

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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JAN 21 2004

STATE OF ILLINOIS
Pollution Control Board

BYRON SANDBERG,)

Petitioner,)

vs.)

CITY OF KANKAKEE, ILLINOIS, THE CITY)
OF KANKAKEE, ILLINOIS CITY COUNCIL,)
TOWN AND COUNTRY UTILITIES, INC.,)
and KANKAKEE REGIONAL LANDFILL,)
L.L.C.,)

Respondents.)

Case No. PCB 04-33

WASTE MANAGEMENT OF ILLINOIS,)
INC.,)

Petitioner,)

vs.)

THE CITY OF KANKAKEE, ILLINOIS CITY)
COUNCIL, TOWN AND COUNTRY)
UTILITIES, INC., and KANKAKEE)
REGIONAL LANDFILL, L.L.C.,)

Respondents.)

Case No. PCB 04-34

COUNTY OF KANKAKEE, ILLINOIS and)
EDWARD D. SMITH, KANKAKEE COUNTY)
STATE'S ATTORNEY,)

Petitioners,)

vs.)

CITY OF KANKAKEE, ILLINOIS, THE CITY)
OF KANKAKEE, ILLINOIS CITY COUNCIL,)
TOWN AND COUNTRY UTILITIES, INC.,)
and KANKAKEE REGIONAL LANDFILL,)
L.L.C.,)

Respondents.)

Case No. PCB 04-35

PETITIONERS' MOTION TO SUPPLEMENT RECORD

NOW COME Petitioners, COUNTY OF KANKAKEE and EDWARD D. SMITH, and as and for their Motion to Supplement Record, state as follows:

1. Waste Management, Illinois, Inc. has previously filed an application seeking siting approval for an expansion of its existing facility located in Kankakee County, Illinois, which is the subject of a pending siting hearing.

2. On January 12, 2004, the local siting hearings began to determine if Waste Management's application should be approved.

3. At the hearing, George Mueller, who represents Town & Country in this proceeding, represented one of the objectors, Mr. Merlin Carlock.

4. On January 15, 2004, George Mueller called Charles Norris, a professional geologist, to testify.

5. During his testimony, Mr. Norris stated that he had reviewed the testimony that Mr. Schuh provided in Town & Country II on behalf of the County of Kankakee in June of 2003. (Waste Management, 1/15/04 Tr. Vol. IX, pp. 24, 53, 54, 63, 102-03).

6. Based on his review of Mr. Schuh's testimony, Mr. Norris agreed wholeheartedly with Mr. Schuh's testimony and opinion that sensitivity analyses must be presented in a landfill siting application. (Waste Management, 1/15/04 Tr. Vol. IX, pp. 38, 51-52, 85).

7. In fact, Mr. Norris repeatedly stated that Mr. Schuh's testimony was "absolutely on the mark." (Waste Management, 1/15/04 Tr. Vol. IX, pp. 52, 85).

8. Mr. Norris further elaborated on his opinion and stated:

I agree with Mr. Shue [sic] not only on the issue of sensitivity runs with the groundwater impact assessment, but with the inclusion of all data, everything known, I think it is inappropriate to the point of being unconscionable for someone at any aspect of these kinds of siting hearings to be asking the siting authority just to trust me, I've looked at the data and it's fine. That data, all of that information has got to be out on the table, available for full review, not just after the hearings, but before the hearings

where all interested parties can have the opportunity to look at them.

(Waste Management, 1/15/04 Tr. Vol. IX, pp. 51-52).

9. Mr. Norris' opinions clearly relate to the proceeding at issue in this case and specifically support Mr. Schuh's conclusion that T&C's application did not contain adequate information to establish that the facility was designed and located to protect the public, health, safety and welfare.

10. Such testimony is directly relevant to this case, particularly since the witness providing the testimony was presented by T&C's own attorney.

11. Because the testimony of Mr. Norris would clearly be helpful to the decisionmakers in this proceeding, Petitioners request that this Board supplement the record with Mr. Norris' testimony from the January 15, 2004 proceeding, which is attached hereto and incorporated herein.

WHEREFORE, Petitioners, COUNTY OF KANKAKEE and EDWARD D. SMITH, STATE'S ATTORNEY OF KANKAKEE COUNTY, request that this Board grant their Motion to Supplement the Record.

Dated: January 19, 2004

Respectfully submitted,
EDWARD D. SMITH KANKAKEE COUNTY
STATE'S ATTORNEY AND THE COUNTY
OF KANKAKEE

By: HINSHAW & CULBERTSON


Richard S. Porter
One of Its Attorneys

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AFFIDAVIT OF SERVICE

The undersigned, pursuant to the provisions of Section 1-109 of the Illinois Code of Civil Procedure, hereby under penalty of perjury under the laws of the United States of America, certifies that on January 19, 2004, a copy of the foregoing was served upon:

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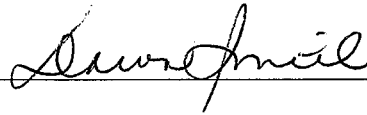
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By depositing a copy thereof, enclosed in an envelope in the U.S. Mail at Rockford, Illinois, before the hour of 5:00 P.M., addressed as above.



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RECEIVED
CLERK'S OFFICE

JAN 21 2004

STATE OF ILLINOIS
Pollution Control Board

STATE OF ILLINOIS)
) SS.
COUNTY OF KANKAKEE)

IN THE MATTER OF)
)
APPLICATION BY WASTE MANAGEMENT,)
ILLINOIS, INC., A DELAWARE CORPORATION,)
FOR APPROVAL OF THE SITE LOCATION FOR)
AN EXPANSION OF THE KANKAKEE LANDFILL.)

VOLUME IX

REPORT OF PROCEEDINGS had during the public
hearing before John McCarthy, Hearing Officer, at the
Quality Inn, 800 North Kinzie Avenue, Bradley,
Illinois, on the 15th day of January, 2004, at
8:45 a.m.

2

- 1 KANKAKEE COUNTY REGIONAL
- 2 PLANNING BOARD MEMBERS PRESENT:
- 3 Loretto Cowhig;
- 4 John Meyer, Jr.;
- 5 Ralph Paarlberg;
- 6 Curt Saindon;
- 7 Jim Tripp;
- 8 George Washington, Jr.
- 9
- 10 KANKAKEE COUNTY BOARD
- 11 MEMBERS PRESENT:
- 12 Ann Bernard;
- 13 Ralph Marcotte, Jr.;
- 14 Leonard Martin;
- 15 Ed Meents;
- Robert Scholl;
- Leo Whitten;
- Francis Jackson;
- William Olthoff.
- PRESENT FROM THE PLAN DEPARTMENT:
- Mr. Michael VanMill, Planning Director;
- Ms. Donna Shehane, Solid Waste Coordinator.

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1 APPEARANCES:
2 MR. DONALD MORAN,
3 Appeared on behalf of Waste Management,
4 Applicant;
5 MR. RICHARD PORTER,
6 Appeared on behalf of the Kankakee County
7 Staff;
8 MS. ELIZABETH S. HARVEY,
9 Special Assistant State's Attorney,
10 Appeared on behalf of the Kankakee County
11 Regional Planning Commission and the
12 Kankakee County Board;
13 MR. EDWARD SMITH,
14 Kankakee County State's Attorney,
15 Appeared on behalf of the Kankakee County
16 Regional Planning Commission;
17 MR. L. PATRICK POWER,
18 Appeared on behalf of the City of Kankakee;
19 MR. GEORGE MUELLER,
20 Appeared on behalf of Mr. Merlin Karlock;
21 MR. DAVID FLYNN,
22 Appeared on behalf of Mr. Michael Watson;
MR. KEITH RUNYON, Individually;
MR. DARREL BRUCK, Individually;

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1 HEARING OFFICER: Let's reconvene the public
2 hearing. It's about a quarter to 9:00 or so.
3 Mr. Moran, you may call your next witness.
4 MR. MORAN: Thank you, Mr. Hearing Officer.
5 HEARING OFFICER: Would you swear the witness,
6 please?
7 (Witness sworn.)
8 HEARING OFFICER: You may proceed.
9 MR. MORAN: Thank you.
10 WHEREUPON:
11 CHRISTOPHER E. RUBAK, P.E.,

11 direct testimony and his cross-examination are
12 already part of this record and do not need to be
13 repeated.

14 HEARING OFFICER: That's correct.

15 BY MR. MUELLER:

16 Q. Mr. Norris, have you had opportunity to do
17 some further review of this application?

18 A. Yes, I have.

19 Q. And have you had opportunity to do some
20 further review of the applicant's operating record?

21 A. Yes, I have.

22 Q. And have you heard the supplemental

22

1 testimony and cross-examination of Joan Underwood in
2 support of the application?

3 A. Yes, I have.

4 Q. Based upon those things, do you have
5 anything to add to the testimony that you previously
6 gave?

7 A. Yes, I do have some observations.

8 Q. If you would proceed, please?

9 A. One of the observations that I think needs
10 to be made and considered is the fact that this
11 application is, with the exception of some
12 bookkeeping changes, exactly the same application
13 that was submitted a year ago. At the hearings a
14 year ago, there were a number of problems that were
15 identified, a number of issues that were raised that
16 the applicant has chosen to simply ignore.

17 One of those areas is unshared information
18 by the applicant. There are four quarters of head
19 data in the expansion area that were not included in
20 the application and have not been shared with the
21 public for review. There are four quarters of water
22 chemistry from the expansion area that have not been

23

1 shared by the applicant with this application and
2 then made available for the public to review. The
3 water chemistry data for all parameters have not been
4 shared with the public for public review and a
5 critical look. The applicant's interpretation of the
6 water table map, a critical element, has not been
7 shared with the public or the county for its review
8 in this application. Model runs that would test the
9 sensitivity of the calculations upon which
10 Ms. Underwood's faith in the public protection of the
11 public health, safety and welfare have not been
12 included in this application and made available for
13 public review.

14 This kind of information would offer a
15 significant improvement, a significant advance in the
16 ability to interpret what is actually going on, what
17 the conditions are under the expansion area and allow
18 a meaningful comparison of the expansion area to the
19 existing area where there are these kinds of data.

20 The performance of the existing landfill is

21 still looked at in basically the same presentation --
22 not basically -- exactly the same presentation that

24

1 it was a year ago in spite of the fact that there
2 have been actions taken by the State IEPA on some of
3 the elements in Table 2-3. And in fact, there's been
4 a remedial plan that has been caused to be put into
5 effect relative to contamination from the existing
6 site.

