservoir in that area that
17 might be used for supply restoration.

18 Q. Secondly, that would be a factor
19 to take into account in evaluating the impacts?

20 A. Yes. Well, we tried to take
21 it into account on page 76. That it could be there.

22 Q. I guess, in your chart under
23 the factor of supply and ease of restoration, you
24 have ranked that a low constraint in that regard?

25 A. Making the assumption that the
reservoir would be there, that's right, yes.

Q. Back to the chemistry chart WB-224.
If we look at site B we see there are two wells with



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cr-ex (Vigod)

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4 readings over the Ministry guidelines. B-4 in the
5 till, sulphate just exceeds the guideline,
6 and in B-6 which is three metres in shale we see
7 an exceedence at 946 milligrams per litre chloride.

8 A. Yes, that is right.

9 Q. Looking at site C we see that
10 three of the four chemistry results are in the
11 overburden, and again if we refer back to the text,
12 would you confirm that most of the wells used
13 the bedrock aquifer. That is on page 32. Do you
14 have that?

15 A. Yes, that is right. It says
16 under Section 3.3.3 the groundwater occurrence,
17 "Most groundwater supplies in the vicinity of the
18 site are obtained from large diameter wells which
19 penetrate the upper weathered portion of the Queenston
20 shale. Wells near the site are concentrated along
21 Burnhamthorpe Road, Dundas Street and the 9th Line."

22 Q. Looking back then at your
23 chart, as we have said, three out of the four samples
24 were done in the till, and in fact two of the three
25 till samples, and one in the shale exceed the
Ministry guidelines by quite a substantial amount.

A. Four of them do, yes.

Q. One being in the shale and the



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other three being in the till.

A. The shale actually had a little better quality than the till in terms of chlorides. At least in one case.

Q. At site D we see five wells that were sampled in the till. None were sampled in the shale.

A. That's right.

Q. If we look at page 39 of your report, Exhibit H-38, you would confirm that your map at this point indicated that more than 75 per cent of the water wells obtained the water in the bedrock. Do you see that? Page 39, Exhibit H-38.

DR. KINGHAM: It's very difficult in this exhibit to turn the pages between maps.

MS. VIGOD: They do have numbers though.

Q. Again, can you confirm that?

MR. SOBANSKI: A. Yes, at this time at this level of investigation we estimated that 75 per cent of the water wells in the vicinity of the site obtained water from the bedrock.

Q. All your samples that were in the till, you would agree with me that the wells you tested showed there was fairly lousy water in the till.



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At least in the five wells you sampled.

A. Yes, I believe this was a matter of discussion in earlier testimony that there is poor water quality on site D as well as site F.

Q. Now in site E we have two wells tested, and one well, I guess at the shale till interface was over the guidelines and finally at site F two wells were tested. Now both were in the shale to depths of, if we look at 12.2 or slightly below that for OW4-14 and 20.5 metres below ground surface for OW14-22.

A. Yes.

Q. First of all you would agree that these are deepest wells tested of any of the wells on any of the sites? The lowest depth in shale on any other site?

A. In terms of depth in shale, yes. The other wells, for instance the D wells are 50-foot wells, or 15 metres, or so in those groups of wells. They are as deep but they are not in shale. Site F of course you would expect it to be in shale since the site is essentially founded in shale over much of it's area.

Q. You would agree though that at the 12 metre well the water is still very good, and



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3 in fact it is well below Ministry guidelines, OW4-14.

4 Can you confirm that?

5 A. Yes, that is right.

6 Q. Okay, in fact this well has
7 both the second lowest chloride and the second lowest
8 sulphate reading of any of the wells in any of the
9 sites?

10 A. Yes, essentially that is right,
11 yes.

12 Q. Your other well, I think we've
13 discussed this, poorer water at depth,
14 at 20 metres you are getting fairly
15 high readings.

16 A. Yes.

17 Q. Could you agree from this chart
18 that generally in Halton Region the well water is not
19 great. Is that a fair statement?

20 A. I think it is variable, but
21 certainly there are numerous and many occurrences
22 of slightly saline water in the Region. That is not
23 uncommon in the Queenston shale.

24 Q. At site D as we have seen,
25 certainly the wells tested showed bad water in the
till.

A. Yes, the till had poor quality



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water.

Q. If we disregard the siting of the landfill issue for a moment, you would agree that D is not located in an area of good groundwater resource, no large yields of good quality water?

A. Yes, that is true. We don't have major aquifers at site D. We do have some minor aquifer zones that are being used however.

Q. Did you do any surveys around the vicinity of D to determine whether any people were getting water trucked in, or any cisterns in the area, did you look at that at all?

MR. BEECHINOR: A. At that time we relied on the Ministry's water well records.