7 Q. Let me interrupt you for a second, Chuck.
8 Have you had an opportunity to review the
9 testimony of Jeffrey Shue, the County's consultant
10 from Patrick Engineering, at the Town and Country
11 hearings?

12 MR. PORTER: Objection, irrelevant.

13 HEARING OFFICER: Mr. Mueller?

14 MR. MUELLER: I'm just asking if he reviewed it.
15 We'll find out if it's relevant when he opines on it.

16 HEARING OFFICER: Overruled.

17 BY THE WITNESS:

18 A. Yes, I have had a chance to read that
19 testimony.

20 Q. And specifically, have you had an
21 opportunity to review the portions of his testimony
22 that identified shortcomings by way of not including

25

1 certain information in that application?

2 A. Yes, I do recall those parts of his
3 testimony.

4 MR. PORTER: Same objection.

5 HEARING OFFICER: Same ruling.

6 BY MR. MUELLER:

7 Q. Mr. Norris, for example, Mr. Shue, I
8 believe, opined that the absence of sensitivity

9 analyses with the application, in his opinion,
10 rendered the application so incomplete as to make it
11 impossible to render a judgment on Criterion 2. Do
12 you recall reading that?

13 A. Yes.

14 Q. And with regard to your comments about what
15 is not included in this refiled application, I'd ask
16 you to keep Mr. Shue's comments in mind and tell me
17 whether you agree with the position that the County
18 has previously expressed in regard to things like the
19 necessity of sensitivity analyses.

20 With that, please proceed.

21 A. In considering the information that is
22 provided in the application in Table 2-3, I would

□

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1 encourage the County to note the careful use of
2 language in the rationalization or explaining away
3 the deterioration of groundwater quality around the
4 old landfill. Statements like, quote, not confirmed
5 increases when compared to final AGQS's, end of
6 quote.

7 One of the things that is observable in the
8 review of the operating record when it is looked at
9 carefully is the change in the water quality
10 standards or the applicable groundwater quality
11 standards that the operator was able to get approved
12 by the State that made a lot of these increases
13 disappear, if you will; not that the water quality
14 didn't change, not that the water quality didn't
15 deteriorate with time, but only that it now doesn't
16 count in terms of not meeting that standard.

17 Geologically -- hydrogeologically, this was
18 in large part accomplished by the assertion that
19 there was atypical channelized flow in the bedrock at

20 this site; and, therefore, the normal approach of
21 using up-gradient wells as a comparison for water
22 quality was done away with, and instead, individual

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1 wells were just compared to themselves. And then a
2 different time frame was taken, a time frame after
3 the deterioration started, to redefine what normal
4 is. This is attributed and dismissed as being a
5 natural variation.

6 When you're looking at this statement in
7 these documents or in this table of when compared to
8 final AGQS, that's a red flag for you. That's we
9 changed the playing field and now it's no longer an
10 increase.

11 Another recurring theme that's used to
12 explain away or rationalize is the suggestion that at

13 some point in time, the purging and sampling method
14 no longer was adequate and that the changes are due
15 to a faulty purging and sampling method or a faulty
16 laboratory method that was fine for a number of years
17 but somehow has suddenly become inadequate and so we
18 need to recharge the standard or find a different way
19 of monitoring or analyzing so that we no longer have
20 a problem.

21 The statement not attributable to landfill,
22 or more specifically, as used in the text, not due to

28

1 leachate release from the facility -- A place where
2 that language is used is on page 225 -- there's an
3 important difference between not attributable to the
4 landfill and not attributable to a leachate release.
5 Discharges from that existing facility have
6 contaminated groundwater around the existing
7 facility. And that is just a simple statement.
8 Okay?

9 Somewhat more detail can be offered in
10 Karlock 15, the second page of that document, from
11 the previous record. Dismissing the groundwater
12 contamination as being caused by a gas release as
13 opposed to a leachate release and that that in some
14 way suggests that that groundwater contamination
15 shouldn't count just simply doesn't fly. It doesn't
16 negate the fact that the existing facility caused
17 that damage. It doesn't actually fit the data
18 itself.

19 The data itself suggests that at least some
20 of those constituents could not have been caused by a
21 gas release, the concentrations that are observed.
22 And ultimately, it apparently hasn't flown with the

29

1 IEPA in that they have instituted a remedial action
2 and that the applicant is having to do some
3 remediation. Now, unfortunately, I haven't been able
4 to review that document. It isn't in the operating
5 record at the County Clerk's office, but I was glad
6 to see that in this case, the Illinois Environmental
7 Protection Agency did not accept the premise that gas
8 contamination of groundwater, were that the cause,
9 doesn't mean that there isn't a problem.

10 Second, this approach of it's not caused by
11 a leachate release doesn't assess responsibility for
12 non-leachate impacts that are caused by the landfill
13 on the hydrogeology, either physical or chemical.

14 Unaddressed are the inconsistencies in the
15 geologic interpretations in the application. The
16 most -- One of these inconsistencies is the concept
17 that the thin sands in the unconsolidated sediments
18 are interpreted by the applicant as being too limited
19 in extent to be pathways of migration. That's most
20 obviously refuted by the existing facility, where we
21 at least have some data to work with, and by the sand
22 stringer there that has had to be targeted and

30

1 drilled to be -- to allow the gas to dissipate to the
2 atmosphere. That sand is extensive enough that this
3 is causing migration of gas away from the existing
4 facility. It is extensive enough that it can be
5 mapped and has been mapped and has been deliberately
6 drilled to deal with the problem of the migrating
7 gas.

8 In looking at and reviewing, again, the
9 operating record, and the painstaking review of that
10 record, shows that there has never been a suggestion
11 at any time that this gas is anything but landfill

12 gas. All of the engineering reports, all of the
13 geologic reports in dealing with it and installing
14 the wells to dissipate the gas to the surface have
15 universally described this as being gas migrating
16 from the landfill. Only in these hearings in the
17 testimony of Mr. Johnson has there been ever any
18 suggestion that there might be some other
19 non-landfill cause for this gas.

20 I would urge you to go with what the record
21 shows and what everyone who has worked on that site
22 and recognized that a sand stringer at the existing

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1 facility has, in fact, transported gas outside the
2 boundaries of the facility and that the geology
3 around the expansion area is sufficiently similar
4 that the same can happen there, and that possibility
5 must be dealt with in the design and operation of the
6 new facility.

7 We still have an insistence that the
8 glacial sediments are an effective barrier to
9 vertical migration. The gas in that stringer at the
10 existing facility could not have gotten there if the
11 glacial sediments are as represented in this
12 application. Modern agricultural chemicals and
13 bomb-generated radionuclides would not be in the
14 bedrock.

15 Water, if the fine grain sediments
16 performed hydrologically the way they are represented
17 as performing in the application, the interpretation
18 is not consistent with either the site data or the
19 regional data. The site data suggests that water
20 moves through at least 50 times or more faster and at
21 higher volumes. The regional data says it could be
22 as much as 170 times greater. These were issues that

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1 were raised in the previous hearings that were
2 unaddressed and are still unaddressed.

3 The channelized flow under the existing
4 facility has been explicitly acknowledged by the
5 applicant's consultants and used, in particular, to
6 change the methodologies for calculating the
7 standards and allowing them to be revised upward.

8 The proposed monitoring system monitors
9 only the upper 15 feet of the bedrock in spite of
10 well bore and stratigraphic evidence that dissolution
11 features exist at greater depth and that there is a
12 gradient downward toward such features. Monitoring
13 the upper 15 feet and ignoring that downward gradient

14 ends up being a situation where most of the water
15 that is traveling through and leaving the upper 15
16 feet is not being monitored.

17 I've put together a diagram to illustrate
18 that point.

19 George, did you want to --

20 Q. Chuck, these have been handed out, and the
21 diagram is Karlock Exhibit D, as in David, and your
22 calculations is Karlock Exhibit E.

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1 A. All right.

2 Karlock D shows a schematic of the 15 feet
3 that is considered the upper part of the bedrock
4 aquifer. It is the part that's going to be
5 monitored. Okay? Essentially, the monitoring will
6 occur around the north, south and east sides. And if
7 you look at the area that is involved in that
8 perimeter around the north, east and south sides, and
9 a thickness of 15 feet, that area is about 3.4 acres
10 that water can move through. We know the gradient in
11 there. We know the hydraulic conductivity. So we
12 can calculate the volume of water that moves through
13 that perimeter area.

14 We have a downward gradient, which means
15 water moves down out of that zone that is being --
16 that is being monitored. The same calculation can be
17 made for that. The volume --

18 Q. Can I interrupt you for a minute? Just for
19 people who are looking at the exhibit, does the
20 rectangular box on Exhibit D, with dimensions 5,000
21 feet by 2,500 feet, represent the top of the dolomite
22 aquifer underneath the site?

34

1 A. Yes.

2 Q. And do the sides of that box, with a
3 dimension of 15 feet in height, represent the
4 perimeter of that area, which is the zone being
5 monitored?

6 A. Yes. That's the depth of the monitoring
7 wells that are proposed in this application at
8 present.

9 Q. Sorry for the interruption, but I just
10 thought we'd explain that.

11 HEARING OFFICER: Mr. Norris -- We have a --

12 Yes, sir?

13 MR. MEYER: Could we see some of that? There's
14 not that many of us.

15 HEARING OFFICER: Yeah.

16 If you could provide them with a copy.

17 MR. MEYER: We could even share.

18 MR. MUELLER: I've got one extra.

19 HEARING OFFICER: Could you give your name, sir?

20 MR. MEYER: John Meyer, RPC.

21 BY THE WITNESS:

22 A. The base flow from the upper monitored zone

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1 occurs over an area of 287 acres approximately with,
2 again, a hydraulic conductivity and a gradient. Now,
3 the hydraulic conductivity of the zone underneath is
4 80 percent of the hydraulic conductivity of the
5 monitored zone. So it's a little bit less. That
6 data comes from the applicant's data.

7 The gradient in the lower zone varies
8 significantly. In some areas the vertical gradient,
9 the downward gradient, is greater than the horizontal
10 gradients. In other places, it's about 10 percent of
11 the horizontal gradients.

12 Q. Chuck, when you say lower zone here, are
13 you referring now for the purposes of this particular

14 part of your presentation to the dolomite aquifer?

15 A. The dolomite aquifer under the portion of
16 the dolomite aquifer, the 15 feet that's being
17 monitored.

18 Q. Okay.

19 A. The rest of the dolomite aquifer.

20 The gradient, to minimize this calculation,
21 to use the buzz word conservative, I went ahead and
22 used the 10 percent vertical gradient rather than the

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1 higher values. And the area of flow is 83 times the
2 area of flow around the perimeter. The result is
3 that you can demonstrate that the amount of flow
4 going out the bottom of that aquifer -- not out the
5 bottom of the aquifer. The amount of flow going
6 downward in the aquifer below the zone that's being
7 monitored is 6.7 times the flow that's going out
8 through the monitored perimeter.