Q. Okay, that's fine. Now, I would like to look at your evaluation of the sites. If we can turn to page 70 in H-38. First of all, if we look at the table we see that the table represents the levels of constraints to development of the site. So a low level of constraint represents good conditions for establishing a landfill while a high constraint represents poor conditions. Then a poor site will have a large number of high constraints, and a good site will have none or few high constraints and many low constraints. Mr. Sobanski, when you were



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ranking the sites, did you consider that any one criterion was of any greater weight, or did you weigh them equally?

MR. SOBANSKI: A. These sites are not ranked on Table 1.

Q. But in terms of ...

A. The Act requires now that if we find constraints to site development we have to consider mitigation which we do in Table 2. Then for the final evaluation we consider the effect on the environment and water resources of a failed system which is Table 3, and it is on Table 3 that the sites are ranked.

Q. If we just stay with your level of constraints, one, would it make sense first of all, would you agree that a high degree of constraint would be of more importance than several low or moderate degrees?

A. I'm sorry?

Q. For example, if a site was situated near a major municipal groundwater supply, that would be a high constraint, and might this outweigh other benefits the site might have, or did you not use this kind of evaluation?

A. We considered whether there may



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4 be potential for municipal supply aquifer in our
5 work. But, that isn't how the sites were ranked.
6 They were ranked on the basis of Table 3 on mitigated
7 sites. All sites have constraints. No site is
8 perfect. You will have high, low, mediums in all
9 of them. So now what we try to do is bring them
10 all to a relatively low level of constraint and then
11 we fail the system. What would be a reasonable
12 failure, we assess the impacts then on groundwater
13 and surface water users and on groundwater. It is in
14 Table 3 that we rank these sites. There is no
15 ranking, we did no ranking at all on Table 1.

16 Q. Well, now, if we were just
17 looking at these level of constraints for D and F,
18 if you can bear with me for a moment, Mr. Sobanski.
19 If we look at attenuation capability we see that,
20 this is your factor of the soil being better than
21 rock. We see D is a low ranking, and F is moderate
22 to high. So in that category F ...

23 A. I'm sorry, what was the second
24 one you mentioned?

25 Q. F would be worse.

A. I missed the one you were
reading.

Q. Attenuation capability.



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A. We have low and moderate to high.

Q. So F would be worse on that rating.

A. It is not a rating, it is a
level of constraint.

Q. On a level of constraint F would
be a worse constraint?

A. Yes, that's right.

Q. If we look at stratigraphic
complexity there we see they are both ranked low.
That would be the same level of constraint.

A. Yes.

Q. If we look at overburden
thickness we again, you would confirm that F would
be a worse constraint. It is rated high?

A. Yes, that's right.

Q. Going on down to complexity of
groundwater flow system, we see the same rating
moderate to high?

A. Yes.

Q. Buried valley aquifer doesn't
apply to either site?

A. That's right. It applies but
the constraint is nil because they don't exist.

Q. That's correct Drainage, the
constraint at F is worse because it is a high.



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A. That's right.

Q. Site capacity, F is worse.

A. At that time, yes.

Q. Complexity to engineer site,
F is worse.

A. Yes.

Q. Down gradient well users, D is
better.

A. No, D is worse.

Q. D is worse, I'm sorry. D worse.
Use of supply restoration, D is worse.

A. Yes.

Q. If we can just add up, as I have
just done, you would agree that we have five
constraints where F is worse, two where D is worse,
and three where there is the same, do you agree?

A. I agree, but you can't use this
table to do that.

Q. But this table, if I understand
it ...

A. Because it was always the intention
that all the sites would be mitigated and engineered.
You can't look at them in their natural condition.
The premise from way back in the study was that
engineering would be required on any site to meet



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the Ministry's criteria.

Q. In terms of hydrogeological constraints before we get into system, engineering system, you would agree that F is clearly a worse site on this table?

A. In terms of pure hydrogeology, this isn't pure hydrogeology. There are other factors in here as well. I am not sure I would say that because some of the factors here like down gradient wells users are very important.

Q. Mr. Sobanski, you indicated to me that these had been evaluated without a weighting system.

A. Yes, that's right, they have been developed without a rating system, but as I mentioned though any site going into Halton Region was going to be engineered and you can't make your comparison on this level.

Q. I would like to turn to just another aspect of site selection. Mr. Estrin has referred you to some of the studies done by the Ontario Waste Management Corporation in their search for a landfill. I believe we have discussed that their site Pl-1N overlaps with site D before this Board.



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A. Yes.

Q. Is that your understanding?

Are you familiar generally with the OWMC site
selection process?

A. In general, yes.

Q. I believe a few weeks ago I
gave you a copy of a map prepared by Gartner Lee for
OWMC?

A. No, you didn't.

Q. Yes, I believe I did.

A. I didn't get it.

Q. It was given to Mr. Beechinor.

MR. BEECHINOR: A. Actually it was
here.