9 87 percent of the flow penetrates below the
10 monitoring zone. 87 particles out of a hundred that
11 move through that aquifer under that facility
12 leave -- 87 out of a hundred particles that move
13 through the upper zone that's being monitored leave
14 that zone not through the intervals being monitored,
15 but through pathways that are below the zone being
16 monitored. This is not in any way addressed in this
17 application.

18 There are still inconsistencies between the
19 engineering and the geology and the hydrogeology,
20 inconsistencies or inadequacies. The most glaring
21 one, I think, is the treatment of the magnitude and
22 the degree of the inward gradient.

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1 At various places, the head of the

2 landfill, the head at the base of the landfill liner
3 is used in calculations as being the elevation of the
4 base of the liner. The head at the base of the liner
5 in some places is considered -- and for some purposes
6 is considered the head of the water in the bedrock.
7 The head on the flanks of the landfill in some
8 calculations is considered equivalent to the water
9 table.

10 The inward gradient is described as being
11 controlled by the water table for some applications
12 and being controlled by the heads in the bedrock in
13 other applications. At some point in the application
14 and the testimony as justification for some kind of a
15 conclusion, these various things have been used.

16 There's been 13 months that have gone by
17 where some of this could have been resolved. None of

18 it has been.

19 The groundwater impact assessment modeling,
20 the modeling that was relied upon by Ms. Underwood as
21 an underpinning of her belief that the site is
22 protective of the public health, safety and welfare,

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1 there are severe problems with that modeling, some of
2 which were brought out in cross-examination but some
3 of which still are out there.

4 There was, as I indicated, just a single
5 run. Sensitivity data are an absolute must to
6 evaluate the meaning of any kind of modeling.
7 Mr. Shue pointed this out at the City hearings on a
8 recent landfill hearing on another facility. His
9 observations relative to that are absolutely
10 pertinent to the missing information from this one.
11 The run that is included in this model, although it's
12 called a base case, is not a base case. A base case
13 has to have its foundation on site data and
14 engineering data generated in the application or
15 materials that are known to exist. The run in this
16 application was based on none of these. It's an
17 artificial construct.

18 Site flow is in three dimensions. This
19 model considered only one dimension of flow. The
20 inward gradient is controlled by the heads and the
21 sediments adjacent to the landfill. The calculations
22 that are used use the heads in the underlying

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1 aquifer, the bedrock aquifer. The liners are of
2 known dimensions and properties, and these were not
3 used. The properties and liners are based on
4 arbitrary and largely meaningless calculations found
5 in Appendix E-4-4, and it's a calculation that's

6 directly in conflict with the calculation in Appendix
7 E-4-3.

8 The use -- Well, the run is also not a
9 conservative case. A conservative case in the first
10 place must be based on reality, not arbitrary,
11 unsupported numbers, and this calculation is not. It
12 is not even based on a logical and expected direction
13 of flow. This calculation that is in the application
14 is a flow over a period of over a thousand years of
15 vertically upward flow into the landfill.

16 As was pointed out, and I would like to
17 emphasize today, the applicant's own help model that
18 was relied upon by the applicant for the design of
19 leachate management facilities -- That's a standard
20 program that is appropriately used for exactly those
21 kinds of things -- shows a leachate head rise in the
22 landfill that is .6 feet per decade. If there were

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1 an inward gradient from the bedrock into the
2 landfill, as represented by Ms. Underwood and in the
3 calculation in the application, that gradient would
4 reverse itself and become an outward gradient and a
5 downward gradient within 200 years. That was not
6 considered. It was not something that was evaluated
7 in this application. It is a major inconsistency.

8 But in a way, the bigger problem with
9 respect to that is the concept that a few defects per
10 acre in this landfill is in some way going to create
11 an upward gradient from the uppermost aquifer 19 feet
12 below it and the base of the landfill. That simply
13 is not, cannot be the case. It is readily refutable
14 by just a consideration of basic flow according to
15 Darcy's Law. And Karlock Exhibit E is a calculation
16 to demonstrate that.

17 Ms. Underwood chose to consider and

18 calculate something that she called an equivalent
19 conductivity through the entire liner system. It's a
20 calculation that can be made, but it's not the
21 calculation that's important to understand what's
22 happened, because we do know what the characteristics

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1 of that liner are. We don't have to go to some kind
2 of an average number. Groundwater flow is not
3 controlled by average numbers. It's controlled by
4 the absolute numbers that are there. And when you
5 have those numbers available, you look at what they
6 tell you.

7 Now, with this calculation, I considered
8 a -- What I wanted to know was if I have one foot of
9 leachate inside the geomembrane, what kind of head
10 outside that geomembrane do I have to have to push
11 water through it at a particular rate? All right?
12 I'm using -- I chose a half a gallon per day per
13 acre. Now, that's about half the water that
14 Ms. Underwood chose to make her calculation on. It
15 would take less pressure outside the liner to push a
16 half a gallon through than it would take to push a
17 gallon through.

18 We know you convert that half a gallon per
19 day per acre to a what's called a specific flux, the
20 number -- the cubic feet that crosses the square
21 footage per day. And that comes out to a small
22 number, a very small number, one and a half

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1 one-millionths of a cubic foot per square foot goes
2 through that. Okay?

3 Simple Darcy Law says that the Q in this
4 case is equal to the hydraulic conductivity times the
5 gradient. We know the hydraulic conductivity of the

6 liner. The geomembrane, not the whole liner. We
7 don't need to consider the whole liner for this
8 calculation. Let's find out what the pressure is,
9 what the head is outside that plastic layer. All
10 right?

11 The hydraulic conductivity of that liner is
12 used in the help model as 2×10^{-13}
13 centimeters per second. If you convert that to the
14 same units of feet per day, you can then calculate
15 what I is. And from what the gradient is, we know
16 that the gradient is equal to the change in head
17 divided by the change in thickness. The thickness of
18 that is only .005 feet. The head change that has to
19 occur across that liner in order to put a half a

20 gallon a day into the landfill is 13 and a half feet
21 of differential water head against that liner.

22 We know that the typical -- using the

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1 average head of one foot of leachate on top of the
2 liner says that the liner -- the leachate head inside
3 on the inside surface of the liner is 621 feet. The
4 head on the outside of the liner has to be 13.5 feet
5 above that, which makes the head outside the liner
6 634 and a half feet. 634 and a half feet is above
7 the head of the dolomite anywhere it's been measured.

8 There is, in spite of the inward gradient
9 at the liner -- the geomembrane liner -- Yes, water
10 flows in at that point, but the gradient past that
11 liner through the composite clay liner and through
12 all the sediments is down into the aquifer. It is
13 not from that point on up into the landfill.

14 The calculation absolutely should have been
15 done with a downward gradient, and that should have
16 been recognized and recognizable by any
17 hydrogeologist that is considering this site.

18 There are going to be changes to the
19 existing flow system. That at least has been
20 acknowledged partially in yesterday's testimony by
21 Ms. Underwood in that she did acknowledge that there
22 would be some decrease in the head of the uppermost

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1 aquifer in response to building this big, impermeable
2 landfill on top of it. You're going to cut down the
3 available infiltration from above, and that can only
4 have an effect of decreasing the heads, decreasing
5 that mound that's in the bedrock under the landfill.
6 Without that infiltration, that high decreases and
7 potentially disappears.

8 In addition, Ms. Underwood pointed out that
9 surface water monitoring features around the sides
10 and the ponds become sources of infiltrating water
11 that tend to raise the water heads in at least the
12 glacial sediments and perhaps the underlying bedrock,
13 so that the areas right now that are high heads in
14 the bedrock will be lowered. Those that are the low
15 areas where the ponds are sitting will tend to be
16 raised. The effect is going to be to change the
17 directions of flow. And without knowing where
18 those -- what those changes consist of and how big
19 they are, you can't pretend to know where you should
20 put your monitoring wells.

21 The existing placement of the monitoring
22 wells show large gaps on the eastern side of the

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1 landfill. The changes that will occur will tend to
2 minimize the north flow, minimize the south flow,
3 allow a more typical regional flow to the east across
4 the area where there are the fewest monitoring wells
5 proposed. The monitoring program is designed on the
6 existing flow system, not the flow system that will
7 develop. And there has been no attempt in the last
8 13 months to quantify what those changes are going to
9 be and to modify the design to fit those changes.

10 Any and all of these issues can and should
11 have been addressed with a standard three-dimensional
12 flow model of the site that can be used to
13 realistically address -- can also be used to
14 realistically address the contaminant migration from
15 the facility. But regardless of the contaminant
16 transport model that's used, a three-dimensional flow
17 model has to be used to characterize the
18 post-installation, the post-construction condition
19 because that is what has to be monitored.

20 One of the issues that's absolutely
21 unaddressed is flow in the shallow system and what
22 this landfill is going to mean to that. If you put a

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1 500-foot barrier to flow that goes some 20 feet or
2 more below the water table surface, you are going to
3 affect the flow in those shallow sediments. To the
4 extent that the shallow water table is in the higher
5 elevations, it's to flow from the west toward the
6 east, and the shallow sediments are going to be
7 interrupted. It's going to have to find its way
8 under or around that landfill. The result is it is
9 going to be -- it is going to tend to dam up and back
10 up behind the landfill, and you create higher water
11 table heads, higher shallow surficial sediment heads,
12 upgrade into the landfill; and correspondingly, they
13 will be somewhat lower below the landfill.

14 The lower heads below that landfill are
15 probably not going to be a problem, but higher heads
16 upgrading in the landfill may be. You have
17 residences up there. Those residences, to the extent
18 that they, for instance, rely on septic systems, if
19 the water tables rise excessively, you can impact a
20 septic system and its function. You can create water
21 problems in basements where they didn't exist before.

22 These are impacts that this facility can be

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1 expected to have that should be explored with flow
2 modeling. They are impacts that are absolutely --
3 potential impacts that are absolutely unaffected by
4 any release from this landfill, but they are
5 potential impacts that can have a negative effect on
6 the public welfare. And it is unacceptable that
7 these kinds of studies, readily, routinely available

8 and can be done, have not been done by this
9 applicant.

10 The monitoring program is not going to be
11 able to protect the public. If this facility is
12 built successfully as designed, there will be no way
13 with the existing monitoring system to determine
14 whether or not there's a problem with it until
15 decades after the pumps have been shut off. The --
16 If you have -- The current plan is that -- The
17 current calculations show that about 19 gallons per
18 acre per day -- or per year -- per day infiltrate --
19 No, it's 19 per year, I think. Let me look and make
20 sure I don't --

21 From Appendix K-1-1, the calculated
22 infiltration through the cover is 18.1 gallons per

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1 acre per day, a flow through the bottom that is right
2 now perhaps a half a gallon per acre per day. If the
3 upper liner -- the cover isn't working, if that
4 number triples, if the base liner is ten-fold worse,
5 if it's letting material water in from the bottom ten
6 times as great, those numbers are still very
7 manageable leachate handling numbers and they set off
8 right now no flags. There is no required response on
9 the part of the operator to changes in the projected
10 leachate calculations that would cause the operator
11 to look for what is causing leachate production
12 beyond what was originally calculated.

13 An element of the monitoring system on an
14 inward gradient landfill should include performance
15 requirements with respect to leachate production. If
16 the leachate production is ten times what was
17 modeled, that should be a flag that the operator has
18 to explain. It should be looked at on a cell-by-cell
19 basis, not on a landfill-wide basis, because if you
20 have a ten-fold increase in one of a dozen cells,
21 averaging that over a dozen cells doesn't indicate
22 that there's a problem. But if you've got a ten-fold

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1 increase in one cell, it says that cell is not
2 performing right, and you should have to go in and
3 find out why and do something at that point, not wait
4 decades before it actually becomes a problem. You
5 have the inherent ability to preemptively find a
6 problem and correct it. But the monitoring and
7 performance requirements of this landfill, as
8 proposed to be operated, will not include those

9 elements.

10 The perimeter monitoring for gas at this
11 landfill does not go below the saturated zone, below
12 the water table. We know from the existing facility
13 that gas can migrate through sands below the water
14 table. The gas monitoring system for this landfill
15 should include probes that go to the base of the
16 landfill whether or not that's below the water table.
17 Right now they go to the base of the landfill only if
18 the water table happens to be that low. These are
19 two changes that have occurred and have been
20 implemented and integrated into other waste
21 management facilities or at least an other waste
22 management facility. They should be included in this

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1 facility.

2 And finally, this facility should include,
3 as part of its monitoring system, piezometers within
4 the waste, something that tells you whether or not
5 leachate is building up in those cells in the
6 landfill. And the reason you need those is it is
7 possible to plug your leachate collection blanket.
8 If that leachate collection blanket doesn't work,
9 then leachate is not getting into your collection
10 system, you're not producing leachate, that can
11 actually be taken as a sign that leachate production
12 is done and everything is fine with the landfill.

13 But if that blanket has become plugged and
14 the leachate is building up in the landfill, you're
15 completely misinterpreting why you're not producing
16 as much leachate. Verification of no produced
17 leachate with the fact that there is no accumulating
18 leachate in the landfill is the only way to get
19 around that misinterpretation. And that should be
20 part of the landfill monitoring and performance.

21 Q. Mr. Norris, Ms. Underwood opined yesterday
22 that the inclusion of sensitivity analyses in an

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1 application -- And we're talking about sensitivity
2 analyses of the groundwater impact assessment. She
3 opined that the inclusion of those is really more
4 appropriately done at the permitting stage.

5 Mr. Shue, the County's consultant, opined
6 at the Town and Country hearings that the inclusion
7 of those analyses is essential to make determination
8 at the siting phase as to whether or not the facility
9 is really protective of the public health, safety and
10 welfare.

11 Who do you agree with?

12 A. I agree with Mr. Shue not only on the issue
13 of sensitivity runs with the groundwater impact
14 assessment, but with the inclusion of all data,
15 everything known, I think it is inappropriate to the
16 point of being unconscionable for someone at any
17 aspect of these kinds of siting hearings to be asking
18 the siting authority just to trust me, I've looked at
19 that data and it's fine. That data, all of that
20 information has got to be out on the table, available
21 for full review, not just after the hearings, but
22 before the hearings where all interested parties can

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1 have the opportunity to look at them.

2 Q. Mr. Norris, Ms. Underwood also opined
3 yesterday that the pressure gradient in the
4 groundwater underneath and in contact with the bottom
5 of the liner in an inward gradient situation will
6 cause a reversal of the existing downward gradient
7 into an upward gradient for tens of feet.

8 Mr. Shue opined at the Town and Country

9 hearings -- And, again, he's the County's
10 consultant -- that construction of a relatively
11 impermeable liner will not reverse the downward
12 gradient below that liner.

13 Who is correct?

14 A. Well, as demonstrative of the calculations
15 that I made in Karlock E, Mr. Shue is absolutely on
16 the mark, and Ms. Underwood is simply badly mistaken.

17 Q. Anything else to add, Mr. Norris?

18 A. No.

19 MR. MUELLER: Thank you.

20 HEARING OFFICER: Mr. Moran?

21 MR. MORAN: Thank you, Mr. Hearing Officer.

22

□

1 CROSS-EXAMINATION

2 BY MR. MORAN:

3 Q. Mr. Norris, these statements you've made
4 today are essentially the same concerns you expressed
5 during the first set of hearings on this application;
6 isn't that correct?

7 A. Many of them are. The calculation to
8 demonstrate the invalidity of the reversal of
9 gradient is certainly new. The two Karlock exhibits
10 are quantification of new materials or quantification
11 of previous concerns, yes.

12 Q. Well, the new information you were asked
13 about was the testimony Mr. Shue gave at the Town and
14 Country proceeding, isn't that correct? Mr. Mueller
15 didn't ask you at the last set of hearings about
16 Mr. Shue's testimony at Town and Country, did he?

17 A. No. That testimony hadn't occurred yet, I
18 don't believe.

19 Q. And you had an opportunity to review that
20 testimony; isn't that correct?

21 A. Yes, I did read it.

22 Q. And I believe last time we were here, I

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1 asked you about whether you had reviewed any of the
2 application, any part of the application filed with
3 the City of Kankakee with respect to the Town and
4 Country application. And you said you hadn't
5 reviewed any of it; isn't that correct?

6 A. That's correct.

7 Q. So since that date, you've now been
8 instructed to review at least part of the testimony
9 that was presented in that siting application
10 proceeding; is that correct?

11 A. I was asked to review testimony that was
12 offered in the Town and Country subsequent to our
13 last hearings, yes.

14 Q. That's right. And Mr. Mueller asked to you
15 do that, didn't he?

16 A. Yes, he did.

17 Q. And he asked you to review Mr. Shue's
18 testimony, and that was the only part of that siting
19 proceeding that you've reviewed; isn't that correct?

20 A. That's correct.

21 Q. Now, let's just step back for a moment and
22 address the questions that you've looked at here

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1 today. Now, last time you were here, you said that
2 you were going to provide your observations, which I
3 believe you'd characterize your testimony here today,
4 and that you weren't offering an opinion that this
5 application failed to meet Criterion 2; is that
6 correct?

7 A. Yes.

8 Q. Is that still your position that all of the
9 observations you've given here today do not add up to
10 an opinion by you that this application does not meet
11 Criterion 2; is that correct?

12 MR. MUELLER: I'm going to object. I think he's
13 asked a compound question where he's stated something
14 in two different ways. One is whether or not
15 Mr. Norris has an opinion that the application
16 doesn't meet the criterion, and the other one was
17 whether or not Mr. Norris has an opinion that it's
18 impossible to tell whether the application meets the
19 criterion. I think Mr. Moran, in fairness, needs to
20 carefully distinguish between those two.

21 HEARING OFFICER: You want to rephrase your
22 question, Mr. Moran?

1 MR. MORAN: Certainly.

2 BY MR. MORAN:

3 Q. Mr. Norris, have your observations that
4 you've given us here today amounted to a conclusion
5 by you that this application does not meet
6 Criterion 2?

7 A. That's a very precise question. And to be
8 honest, I lost concentration halfway through it. I
9 would ask to have it repeated. If you'd like to have
10 it read back, I know you constructed it very
11 carefully. I'm not asking you to rephrase it. I'm
12 just asking to hear it again.

13 MR. MORAN: If the court reporter could read
14 back my question?

15 (Record read as requested.)

16 BY THE WITNESS:

17 A. No. My observations today reflect the
18 geologic and hydrogeologic problems with the existing
19 application.

20 Q. So you are not testifying here today that
21 this application does not meet Criterion 2; is that
22 correct?

1 A. Yes. I no longer testify to that effect at
2 hearings. I have come to the conclusion through the
3 years that it is inappropriate for people,
4 geologists, to make that determination one way or the
5 other. It's really outside the venue of the science
6 of geology. They can determine whether or not the
7 information exists for a body to make that
8 determination; but a determination of safety is not a
9 geologic determination, it is a combination of policy
10 and risk and other things that are non-geologic that

11 have to be factored into it. So I no longer make
12 that determination.

13 Q. And when did you decide that you would no
14 longer make a determination in reviewing a siting
15 application that that application did not meet any of
16 the criteria?

17 A. Well, I don't think I've ever considered
18 any of the criteria except Criterion 2, but I would
19 think it's been at least three, maybe four years
20 since I've made such a determination.

21 Q. So the last time you recall having drawn a
22 conclusion that a siting application did not meet

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1 Criterion 2 was approximately three or four years
2 ago?

3 A. I believe so.

4 Q. Now, addressing that issue, you have, in

5 fact, been asked by Mr. Mueller to review a number of
6 siting applications; isn't that correct?

7 A. I have looked at a number of siting
8 applications for Mr. Mueller and for other people.

9 Q. Well, I want to focus on those that
10 Mr. Mueller has asked you to review.

11 MR. MUELLER: I'm going to object, Mr. McCarthy.
12 This is repetitive and completely cumulative of
13 previous cross-examination. Mr. Norris's background
14 has been completely explored by both the County's
15 attorney and Mr. Moran at past hearings and, in fact,
16 is beyond the scope of today's direct since we didn't
17 review his background any further, as that would have
18 been cumulative and repetitive on my part.

19 HEARING OFFICER: Mr. Moran?

20 MR. MORAN: Well, in fact, there have been
21 developments since the last hearing. There have been
22 a number of issues raised, in fact, by Mr. Mueller's

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1 questioning of Mr. Norris with regard to additional
2 reviews he has performed of another siting
3 application in this county. And I believe that I'm
4 entitled to question him about what I consider to be
5 his bias in reviewing these applications.