Q. If we could just pull the map
at the back. You have pulled it already I see.

MR. LEDERER: I am not certain that I
was given a copy.

MS. VIGOD: I raised some interrogatories
with Mr. Sobanski and Mr. Beechinor. Unfortunately
I was not able to get additional copies. I've
given the witness a chance to review this. What I
am seeking is just an indication of where the two
sites are on this map.

MR. LEDERER: My difficulty is not



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4 having seen it or been told about it, I've not had
5 an opportunity to evaluate it in theory at least.
6 I might have some objections. I would like a couple
7 of minutes to look at it, or at least told what it
8 is, before it is entered into evidence.

9 MS. VIGOD: Perhaps, if we could take
10 a ten-minute break.

11 DR. KINGHAM: Let us just take a ten-
12 minute break and be back here at 3:00.

13 ---Recess

14 ---Upon resuming

15 DR. KINGHAM: Thank you, please
16 be seated. Are we prepared to accept this?

17 MS. VIGOD: Actually, Mr. Chairman,
18 I have decided to consider this overnight and take
19 another look at the map. So if we can leave this
20 for now we will nail this down overnight.

21 Q. Okay, Mr. Sobanski, I would like
22 you to turn Exhibit E-109 which is the Ministry
23 review. If you could turn to page 28 and if we
24 see in the middle of that page a reference, the
25 Ministry review, that given the description of
this stage 2A methodology presented.

MR. SOBANSKI: A. You have to wait
for me just a minute and direct me a little better.



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Q. We are on page 28 under the heading stage 2A on the second sentence.

A. Yes.

Q. "Given the description of the stage 2A methodology presented, the reviewers felt that the consultants conclusions, particularly those regarding the hydrogeological suitability of seven pit and quarry sites, did not flow clearly and logically from the evidence provided." If we continue, "Hydrogeologic suitability was the primary evaluation criterion used at this stage to narrow the region-wide search for candidate areas. The seven pits and quarry sites were not subject to the same hydrogeological evaluation", you would agree, I believe we have discussed it, that this was indeed a different evaluation.

A. Yes.

Q. The decision to conclude, if we continue "... they were grouped together and treated as a separate type of area. The decision to include these sites at this stage was not clearly explained." Then, Mr. Sobanski, if we could turn to the next page, page 29 and if we see the bottom two paragraphs "Again the seven pits and quarry sites carried through to this stage ..."



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A. Just a second please, please give me a chance to find where you are.

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Q. Last two paragraphs of page 29.

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Q. "The seven pits and quarry sites carried through to this stage were submitted to a separate evaluation system. They were treated as equivalents to the other candidate sub-areas for some factors (natural, socio, cultural and economic) and at other times, however, the application of certain categories, that is hydrogeology was applied in a different manner." You would agree that that is the process?

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A. Mr. Walker prepared the EA document but we have said to you that the hydrogeology of the two types of sites are different. Obviously one is rock and one is overburden, so they are different.

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Q. The final paragraph "The consultant did not provide a clear explanation to describe the separate evaluation methodology used for pits and quarries that seemingly allowed inconsistent treatment of these sites in comparison to the clay/till plain candidate areas." Again you were involved in that process, do you agree?

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A. No I wasn't involved in this



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particular part of the process.

Q. Have you been provided with this
Ministry review?

A. I am not sure that we have
seen this particular document.

Q. I believe you said earlier you
were apprised of certain of the Ministry's views
throughout this process?

A. Well, we were familiar, but this
is, appears to be their review of the environmental
review under the Environmental Assessment Act. I
am not sure I saw this particular document. We say
now that things aren't well explained. You know, I'm
not sure. We have had a different cast of characters
in the Ministry too I believe over the years. I
thought that people were kept reasonably well apprised
of what we were doing. We had all kinds of public
meetings and meetings with Mr. Walker and Mr. Young
met with the Ministry of the Environment, I thought
everyone was quite familiar with what was going on.
The Ministry wanted us to do less work on some of
the sites on stage 2C. We did more. We felt it
was necessary. They wanted us to do a desktop review
of it. Now we come and have review and somebody
says we haven't done enough, they don't like this, they



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4 don't like that. I think they have forgotten at times
5 what is happening in the process.

6 Q. Mr. Sobanski, you are aware that
7 this is a review that is mandated, if you like, under
8 the Environmental Assessment Act, and was prepared
9 in February of '86.

10 A. Certainly, I am aware of that,
11 but as I say though Mr. Walker was the one that has
12 put the EA document in. This is the review, the
13 review of that EA document.