6 HEARING OFFICER: I'll allow it.

7 MR. MUELLER: Mr. McCarthy?

8 HEARING OFFICER: Yes.

9 MR. MUELLER: If he wants to limit his questions
10 to what work Mr. Norris has done since he last
11 testified, I think that's fair subject matter. But
12 if we're just going to rehash what happened in 1993
13 and '95, that certainly is repetitive and cumulative.

14 HEARING OFFICER: Mr. Moran?

15 MR. MORAN: May I proceed?

16 HEARING OFFICER: You may.

17 MR. MORAN: Thank you.

18 HEARING OFFICER: The objection is overruled.

19 BY MR. MORAN:

20 Q. Mr. Mueller asked you on a number of
21 occasions to review siting applications filed in
22 various venues within this state; is that correct?

□

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1 A. Yes, he has.

2 Q. And by my count, before this application
3 that you've reviewed here today, he has asked you to
4 review seven siting applications. Would that be an
5 accurate number?

6 A. I don't have my resume with me, but I think
7 it would certainly be a reasonable number.

8 Q. Well, just to refresh your recollection,
9 last year when I asked you, you said there were six
10 including the first application filed here.

11 A. Okay. Well, this application then would be
12 No. 7.

13 Q. Well, no. I think since the last hearing,
14 didn't you review a siting application in Rochelle
15 that Mr. Mueller asked you to review?

16 A. Yes. I'm sorry. Rochelle would be seven.
17 This would be eight.

18 Q. So this would be No. 8?

19 A. Yes.

20 Q. And in those seven siting applications that
21 Mr. Mueller asked you to review, one of your
22 observations in each of those seven siting

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1 applications you reviewed was that the proposed
2 monitoring for that facility was inadequate; is that
3 correct?

4 MR. MUELLER: Mr. McCarthy, let the record show

5 my continuing objection to this line of questioning.
6 I will not interrupt by objecting to every question.

7 HEARING OFFICER: Fine.

8 BY THE WITNESS:

9 A. Yes, I have always found room for
10 improvement with the monitoring systems.

11 Q. And in fact, during the Rochelle hearings,
12 you were asked about whether you had testified in
13 prior siting applications at the request of
14 Mr. Mueller; is that correct?

15 A. I would imagine.

16 Q. And in that hearing, you indicated that in
17 those prior siting applications you reviewed, that
18 you would have testified in each of those cases that
19 the siting criteria were not met. Isn't that what
20 you testified in Rochelle?

21 A. That I would have testified to that effect
22 or that I did testify to that effect?

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1 Q. That your testimony in Rochelle is when
2 Mr. Mueller asked you to review a siting application,
3 that in each of the cases prior to Rochelle that you
4 had reviewed, that you would have testified that
5 those siting applications did not satisfactory
6 Criterion 2?

7 A. Yes. Were I wearing a hat where it was
8 appropriate to make that determination, I believe
9 that would have been my determination in each of
10 those cases.

11 Q. And in at least two of those siting
12 applications that you testified regarding your
13 observations, that testimony was given since 1998;
14 isn't that true?

15 A. Yes.

16 Q. Now, during the period during which
17 Mr. Mueller was asking you to review siting
18 applications, had he ever asked you to review the
19 siting application that was submitted by Town and
20 Country Utilities to the City of Kankakee?

21 A. No.

22 Q. And in that instance, Mr. Mueller was

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1 representing the applicant; is that correct?

2 A. Yes.

3 Q. And I believe what you said a few moments
4 ago was that he did ask you to review one portion of
5 the testimony given in that proceeding, and that was
6 testimony provided by Mr. Shue; is that correct?

7 A. Yes, the testimony, but not the
8 application.

9 Q. Precisely.
10 And your review was of Mr. Shue's

11 testimony, in which Mr. Shue talked about sensitivity
12 analyses that would be performed in conjunction with
13 the groundwater impact assessment modeling done for
14 purposes of that application; is that correct?

15 A. That was part of Mr. Shue's testimony, yes.

16 Q. Now, have you ever performed any
17 groundwater impact assessment in connection with a
18 permit application to the Illinois Environmental
19 Protection Agency?

20 A. No. As I testified in the previous
21 hearings here in response to that question, I have
22 not.

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1 Q. Do you know what the POLLUTE model is?

2 A. Yes.

3 Q. Is that a program which allows an analysis
4 to be performed and a model to be run in connection
5 with a permit application for a solid waste facility
6 of the Illinois Environmental Protection Agency?

7 A. It is one that can be used, yes.

8 Q. Had you ever performed or prepared or run a
9 POLLUTE model in connection with a permit application
10 to the Illinois Environmental Protection Agency?

11 A. No. Again, as I believe I already
12 testified a year ago, I have not.

13 Q. Do you know what a MIGRATE model is?

14 A. I have seen the program. I've heard about
15 it. I have not used it.

16 Q. Have you ever prepared or run any
17 sensitivity analyses in connection with a model
18 presented in connection with a permit application to
19 the Illinois Environmental Protection Agency?

20 A. No, I have not.

21 Q. Mr. Norris, you testified a little bit last

22 time about your observations and testimony provided

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1 for a proposed landfill in Will County, Illinois,
2 which was proposed by Waste Management of Illinois,
3 Inc.

4 Do you recall that question and that
5 testimony you gave during the last hearing?

6 A. I recall that we discussed some aspects of
7 that, yes.

8 Q. And in that siting application, you, again,
9 testified as you have here that the monitoring system
10 proposed for that landfill was inadequate; is that
11 correct?

12 MR. MUELLER: I'm going to object, Mr. McCarthy.
13 Mr. Norris's testimony at Will County was extensively
14 explored last time; and, in fact, Waste Management
15 admitted into evidence exhibits which they believed
16 impeached Mr. Norris's testimony with regard to that.
17 And, therefore, he already -- he either has been
18 impeached or he hasn't, but it should not be allowed
19 to happen again.

20 HEARING OFFICER: Mr. Moran?

21 MR. MORAN: I'm just setting the groundwork for
22 my next question.

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1 HEARING OFFICER: It's overruled.

2 You may continue.

3 BY THE WITNESS:

4 A. I'm sorry. What was the question?

5 Q. Do you recall that I asked you last time
6 regarding your testimony in the Will County siting
7 application, that you had testified there that the
8 proposed monitoring system was inadequate?

9 A. Yes. The design was essentially the same,

10 the geology was essentially the same as this site,
11 and I believe my criticisms were essentially the same
12 as well.

13 Q. And in that case, both the siting committee
14 that considered your testimony and the Will County
15 Board rejected that testimony; isn't that what I
16 asked you and you acknowledged that fact?

17 MR. MUELLER: Again, I'm going to object. We're
18 just repeating the past.

19 HEARING OFFICER: Overruled.

20 BY THE WITNESS:

21 A. Yes.

22 Q. Are you aware that that proposed facility

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1 has been permitted and they anticipate breaking
2 ground on that facility tomorrow?

3 A. No, I was unaware that they were breaking
4 ground. I was aware it was in the final stages for
5 approval, in part because of the negotiations and
6 work that I did with Waste Management just a little
7 over a year ago regarding changes to the monitoring
8 program that incorporated exactly some of the changes
9 I think Kankakee County should insist on.

10 Q. And we, indeed, covered your claim that
11 somehow you were working in connection with Waste
12 Management on the permitting of that facility; isn't
13 that correct?

14 A. I don't know that it was so much working
15 with Waste Management as perhaps working against
16 Waste Management; but nonetheless, the changes that I
17 proposed to monitoring program and protocols were
18 incorporated in the final application to the State, I
19 believe.

20 MR. MORAN: I have no further questions of this
21 witness.

22 HEARING OFFICER: Thank you.

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1 Mr. Flynn, any cross-examination of this
2 witness?

3 MR. FLYNN: Just one question.

4 CROSS-EXAMINATION

5 BY MR. FLYNN:

6 Q. If I understand your testimony correctly,
7 it's your opinion that there's insufficient data from
8 a hydrogeological perspective to make a determination
9 as to whether or not Criterion 2 has been met?

10 A. Yes, I believe that's the case. A
11 combination of insufficient data and data that has
12 been misdealt with.

13 MR. FLYNN: Thank you.

14 HEARING OFFICER: Mr. Power?

15 MR. POWER: No questions.

16 HEARING OFFICER: Mr. Runyon?

17 MR. RUNYON: Yes, I have a few questions.

18 CROSS-EXAMINATION

19 BY MR. RUNYON:

20 Q. Mr. Norris, were you here last night when
21 Ms. Underwood was testifying?

22 A. Yes.

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1 Q. And did you hear Ed Smith ask Ms. Underwood
2 if, in fact, there were leaks through the system,
3 that the monitoring wells would pick up those leaks?

4 A. Yes.

5 Q. Isn't it true that leachate tends to
6 migrate in different patterns? For instance,
7 leachate can migrate in a plumage, a plume-type
8 pattern; is that correct?

9 A. Yes.

10 Q. Isn't it also correct that leachate can
11 follow a migration path like a finger, straight out
12 in a very narrow corridor?

13 A. A leachate release will move in a pattern
14 that is controlled by the geology and the
15 hydrogeology. If the flow path and the flow system
16 is a large system and a fairly uniform system, then
17 you get what is more of a traditional concept of a
18 plume. If the geology and the hydrogeology is such
19 that the flow path is a very discreet, contained
20 system as in a thin sand lens, stringer, a fracture
21 system, then the leachate can move and will move
22 preferentially through that system more analogous, as

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1 you suggested, to a finger. It's all controlled by
2 the geology and the hydrogeology.

3 Q. Isn't it true that should the leachate
4 migrate in one of those narrow finger patterns, let's

5 say, through the fractured bedrock or something like
6 that, that could actually go right between the
7 monitoring wells and never be detected?

8 A. It's well demonstrated in the literature
9 and experience that the more heterogeneous the system
10 you have, the more discreet the flow paths, the more
11 difficult it is to detect monitoring. And yes,
12 moving through a discreet fracture or a sand stringer
13 that doesn't exist as a broad layer can cause a
14 monitoring well to not detect leachate release that
15 has moved past it. Yes.

16 Q. The computer modeling programs that have
17 been referred to can have a lot of variation in
18 output depending upon your input, can't they?

19 A. Absolutely.

20 Q. So if it's garbage in, it's garbage out?

21 A. That is a --

22 Q. Or trash in and trash out?

□

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1 A. It's a standard axiom; and it's standard
2 because it's true, yes. The outputs of a model are
3 certainly no better than the value of the data and
4 the choices of the input parameters that go into the
5 model.