14 Q. Would I better then ...

15 A. Yes, far better. Again many of
16 these things, I'm a little surprised perhaps at the
17 comment.

18 Q. I would just like to look at one
19 other comment on page 43 relating to, there is a
20 heading.

21 MR. LEDERER: Before we go on with this.
22 What Ms. Vigod has done is to read certain sentences
23 of the document. She has not asked a single question
24 about it. She's just read it in and said well, it's
25 here. The document is here and it's been filed, and
we will or we won't hear from someone who is
responsible for writing it. Certainly we've had
discussions with respect to other reports which



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4 Mr. Sobanski didn't prepare. In those cases he has
5 been asked to comment and offer his opinion as to
6 the substance of the material that has been raised.
7 For example, in the matter of porosity that was
8 referred to by Mr. Estrin with respect to site D,
9 but to simply read something in and say here it is,
10 that's not cross-examination. With the greatest
11 of respect, that is not proper cross-examination.
12 You don't use cross-examination to underline parts
13 of a report. You use it to find out from the witness
14 his position with respect to certain questions
15 you may have. If all we are going to have is the
16 reading of these paragraphs, then I object to the
17 question. It is not proper, there is no question.

18 MS. VIGOD: Mr. Chairman, if you recall
19 my question to Mr. Sobanski was first of all if he
20 had seen this report and read this report and would
21 then be in a position to comment on it and there was
22 a question certainly at the end of that statement.
23 I would submit that is entirely proper cross-
24 examination on a document that is already in evidence,
25 and is a Ministry review. I believe it is entirely ...

26 DR. KINGHAM: I recall that question.
27 My recollection of the answer was he was not certain
28 that he had seen the document.



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MS. VIGOD: That is correct, and that I would submit is a proper question for cross-examination coming in respect of a report.

MR. LEDERER: If you haven't read a report, how can you comment on it?

DR. KINGHAM: Mr. Tidball, this seems to be your Ministry's report.

MR. TIDBALL: It has an E in front of it, Mr. Chairman. The section that Ms. Vigod is reading from, the section at pages 28 and 29 is, if you go back a couple of pages it is a description of the site selection process. It effectively amounts to a review of Ministry comments that were made throughout the site selection process at 2A, 2B, 2C. I am pretty sure that all the review co-ordinator is doing is summarizing what occurred in the past. The fact that these witnesses may not have read this document may not be that helpful because the comments were in fact made, to a probably as far back as ago 1983 and onwards. If you trace the documentation I think you would find that. If that helps.

DR. KINGHAM: Thank you, Mr. Tidball.

MS. VIGOD: I believe I could those questions of the Ministry witnesses later on. I do



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4 have one question that I would like to put to
5 Mr. Sobanski of a different nature based on this
6 report.

7 Q. If you could examine page 43
8 we see there a summary of comments made by the
9 conservation authority regarding hydrogeological
10 and hydrological components. If we see in the
11 second paragraph, the second sentence, "... it is
12 the authority's opinion," and this is a reference to
13 site F, "... further contamination of the ground-
14 water at any site is unwarranted." I would ask you,
15 do you agree with that statement?

16 A. I'm sorry, where?

17 Q. The second sentence, the second
18 paragraph that is in quotes. This is a quote from
19 the conservation authority.

20 DR. KINGHAM: Page 43.

21 MR. SOBANSKI: I'm sorry, the second
22 paragraph.

23 MS. VIGOD: Q. At site F the second
24 sentence quoted, "It is the authority's opinion
25 that contamination or further contamination of the
groundwater at any site is unwarranted." Do you
agree with that statement?

A. No, I don't. This is not the



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4 policy of the Ministry of the Environment that
5 regulates landfill sites. The reasonable use
6 criteria are the governing factor.

7 Q. So your disagreement is based
8 on your interpretation?

9 A. My interpretation is that the
10 conservation authority is not the governing body
11 for landfill sites. It is the Ministry of the
12 Environment.

13 Q. It is your opinion that the
14 Ministry believes that contamination of the groundwater,
15 further contamination is warranted?

16 A. The Ministry allows us to
17 contaminate groundwater to a certain degree.

18 Q. Would you agree, just the last
19 sentence on that page, a quote again from the
20 conservation authority, "... site D appears to have
21 better inherent capabilities to protect the ground-
22 water resources than does site F." Would you agree
23 with that statement?

24 A. I don't think I would agree with
25 it in light of the detailed studies.

Q. So you are saying, my first
question is what about at stage 2C?

A. At stage 2C. At stage 2C that



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4 might be a reasonable statement at stage 2C, but not
5 after the detailed study.

6 Q. We're about to get into your
7 technical reports now. I will pick up on that later
8 on when we discuss the details. Those are my
9 questions on that document.