6 Q. So then the person running the program can
7 certainly manipulate the outcome of that model; is
8 that correct?

9 A. Yes, but I don't think there are very many
10 professionals in this world that manipulate the
11 outcome so much as they make bad or uninformed
12 choices or they overlook things. I hesitate on the
13 manipulate part because it kind of implies an
14 antisocial aspect that I would like to think doesn't
15 exist among professionals. But somebody can

16 manipulate a program, absolutely.

17 Q. That's all I wanted to know about that.

18 Thank you.

19 Isn't it true that most of the modeling
20 programs, however, assume a certain number of faults
21 per acre in the liner system?

22 A. Well, the programs that were used in this

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1 case, the HELP model and the POLLUTE model, do have
2 standard assumptions to that effect. If you don't
3 assume some kind of defect, for instance, in a liner,
4 then all you have is the diffusion of some materials
5 through that liner and you have no flow whatsoever.
6 So you're going to be calculating flow through the
7 liner, you can't have zero permeability. So some
8 assumptions are made that there's at least a minimum
9 kind of number of faults in the liner.

10 Q. So we can kind of compare this, a landfill
11 with a liner like this, as a big bathtub with a
12 baggie inside it?

13 A. That's a -- I mean, visually, I like that.
14 I suppose you could consider it that way.

15 Q. And isn't it true that the those liners are
16 highly susceptible to penetration through things like
17 punctures, even if the wells don't break, that they
18 can be punctured?

19 A. There are ways in which a liner can be
20 damaged as a result of construction. Hopefully, you
21 know, those are caught when they happen, but the
22 answer to the question is yes.

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1 Q. Isn't it also true that there are some
2 chemical compounds that do penetrate the liner?

3 A. To my understanding, yes.

4 Q. Okay.

5 A. I should -- Penetrate, I think, may not be
6 an optimum word there because it implies some kind of
7 a break. The chemicals diffuse or move through the
8 liner, but they don't penetrate it in the sense that
9 they break it.

10 Q. Isn't it true that each year the scientific
11 industrial community produces quite a number of new
12 chemicals?

13 A. I think that's probably a fair general
14 statement.

15 Q. Isn't it also true that ultimately, most of
16 those chemicals will end up in a landfill eventually?

17 A. Again, just speaking as a lay person, I
18 mean, it's not my area of expertise, but there
19 certainly is that potential that they will end up
20 there, yes.

21 Q. Isn't it true also that those chemicals can

□ 22 create, if admixed inside landfill, a compound the

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1 result of which we can't predict?

2 A. Well, that's getting a little too far
3 afield even for me to comment on it as a lay person.

4 Q. Okay. Just a couple of other questions.

5 Do you recall me showing you this letter
6 from Dr. Mehnert yesterday?

7 A. Yes.

8 Q. Do you recall the conclusion of that
9 letter, what he said about the present expansion in
10 terms of its hydrogeologic desirability?

11 A. Well, I don't have it in front of me,
12 but --

13 Q. Would you like to refer to it?

14 A. The thrust, as I recall, is that he felt
15 that there were less optimal conditions at this
16 location than there would be in other areas of
17 Kankakee.

18 Q. Do you recall on what basis he drew that
19 conclusion?

20 A. He was looking at some state survey
21 geologic mapping of Kankakee County.

22 Q. I just have one other question for you, and

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□ 1 it's really a question that that Byron Sandberg asked
2 me to ask. And I'm not even certain I understand
3 what I'm asking.

4 But I believe he gave you --

5 MR. RUNYON: And I don't recall, Mr. Hearing
6 Officer, which exhibit of Sandberg's this was,
7 whether it was 1 or 2 or what.

8 BY MR. RUNYON:

9 Q. But it refers to -- And maybe you'll recall

10 it -- to lineaments.

11 A. Yes.

12 Q. And Mr. Sandberg wanted to know what impact
13 lineaments have on the proposed site.

14 A. If I could have that document to look at
15 it, I think it would help.

16 Q. Sure.

17 A. The document is a number of pages that come
18 from an Illinois Water Survey Investigation Report
19 No. 111 by Stuart Cravens, et al. In particular, the
20 question apparently is related to Figure 9, which is
21 a -- The figure shows a series of -- Well, the
22 caption to the figure is lineaments located by

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1 interpretation of aerial photographs at two locations
2 in Kankakee County. One of those two locations is a
3 location that includes the proposed landfill location
4 and areas to the north and east of it. That figure
5 shows a number of the lineaments that were mapped
6 from the aerial photographs that run to the northeast
7 from the area of the facility.

8 And another figure in Mr. Sandberg's
9 exhibit is a head gradient map for the Silurian
10 dolomite, which, again, shows the location of the
11 facility relative to the map and a pattern of heads
12 within on that potentiometric map that would short
13 northeastward flow in the dolomite. And that, too,
14 is apparently from the Illinois Water Survey
15 Investigation Report No. 111.

16 His question to me yesterday, which I am
17 going to infer is the one he was trying to get you to
18 ask, is what the importance might be of the fact that
19 there is one of the larger lineaments that appears to
20 correspond with the flow direction from the site from

21 the Iroquois River and whether or not -- what import
22 that might have. So with that as background, what I

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1 observed to him is that there are a host of things
2 that can cause lineaments to show up on air photos.
3 They are -- can range from glacial features
4 to bedrock faults to varied sediment features that
5 impact surface vegetation to -- They are a starting
6 point for a way to localize a geologic investigation.
7 Certainly, some things that cause lineaments can also
8 be the types of things that represent enhanced flow
9 paths, but you can't make the assumption outright
10 that because there's a lineament there, there is an
11 enhanced flow path. But it does suggest a geologic
12 anomaly that would be worth investigating because
13 that is a possibility.

14 MR. RUNYON: Thank you very much. I believe
15 that's all I have for you.

16 HEARING OFFICER: Mr. Bruck?

17 MR. BRUCK: No.

18 HEARING OFFICER: Mr. Porter?

19 MR. PORTER: Just a few.

20 CROSS-EXAMINATION

21 BY MR. PORTER:

22 Q. Good morning.

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1 A. Good morning.

2 Q. Earlier you testified that there were some
3 problems with the -- You believed there was a need
4 for additional monitoring wells. Exactly where?

5 A. Well, until a flow system is determined or
6 projected, modeled for conditions after the facility
7 is put in, I would not venture to even begin to try
8 and locate them. That's one of the problems with

9 what has been done here is that the monitoring system
10 has been installed or proposed based on conditions
11 without a 5,000-by-2,500-foot barrier to vertical
12 flow and shallow horizontal flow. And until the
13 impact of that has been determined, there is no point
14 in trying to locate specifically where you would put
15 monitoring wells.

16 One thing that I think can be said is as a
17 generalization, however, is that a monitoring system
18 that is proposed and is put in should include
19 monitoring at depths below the 15 feet that are
20 currently proposed. Everything on the site indicates
21 a significant movement of water through the aquifer
22 below that top 15 feet and regardless of the

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1 geographic position. Unless the three-dimensional
2 modeling somehow showed that the vertical gradient

3 disappeared -- And I would not, based on experience,
4 expect that -- then the monitoring system should
5 certainly include an increased vertical depth than
6 what's presently there.

7 Q. So you don't have any specific criticism
8 about the location of the monitoring wells, correct?

9 A. Some of those locations may end up being
10 perfectly valid monitoring locations. There's no way
11 to know.

12 Q. You do have specific criticism that the
13 depth of the monitoring wells is not sufficient; is
14 that correct? What depth do you propose?

15 A. Again, I would rely on a three-dimensional
16 flow model of the system with the constructed
17 facility and then look at what that hydrogeologic
18 situation says in terms of where the monitoring needs
19 to occur.

20 Q. But you personally did not run such a
21 model, correct?

22 A. No.

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1 Q. And you don't have any specific depth that
2 you're proposing today, correct?

3 A. Not today, no.

4 Q. You did mention that you thought leachate
5 monitoring systems could be improved; am I correct?

6 A. I think that part of the overall monitoring
7 program for the landfill should be one in which
8 leachate volumes on a cell-by-cell basis are used in
9 a performance aspect, in that if the leachate volumes
10 that are being produced are sufficiently different
11 from those that are anticipated, that they be used --
12 that that information then be used to trigger
13 investigation of why that occurs.

14 Q. Is there a specific piece of equipment that
15 you're proposing?

16 A. Well, in this particular case, it's merely
17 a matter of measuring the cell-by-cell production and
18 having those numbers be used against a standard or
19 criteria to determine when they have become anomalous
20 enough that they need to be investigated as a
21 potential problem.

22 Q. And the only other suggestion that I heard

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1 was something about piezometers within the waste.

2 A. Right.

3 Q. Can you go over that again for me briefly?

4 A. Yes. I think that the water levels -- the
5 leachate levels within the landfill should be
6 monitored as a routine part of the monitoring program
7 for the landfill.

8 Q. If I also understood correctly, this is the
9 first time you've ever been retained by Mr. Mueller
10 and not come to the conclusion that Criterion 2 had
11 not been met; is that correct?

12 A. No, that is not correct.

13 Q. Have you ever testified for Mr. Mueller
14 that Criterion 2 was met?

15 A. No.

16 Q. Other than this hearing, have you ever
17 testified that you had no opinion regarding
18 Criterion 2?

19 A. Yes.

20 Q. And in which hearing was that?

21 A. A previous hearing here, and the Rochelle
22 hearing I know for certain. To be honest, I'm not

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1 sure when I shifted on that and determined that I was

2 uncomfortable with the concept of a hydrogeologist
3 making that determination.

4 Q. If all of these changes are made, the
5 deeper monitoring wells are employed, the leachate is
6 monitored as to each cell, piezometers are used,
7 would you have an opinion that Criterion 2 was met?

8 A. An opinion as to whether or not there were
9 sufficient data for someone to reasonably make a
10 determination would have to be made based on an
11 application upon which those kinds of changes were
12 incorporated. In other words, we still haven't
13 seen -- It hasn't been made available -- what the
14 time series information from the existing or the
15 expansion area are, what the chemistry information
16 from the expansion area is. There's a lot of missing
17 information from this application that can't be
18 patched up just by saying okay, we'll put piezometers
19 in the landfill, we'll deepen the gas collection
20 wells, and we'll make a monitoring -- create a
21 monitoring program for leachate volumes. Those are
22 things that I think are needed in order to reach the

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1 point you can make a decision, but there's also a
2 whole set of data that are not available yet to even
3 make a determination as to what else might be needed.

4 So I mean, I think ultimately, those
5 aspects would provide -- those monitoring changes
6 would provide significant elements for someone to
7 make a determination of safety, but they don't repair
8 this application and allow one from this application
9 to do so.