10 Now turning to some questions on your
11 technical report which is Exhibit H-40. I am just
12 going to -- Mr. Sobanski, I would just like to start
13 with some questions mainly of clarification. On page
14 12 you were discussing your packer injection test
15 and their use in determining permeability of the rock.
16 You would agree with me that the methodology of
17 the packer test is that the bore hole is sealed off
18 with rubber packers, and the water is pumped into the
19 hole at various pressures and the rate at which the
20 water, I'm sorry the rock takes water is measured
21 in and permeability calculated.

22 MR. BEECHINOR: A. That is right.

23 Q. You would agree that there are
24 certain limitations inherent in the test. For
25 example, the water can leak past the rubber seals
and indicate a higher permeability than actual
or well drilling cuttings can be forced into fractures
by the water and plug them giving a lower permeability.



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Would you agree with that general statement?

A. We were, I think you could say that just about for any test we conducted to ascertain hydraulic conductivity. I think we were very conscious of that and we made every effort and we felt comfortable with the methodology. We had no evidence of that problem.

Q. This test as compared to the pumping test, I believe we stated this test affects a relatively small area of rock directly around the bore hole examined, is that correct?

A. The packer test, it represents the packed off section of the bedrock.

Q. Do you agree that this test and method of analysis developed by the U.S. Bureau of Reclamation is generally developed for a porous and not fractured media, the packer test?

A. Not necessarily. I think they have been applied to both environments.

Q. But generally would you agree that they have been developed for use in a porous media?

A. I know it is used considerably by the civil engineers in determining the amount of grout that might need to be applied to a specific fracture



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zone at depth.

Q. Do you agree though that the test has difficulty in measuring low permeability, say lower than 10^{-6} or higher than say 10^{-2} permeabilities using standard equipment. I am asking this in a general sense.

A. I think when you get into the higher permeability it is, I think that would be correct. You are losing water into the formation, and if you are losing water at a very large rate, you might not be able to keep with up it and the hydraulic conductivity might be higher. On the other hand the hydraulic conductivity of the unit is very low and we have for instance, if we had, we had zero water lost at HC-6, again it becomes very difficult to be precise on what the hydraulic conductivity is of a formation that doesn't accept any water.

Q. Would you agree that the test depends on the measurement, an accurate measurement of the pressure and rate of the water flow into the hole. In the packer test I believe you would use a Neptune flow meter, the meter you referred to.

A. I believe that is correct. I am not clear with all those details at this moment.



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4 Q. This meter, the Neptune meter
5 is the same type of meter used to measure water flow
6 into houses used by city water works departments, is
7 that right? Is that my understanding?

8 A. I can't confirm that, no.

9 Q. Did you do the packer test, or
10 supervise them?

11 A. I had, we had some of our staff
12 engineers from the geotechnical group supervise the
13 packer test. I was out there on occasion to see how
14 the tests were going. That sort of thing.

15 Q. You would be aware of the
16 methodology used?

17 A. Not to the detail. If there
18 is some specific aspect of the performance of the
19 test, it might require obtaining that detail.

20 Q. Are you aware of the accuracy
21 of the Neptune meters to measure about one litre
22 a minute?

23 A. Did we provide any information
24 to you in the interrogatories in that regard?

25 Q. I believe, I will refer you to
our interrogatories then, Exhibit H-85. If we look,
Mr. Beechinor, it is the appendix or addendum 4 to
the interrogatories.



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A. Yes.

Q. You will see the heading there
is packer test?

A. Yes.

Q. You will see first of all on the
first page a reference to a Neptune meter?

A. Yes.

Q. If we look on the next page,
Pl of 2, sheet 1 of 2, the next page.

A. Yes.

Q. Do you see on the righthand
column the fourth item down it says reading to one
litre.

A. Yes.

Q. Is that then the accuracy of the
flow meter would be to one litre?

A. It seems to be the accuracy of
the flow meter shown on the very lefthand side of
the column you see time, then pressure, then the
various readings the technician could actually define
on the meter. I think that defines the ability to
read the meter. There were reading differences
between time one minute, two minutes, there is a
difference in reading of $0.45M^3$ to $0.011 M^3$.

Q. Do you know from this information



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then how accurate the meter would be?

A. I would have to check on that to be very precise. By the readings reported here I think the readings are fairly fine.

Q. Could you check on the limitations to the Neptune meter in terms of ...

A. I certainly can. I believe we had the equipment, All Terrain, the drilling contractor that we employed to do this work. I can call the president of that company to get that information for you.

Q. Our concern really is in terms of the low permeability readings and use of the Neptune meter to obtain low ...

A. It was my recollection though that we make every effort to have an instrument that could read the very fine gradations of water moving into the formation. I think that is apparent on the data sheet here. But I will undertake to find that out for you.

Q. Thank you, Mr. Beechinor. Now, just one other matter of clarification of your methodology here, if we look at page 14, we have a discussion of the piezometer well and we see, I guess it is the second full paragraph, there is an indication



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3 that the piezometers wells where screens were set
4 in medium grain sand that covered screen interval.
5 Sand was capped to three metres with bentonite seals.
6 Sand and gravel was employed to fill the remaining
7 interval.

8 A. Yes.

9 Q. First of all, the sand filters,
10 the purpose is to screen the well and minimize the
11 entry of soil and fine solid particles into the well,
12 is that correct?

13 A. Yes, I wouldn't disagree with
14 that.

15 Q. And the bentonite then provides
16 a low permeability seal, and this would serve to
17 isolate the well in the hole and we can measure the
18 water level or the sample in the discrete zone, is
19 that the purpose of the bentonite?

20 A. That is right.

21 Q. Would you agree that the seal
22 is important in determining water levels or heads
23 at different levels in the rock?

24 A. I would.

25 Q. On page 14 the seal is described
as a three-metre thick bentonite seal.

A. Yes, I see that.



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Q. That is again is to ensure
accurate head measurements.

If we refer to Appendix 4.

A. I think that is an idealized
description of it. I think we made attempts to
utilize around 10-foot seals whenever we could.

Q. I'm not sure that I understand
what it means here. The sand was packed with a
three-metre thick bentonite seal. Is that accurate?

A. That was our aim in the '86 and
'87 series wells is to have a thick bentonite seal.
Normally in many sites we have used much thinner
seals, a foot or two. We were conscientious of
the fact that we didn't want any bypass of the fluid
pressure on a specific piezometer into another unit
that we were monitoring, so we tried to maximize the
thicknesses of the bentonite seals.

Q. First of all we would then read
that statement.

A. '85 and '86 wells, I'm sorry.

Q. Would we read that statement that
the aim was to cap this sand with a three-metre thick
bentonite seal rather than was capped? Is that what
you are telling us now?

A. It was the aim to put 10-foot



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bentonite seals above the piezometers. I am not going to dispute the fact that there may be an occasion where we don't quite meet three metres.

Q. Let us look at Appendix 4 for a moment. These are in Exhibit H-40A, the appendices. Okay, if we look at ...

A. One moment.

Q. If I look at, for example, HC-1-85 OW-2 for example. If I subtract the 169.3 from 171.2, I get 1.9. Is that correct?

A. Where are we now? Oh, piezometer 2 in the lower seal?

Q. The difference between the top and the bottom of the upper seal 1.9 and if we look at the top and bottom of the lower seal, 1.8, do you see that?

A. Yes, the seal at that particular location is 1.9 metres.

Q. Could you confirm in fact, I don't really want to spend much time on this, that the thickness of the seals installed range from 0.6 to 4 metres, and that in fact most are 1.8 metres or less?

A. I couldn't confirm that without going through this table. There is no magical number



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4 to the thickness of the seal. As I mentioned before,
5 in most studies we have done, we have put in, we have
6 only been required to do something in the order
7 of a half a metre for a seal, or even less. We, as
8 I mentioned, maximize the thickness of the seal
9 wherever possible. There may be reasons that if I
10 go into this data base very carefully, there may be
11 a rationale why the particular location seal is not
12 as thick as three metres. You mentioned there is a
13 range between about one and four metres. That
14 doesn't surprise me.

15 Q. Could you confirm perhaps,
16 overnight, there is indeed this range of 0.6 to 4,
17 and most are 1.8 metres or less?

18 A. I will confirm that, sure.

19 Q. The area between the seals was
20 packed with sand and gravel. This might allow some
21 interconnection between zones in the bore hole since
22 the gravel is permeable. Would you agree with that?

23 A. No, that is why we put the seals.
24 If you recall the drilling process, we cored the
25 bedrock, so we have a 30-metre open hole. To put
the piezometers into that hole we have to backfill it.
To ensure number one that we have the sand around
the screen, the seal above the screen and then sand



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3 filling up the remainder of the open hole, it is pretty
4 much the only way one could do it.

5 Q. Wouldn't it have been more
6 appropriate to seal the entire space between the
7 wells with bentonite?

8 A. There is a school of thought
9 that suggests that that may be better. I don't
10 agree with that. I think using the thickness of
11 seals that we have is quite adequate.

12 Q. But not the three-metre thick
13 seals that are mentioned in your report body?

14 A. The seals that we do use are
15 mentioned in the report, they are in Appendix 4.

16 Q. Not as we say on page 14 in the
17 body of the report.

18 A. That's a general statement of how
19 we did the well construction. I think it is probably
20 referring to a figure that is contained in the rear
21 of the ...