10 Q. So if I understood that correctly, even if
11 those changes were made, you would still have no
12 opinion on Criterion 2, correct?

13 A. Even if there were a -- those changes were

14 made and if there were appropriate and correct
15 modeling that was done -- the 3-D modeling was done
16 and the monitoring wells were designed based on that
17 modeling for the existing facility, as a
18 hydrogeologist, I still will no longer make the
19 determination that the public health, safety and
20 welfare would be protected.

21 If all that were done and all of the data
22 that were there that, as a city council member, as a

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1 member of the public or as a decision maker for the
2 County, that the data were there to legitimately make
3 that, I would so state. But as a testifying
4 hydrogeologist, I would not make that determination
5 anymore. I don't think it's an appropriate
6 determination to be made by someone wearing the hat

7 of a professional geologist and hydrogeologist.

8 Q. Are you aware --

9 A. That's a change. I mean, I have made that
10 determination in the past.

11 Q. Are you aware that the hydrogeology/geology
12 of the waste site is different than the City site?

13 A. Anecdotally, I've heard discussions that
14 suggest that, yes. I've not looked at that
15 application at all.

16 Q. You're aware that the City proposes to
17 actually build a landfill directly into the aquifer
18 without the in situ in place?

19 A. I have -- I have -- Yeah, that's consistent
20 with what I've heard. Yes.

21 Q. You understand that that was what Mr. Shue
22 was testifying regarding, correct?

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1 A. Part of Mr. Shue's testimony was to that
2 effect. I did not have the technical materials. I
3 have no idea whether those technical details and
4 discussion were supported or supportable by the
5 application or not. The comments that I have been
6 referencing to Mr. Shue here are independent of any
7 geology or hydrogeology of the site. It's basic
8 things that need to be done in order to get to the
9 point that you can legitimately tell a hearing body
10 you have the information you need to make an informed
11 decision.

12 So I could care less -- I mean, Mr. Shue's
13 comments as to detailed problems with, for instance,
14 running a groundwater impact assessment, I don't know
15 I have no opinion on whatsoever. His observation
16 that the application for siting purposes should not
17 be considered complete without sensitivity runs is, I

18 think, absolutely on the mark. His observations that
19 three-dimensional modeling are the only way you're
20 going to be able to determine the point at which a
21 gradient reverses itself or doesn't reverse itself is
22 absolutely on the mark. But that's independent of

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1 the specific --

2 Q. Right. And you understand that was
3 particularly important in regard to the City's
4 application because they were proposing to build a
5 landfill directly in the aquifer, correct?

6 A. It is absolutely as important with this
7 facility.

8 Q. You are aware that the in situ in place are
9 going to remain in place in regards to this facility,
10 correct?

11 A. The ones that lie below the base of the
12 landfill liner, yes.

13 Q. Are you indicating that there is no
14 hydrogeological condition that would ever cause you
15 to henceforth have an opinion that a landfill does or
16 does not protect the public health, safety and
17 welfare?

18 A. My testimony as a professional geologist,
19 as I perceive the duties at this point, and as far as
20 I know, indefinitely in the future, are that my job
21 is to determine whether the data are adequate for the
22 conclusions, whether the conclusions are consistent

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1 with the data, that a complete and accurate
2 description of the existing facility and the facility
3 after the construction of the landfill are correct
4 and accurate and that there is a monitoring program
5 that will allow one to determine there's a problem if

6 a problem develops. If those conditions are met,
7 then I can testify to the county you have what you
8 need to make the decision or the city or whatever the
9 decision body is. That is the limit of what my job
10 is.

11 Q. Have you ever provided that testimony to a
12 county or local municipality trying to decide a
13 siting hearing that they have all the information
14 they need to come to a conclusion?

15 A. It's a long time ago. There may be one.
16 I'm trying to think what -- It's in the southern part
17 of the state.

18 Q. Was it more than a decade ago?

19 A. Yeah, it would have been more than a decade
20 ago.

21 Q. In the past decade since you've been
22 testifying, have any of the facilities testified at a

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1 local municipality did not have sufficient
2 information eventually received permit approval from
3 the IEPA?

4 A. Oh, yes, absolutely.

5 MR. PORTER: Nothing further.

6 HEARING OFFICER: Mr. Smith?

7 MR. SMITH: No, sir.

8 HEARING OFFICER: Ms. Harvey?

9 MS. HARVEY: No, thank you.

10 HEARING OFFICER: Members of the Regional
11 Planning Commission?

12 Mr. Washington?

13 CROSS-EXAMINATION

14 BY MR. WASHINGTON:

15 Q. Mr. Norris, in reference to your statement
16 about blocking the leachate flow channels, an
17 operator with the knowledge of past landfill

18 performances and data that supports the expected
19 amount or typical amount of leachate to be produced
20 at any given time during the life of the landfill,
21 why would there be a misinterpretation of the data of
22 leachate produced of that landfill at any given time?

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1 A. One of the concepts of the contemporary
2 landfill is that there is a limit to the life period
3 over which leachate will be produced. If you are
4 looking at a leachate production from a closed
5 landfill that is producing 500 or 5,000 or 10,000
6 gallons every week, month, year, whatever, on a
7 regular basis, and the production starts to decline
8 and drops off to 300 gallons or less, then an
9 interpretation that might be consistent with that is
10 that the process of generating leachate has ended,

11 leachate is no longer being generated by the
12 landfill, and I, as an operator, can now approach the
13 state and say this landfill is inert, it's done, and
14 I should be allowed to reclaim my bonding. It's
15 safe. It's not producing leachate. It can't create
16 a problem. So our job, you as regulator, me as
17 operator, is finished, and we can walk away from it.

18 Q. Again, though, why would they misinterpret
19 that information when they have past history of that
20 same type of operation going on in a typical landfill
21 of this kind with the same types of material being
22 deposited over that same period of time?

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1 A. Not all landfills are going to operate the
2 same. The details of construction are not always the
3 same. The fact that leachate is not making it down
4 to the pump to be pumped out does have another
5 explanation. That explanation is it can no longer
6 get into the leachate collection system. And you
7 really can't determine which of those two is the
8 controlling piece of information unless you're
9 looking at whether or not water levels are rising in
10 the waste in that landfill.

11 It's a very non-aggressive, non-invasive
12 approach to verify the conclusion that leachate is
13 not being produced as opposed to the fact that you
14 have a plugged leachate collection system before the
15 operator is allowed to leave the facility behind.

16 MR. WASHINGTON: Thank you.

17 HEARING OFFICER: Any other members of the
18 Regional Planning Commission?

19 (NO RESPONSE.)

20 Members of the County Board, do you have
21 any questions of this witness?

22 (NO RESPONSE.)

1 Members of the general public?

2 Yes, sir.

3 MR. HARRISON: Bruce Harrison. I do have a
4 couple questions.

5 CROSS-EXAMINATION

6 BY MR. HARRISON:

7 Q. In your earlier testimony you said that 18
8 months had passed without Waste Management addressing
9 any of the problems from the last application; is
10 that true?

11 A. I think I said 13 months.

12 Q. 13 months?

13 Why do you think none of these things were
14 addressed?

15 A. I would have to speculate. I don't know
16 why they weren't. It's -- I don't even want to
17 speculate as to why. I don't know why they weren't.
18 I just observed that they weren't addressed.

19 Q. Well, the reason why I asked this question
20 is because if they weren't addressed, you know, I'm
21 trying to figure out if any of these things were
22 necessary even because they weren't addressed. You

1 know, that's why -- You know, I don't have the
2 information that you people do.

3 A. Right. There's -- I mean, there's a host
4 of reasons hypothetically why they may not have been
5 addressed. Ms. Underwood made clear with respect to
6 the sensitivity runs that she didn't think it was
7 part of the process for siting to provide that
8 information. I do. But they certainly -- The
9 decision not to include that presumably would have
10 included her opinion that sensitivity runs, the

11 County doesn't need to see the sensitivity runs to
12 come to a decision, that it's part of the permitting
13 process, it's not part of the siting process. I
14 adamantly disagree with that concept.

15 Ms. Underwood and I have substantially
16 different views and opinions of what the
17 hydrogeology -- the details of the hydrogeology at
18 the site are. Perhaps none of my concerns were
19 raised because she didn't see the conflict and my
20 objections as having the merit to discuss. It may be
21 that Waste Management said the permit was approved
22 last time, why change it, let's just put it back in

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1 the way it was. Maybe the cost of addressing it was
2 beyond what their budget -- I mean, I simply don't
3 know.

4 The concerns I raised maybe weren't
5 addressed because they were dismissed. We don't
6 know. They're still out there. As a hydrogeologist
7 with my experience and background, I think they are
8 still absolutely accurate descriptions of
9 inconsistencies and problems that need to be
10 addressed, but I don't know why they weren't.

11 Q. I have some concerns about test wells, some
12 of the testimony that you were talking about test
13 wells.

14 Well, these test wells that are out there,
15 you were testifying to some of the questions some of
16 this panel asked you. I'm assuming a test well is
17 kind of like fishing? There's a lot of luck involved
18 when it comes to checking a well? Is that a fair lay
19 person's analogy of the test well?

20 A. Perhaps. But I would like to take the
21 analogy a little further in that a good fisherman

□ 22 doesn't just operate randomly. He usually knows the

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1 species he's looking for. He usually knows the
2 places he's likely to find that. He knows what the
3 bait is likely to do.

4 So you can put test wells in randomly,
5 monitoring wells in randomly and hope you have them
6 in the right place to find something that's leaking
7 or you can use the science of geology and
8 hydrogeology to optimize the opportunity to catch
9 that fish.

10 Q. My other question, is it your professional
11 opinion that based on the information that Waste
12 Management has provided, the County does not have
13 adequate information to make a determination as to
14 the protection of the public health, safety and

15 welfare?

16 A. Yes, that is my opinion.

17 MR. HARRISON: Thank you.

18 HEARING OFFICER: Mr. Mueller, are you going to
19 have some redirect?

20 MR. MUELLER: About three minutes' worth.

21 HEARING OFFICER: Okay. We've been at this for
22 more than an hour and a half. Let's take a short

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1 recess, during which time I'd like to talk to
2 Mr. Flynn about the availability of his witnesses and
3 where we go from here.

4 MR. FLYNN: Let me make some phone calls first.

5 HEARING OFFICER: Okay. Let's take a ten-minute
6 break and try to finish Mr. Norris before lunch.

7 (A brief recess was had.)