22 Q. You have indicated that sand and
23 gravel is used. I would like just to then turn, is
24 that correct?

25 A. Drawing 2, I think what you are
referring to is our idealized well construction, typical
drilling site well construction site F shown in drawing 3



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4 in the site F report.

5 Q. Drawing 3. Now, my question is
6 we see a reference in drawing 3 to a bentonite seal
7 and native backfill. Now, my question is what was
8 used, was it native backfill or sand and gravel?

9 A. I would have to check with some
10 of my field staff to be sure of what that actually is.
11 It is either some shale or it is sand and gravel, or
12 a fine sand, a silica sand quite likely.

13 Q. Could you then check on that
14 because there seems to be a bit of a discrepancy there.

15 A. What is the discrepancy?

16 Q. Between the native backfill
17 described in your drawing 3 and the sand and gravel
18 reference in the body of the report on page 14.

19 A. All right.

20 Q. Now, on page 16 there is a
21 reference to test pits. The third paragraph on
22 page 16, H-40. Do you have that?

23 A. Yes. The third paragraph on
24 page 16.

25 Q. There is reference to test pits
being dug at locations shown on drawing 5 to
investigate the weatherability and rippability of the
shale. Mr. Beechinor, we have looked at drawing 5 and



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we don't see any reference to test pits.

A. You are quite correct. I noticed that a while ago myself. The location of those test pits are not on drawing 5.

Q. Would you be able to obtain the location?

A. Yes, we would.

Q. Could we also ...

A. The logs, yes.

Q. On page 18 there is a reference to the pumping test and wells were drilled to conduct these pumping tests. Were they cleaned and developed prior to conducting the test?

A. Yes, they were. I had Mr. Tim Lotimer who is the manager of our Cambridge office, actually perform the work with respect to the pumping wells.

Q. We agree that developing wells is an important aspect?

A. Yes.

Q. We have had some discussion that the pumping tests are, you believe, are more accurate than the packer or rising head tests in terms of permeability?

A. They are more accurate in the



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4 sense that they are also more useful when you
5 are trying to establish hydraulic connection
6 distant from the pumping well because we are
7 actually measuring the response in an observation
8 well which is distant from the pumping well.

9 Q. Now, I would like to get into
10 a discussion of your delineation of the various units.
11 First of all, we have the discussion beginning at
12 page 52 of your, I guess we understand these now,
13 as your -- these are hydrostratigraphic units
14 described here.

15 A. Yes.

16 Q. The highly fractured shale unit,
17 as we have described is supposed to act as an under-
18 drain and cause a strong downwards gradient
19 beneath the landfill and that is your interpretation?

20 A. Yes.

21 Q. It is supposed to serve to collect
22 the flow from beneath the site and keep the flow paths short and
23 well defined. Is that your interpretation?

24 A. I don't think we made an
25 interpretation like that.

Q. The under-drain concept though
is to collect the flow and ultimately discharge it
in that discharge zone?



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4 A. What do you mean the under-drain
5 concept?

6 Q. Of your unit 4, the
7 highly fractured unit.

8 A. All we are reporting is what
9 our field information demonstrates. That is what
10 is happening.

11 Q. In terms of your contaminant,
12 is that what zone 4 does in your opinion, I thought
13 it was?

14 A. Was what?

15 Q. That it acted as in fact an
16 under-drain to cause the down gradients.

17 A. I believe it does, yes.

18 Q. Now, if I understand your
19 testimony, this unit was defined based on the
20 permeability test, the packer rising head, pumping
21 tests, and any visual examination of the fractures
22 in the cores. Is all that information put together?

23 A. The delineation of it's extent
24 was relied on the information. You stated the
25 actual hydraulic conductivity that we used to
characterize the highly fractured shale unit is
based on pumping test we conducted, pumping test
number one, the calculations of hydraulic conductivity



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1 I will be referring to. So if you can hold on.

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4 Q. Are you with me?

5 A. Yes, go ahead.

6 Q. First of all, just looking at
7 the bore hole log, the first two lines provide a
8 brief description of the rock shale, unweathered to
9 highly weathered, very low strength to 30.8. Is
10 that correct?

11 A. Yes.

12 Q. The question is, why does the
13 log not provide a description of each unit along
14 with the depth and elevation of the boundary between
15 the units. Because if we follow through this log
16 there is no delineation of your zones.

17 A. What we did, there is a summary
18 of all the various discontinuities on bore hole
19 HC-4-85. They are summarized. That summary are
20 all the discontinuities we found throughout that core
21 hole. What we did with that information, as I have
22 indicated before, on Exhibit H-220 is, as Mr. McQuaid
23 described it, as the bar graph symbology, noted
24 the locations of these various discontinuities on
25 Exhibit H-220. So, figure, Exhibit H-220 defines
in vertical extent the distribution of the discontinuities
shown on the bore hole log you are now referring to.



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Q. Okay, so we had to jump. First of all, is this information in this report, or do we have to go to H-220?

A. The information is in the report. The discontinuities shown by the bar graphs on Exhibit H-220 come from the summary you see before you, bore hole log HC-4-85. The information is in the log.

Q. If we just go back to the beginning of HC-3. Just for a minute if you can keep your hand in HC-4. If we go to drawing one of bore hole HC-3-85.

A. Drawing?

Q. Not drawing, your first sheet, I'm sorry. The first sheet HC-3-85. The bore hole log, about four, five pages back, the core log.

A. Yes.

Q. I am looking at the bore hole log.

A. Yes.

Q. We see there that there is a delineation between the shale, till and then a highly weathered red shale, red and green shale, your red brown shale in this log.

A. Yes, that's right.

Q. This kind of delineation was not



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done in any of your detailed HC series?

A. The delineation has been done.

Q. But not in the core logs themselves?

A. The information is summarized, as I mentioned on the next page HC-3-85. The same as I pointed out with HC-4-85. It requires to put the information on the bar graph, but the information necessary to make the various delineation is there.

Q. Can we read then the stratigraphic unit so we can read it from figure 2, is that correct?

A. Where we made the picks for the stratigraphic interpretation?

Q. Yes.

A. That is shown on figure 2.

Q. Let us look at, I am going to be looking at both figure 2 and your Appendix 2. First of all, looking at unit HC-4, unit 2, we see that extends from approximately ...

A. I'm not sure where you are at the moment.

Q. I am on your figure 2.

A. Figure 2.

Q. Referring to figure HC-4 still. And your unit 2 extends from approximately 131.3.

A. I don't have the page yet, hold



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3
4 on.

5 Q. Page 35.

6 A. Yes.

7 Q. Your unit 2 extends from
8 approximately 131 metres elevation down to 120 for
9 a total depth of about 11.3, is that right?

10 A. What we see is a definition of
11 the moderately fractured and weathered shale unit
12 between, I will just pick them off figure 2 for
13 a moment. Somewhere between 135, and it is 137,
14 if I recall, to 120.

15 Q. If we look at, the core log starts
16 at 131.3.

17 A. HC-4?

18 Q. Yes.

19 A. I believe the core log at HC-4-85
20 starts at 137.4, oh the core log, very well.

21 Q. In fact it is based on your
22 discontinuities we would start there, is that correct?

23 A. At which elevation?

24 Q. 131.3 is marked on the top of
25 that core log. Is it correct, Mr. Beechinor, above
that level we don't have any fractured discontinuity
information?

A. If I can refer back again to bore



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4 hole log HC-4-85. The ground surface at that location
5 is 137.4. Now we, at that point the shale was
6 extremely weathered. We were able to auger through.
7 It was not necessary to core it at that particular
8 location. It was very broken up, very weathered.
9 So, we augered that down to, as you can see it is
10 about six metres in elevation shown about 31.3 where
11 we got auger refusal. At that point we found the rock
12 a little more competent, I think we started
13 coring.

14 Q. You would agree that your detailed
15 fracture analysis doesn't start until 131.3. It is
16 a different level of detail?

17 A. We assume it is all very
18 weathered in that portion and that is one of the
19 discontinuities. There is no doubt in my mind that
20 it is very weathered. It is a discontinuity.

21 Q. That's fine, but in terms of the
22 detail if we are looking at these fractures we can
23 start at the 131.

24 A. That is part of the discontinuity
25 we described for the unit, fully fractured, yes.

MS. VIGOD: Mr. Chairman, we could, in
light of your ruling, break at this point.

DR. KINGHAM: We had agreed this



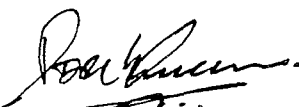
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1 morning that we would adjourn early this evening
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4 so we could have discussion just with counsel about
5 the question of witnesses, cross-examination, order
6 and whatever we might do to improve on the co-ordination
7 of that effort and our understanding of it. What we
8 will do is we will adjourn now. I would ask that the
9 experts and so on, that we clear this room. It seems
10 to be the only room available large enough I think
11 to fit all of counsel unless you have some other
12 suggestions. The meeting will not be recorded because
13 it is not part, we are not hearing evidence. We
14 are not cross-examining. We would just like to talk
15 to counsel about the weeks remaining. So we will
16 adjourn now until tomorrow at 10:15.

17 ---Whereupon the hearing adjourned at 3:56 p.m. to
18 resume on Wednesday, October 7, 1987.

19 -----
20
21 CERTIFIED CORRECT

22 

23 P. McQueen

24 (PAGE 8550 FOLLOWS)