8 HEARING OFFICER: Let's reconvene the public
9 hearing. Just a couple of announcements before we
10 continue. We've had some scheduling problems with
11 witnesses, so what we're going to do we're going to
12 finish Mr. Norris this morning, his redirect and
13 recross. We're going to then go through the exhibits
14 that Mr. Moran submitted, Petitioner's Exhibit 3,
15 what's part of it, what's not part of it. Mr. Flynn
16 may want to supplement that, as I understand it.

17 MR. FLYNN: Correct.

18 HEARING OFFICER: And then we're going to
19 adjourn for the day. There will be no afternoon or
20 evening session. We'll reconvene tomorrow morning at
21 8:30.

22 Mr. Flynn has indicated he has two

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1 witnesses at that time, one on traffic, one on real
2 estate. Mr. Mueller has indicated he can't be here

3 tomorrow morning but he's agreed we can go ahead
4 without him. That would be the conclusion of
5 everyone's case in chief. The applicant would then
6 have an opportunity to introduce rebuttal testimony,
7 and that may consist of one, two or possibly three
8 witnesses depending upon Mr. Flynn's witnesses. It
9 may consist of Ms. Underwood, Mr. Corcoran on
10 traffic, Ms. McGarr on real estate.

11 Is that correct?

12 MR. MORAN: Yes.

13 HEARING OFFICER: And so we would plan on going
14 most of the day tomorrow, even tomorrow evening if we
15 have to. I understand that Ms. McGarr may not be
16 available until Tuesday, so if we don't get it done
17 tomorrow, we may come back Tuesday for Ms. McGarr's
18 rebuttal and then for closing arguments.

19 But that determination hasn't been made yet
20 because you don't know what testimony Mr. Flynn will
21 introduce; is that right?

22 MR. MORAN: That's correct.

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1 HEARING OFFICER: Everybody clear on that? Any
2 questions?

3 (NO RESPONSE.)

4 So after this morning's session, we'll
5 adjourn until tomorrow morning at 8:30.

6 With that, Mr. Mueller, redirect?

7 MR. MUELLER: Thank you.

8 REDIRECT EXAMINATION

9 BY MR. MUELLER:

10 Q. Mr. Norris, you were asked if you have done
11 sensitivity analyses in connection with preparing a
12 permit application, and your answer was that you had
13 not.

14 My question is have you done sensitivity

15 analyses of groundwater impact assessments in other
16 contexts..

17 A. Yes.

18 Q. And what is the significance and importance
19 of having sensitivity analyses performed and
20 completed?

21 A. They're an absolutely critical part to
22 understanding the results of the modeling for your

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1 own benefit and providing a meaningful ability for
2 someone to review and understand the effects of your
3 modeling that you're presenting to them. It can
4 point out critical flaws in your approach. It can
5 help you not make mistakes that you might otherwise
6 make. But for the most part, it provides confidence
7 for both yourself and for the parties for whom you
8 are doing the modeling.

9 Q. Mr. Norris, in response to one of
10 Mr. Porter's questions, you indicated that you
11 understood anecdotally that the Town and Country
12 facility is proposed to be actually constructed in
13 the dolomite and that that distinguishes it from this
14 facility, which is proposed to leave some in situ,
15 unconsolidated materials between the bottom of the
16 liner and the dolomite, correct?

17 A. Yes.

18 Q. Now, based upon your review of the data in
19 this application, do you have an opinion as to
20 whether the unconsolidated materials proposed to be
21 left under the liner provide a meaningful or
22 significant barrier between the bottom of that liner

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1 and the top of the dolomite?

2 A. No, I don't think they do for two reasons.

3 One, the representation of those materials as being
4 significant factors of safety with respect to the
5 proposed facility are badly exaggerated in the
6 assessment within the application and the
7 hydrogeologic data from the site indicate that they
8 are at least several orders of magnitude more
9 conductive than is represented.

10 But at least as critical, and perhaps
11 ultimately critical, is that the thickness of those
12 sediments varies significantly in terms of the amount
13 of barrier that they have. And it's one of those
14 cases where an average number is not what's critical.
15 What's critical is the least protective flow path.
16 And there are places where, at most, the fine grain
17 sediments that were referred to as being left in situ
18 are no more than a couple of feet thick, if that. So
19 the concept of these in situ materials below the

20 liner and above the bedrock aquifer do not convey
21 that level of protection or distinction.

22 Q. Mr. Norris, you were asked about the number

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1 of times you have reviewed applications on my behalf.
2 Eliminating duplications where there have been
3 multiple siting hearings such as here and in
4 Rochelle, at how many different venues have you
5 consulted for me?

6 A. I believe six.

7 Q. And Mr. Moran reminded you that your
8 conclusions were rejected by the Will County Board.
9 With regard to the six venues where you've consulted
10 for me -- And obviously, Will County was not one of
11 them -- what were the outcomes of those?

12 A. Lake in the Hills Village, the application
13 was denied. LandComp in LaSalle County was approved.
14 The application of Tazwell was withdrawn. The
15 application at Rochelle was denied. This application
16 is pending. And the application in Coles County was
17 denied. So we've got three denials, one approval and
18 one withdrawn and one pending.

19 Q. And in each of those denials, did the
20 county board, or city council as the case may be,
21 find Criterion 2 had not been met?

22 A. To be honest, I don't know, George.

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1 Q. Fair enough.

2 Lastly then, with regard to the Will County
3 case where your conclusions were, as Mr. Moran said,
4 rejected, in fact, after that process was complete,
5 weren't you invited on behalf of the Sierra Club to
6 sit down privately with Waste Management's technical
7 people and negotiate and work on changes in the

8 monitoring system?

9 A. Yes.

10 Q. And did you, in fact, do that?

11 A. Yes.

12 Q. And did the results of those conferences
13 manifest themselves in the permit application which
14 was ultimately granted by the IEPA?

15 A. That's my understanding.

16 MR. MUELLER: That's all I have.

17 HEARING OFFICER: Mr. Moran?

18 RECROSS-EXAMINATION

19 BY MR. MORAN:

20 Q. Mr. Norris, before today, have you ever
21 opined that sensitivity analyses need to be performed
22 on a groundwater impact assessment done in connection

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1 with a local siting application?

2 A. No. I don't know that it's ever been an
3 issue before the Kankakee one.

4 Q. Well, it became an issue here because
5 Mr. Mueller showed you the testimony of Mr. Shue from
6 Town and Country; isn't that right?

7 A. No. It became an issue here when I looked
8 at the groundwater impact assessment critically for
9 this application for the first time.

10 Q. Well, you didn't have any comments about
11 the sensitivity analysis during our first set of
12 hearings back in November of 2002, did you?

13 A. No. I had not had the time to investigate
14 the details of the groundwater impact assessment
15 modeling that was presented in the application. It
16 was there, but it was not part of what I had the time
17 and the resources to review for that hearing.

18 Q. And the Town and Country hearings to which

19 Mr. Shue's testimony related occurred in June of
20 2003; isn't that correct?
21 A. Yes.
22 Q. And that would have been after the first

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1 set of hearings here, correct?
2 A. Correct.
3 Q. Just so that I'm clear, you indicated that
4 you looked at no other portion of that siting
5 application on behalf of Mr. Mueller; is that
6 correct?
7 A. That's correct.
8 Q. I think you've also indicated that you have
9 not within the last ten years ever found a siting
10 application that was submitted to a local siting body
11 sufficient in terms of the amount of information it
12 provided that related to Criterion 2; is that
13 correct?
14 A. Yes.
15 MR. MORAN: Nothing further.
16 HEARING OFFICER: Mr. Flynn?
17 MR. FLYNN: Just one or two questions.

18 RECROSS-EXAMINATION

19 BY MR. FLYNN:
20 Q. You were asked some questions a little bit
21 earlier -- I believe it was Mr. Porter that asked
22 them -- in terms of where would you locate monitoring

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1 wells on this site. Do you recall those questions?
2 A. Yes.
3 Q. And I believe you indicated at this point
4 in time, you can't give an exact location, an
5 address, so to speak?
6 A. Correct.

7 Q. You need additional information in order to
8 do that?

9 A. Yes.

10 Q. A map, so to speak? A hydrogeologic map?

11 A. I think the ultimate presentation of that
12 information would be expressed as a map certainly.

13 Q. That information is just simply not
14 contained within this application?

15 A. That's correct.

16 MR. FLYNN: That's all.

17 HEARING OFFICER: Mr. Power?

18 MR. POWER: Nothing.

19 HEARING OFFICER: Mr. Runyon?

20 MR. RUNYON: Nothing.

21 HEARING OFFICER: Mr. Bruck?

22 MR. BRUCK: No.

□

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1 HEARING OFFICER: Mr. Porter?

2 MR. PORTER: No, thank you..

3 HEARING OFFICER: Mr. Smith?

4 MR. SMITH: No, sir.

5 HEARING OFFICER: Ms. Harvey?

6 MS. HARVEY: No, thank you.

7 HEARING OFFICER: Members of the Regional
8 Planning Commission?

9 (NO RESPONSE.)

10 Members of the County Board, any questions
11 of this witness?

12 (NO RESPONSE.)

13 And members of the public, any questions?

14 Yes?

15 MR. HARRISON: Bruce Harrison. I just have one
16 more question.

17 RECROSS-EXAMINATION

18 BY MR. HARRISON:

19 Q. Is it your professional opinion that this
20 application is severely lacking in information to
21 make a decision?

22 A. Yes.

□

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1 MR. HARRISON: Thank you.

2 MR. MORAN: Mr. Hearing Officer, if I could --

3 HEARING OFFICER: Yes.

4 MR. MORAN: -- I've just been informed by
5 Ms. Underwood that the Karlock Exhibit D contains a
6 number of items in it that are really unexplained.
7 And perhaps I should have asked this before of
8 Mr. Norris, but I would just ask leave to have him go
9 through and explain these numbers because, frankly,
10 we don't understand them.

11 HEARING OFFICER: Any objection, Mr. Mueller?

12 MR. MUELLER: As long as it's limited to
13 eliciting information regarding the meaning of the
14 exhibit, I have no problem with it.

15 HEARING OFFICER: And I would allow you further
16 redirect if there are other questions.

17 MR. MUELLER: That's fine.

18 FURTHER RECROSS-EXAMINATION

19 BY MR. MORAN:

20 Q. Mr. Norris, do you have Karlock Exhibit D
21 in front of you?

22 A. Yes.

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1 Q. Could you just take us through that
2 exhibit, and beginning in the upper right-hand corner
3 with your Q equals K times small I times A , and
4 indicate to us what each of these letters and each of
5 these designations represent and go through that
6 entire exhibit?

7 A. Sure. Q equals K times I times A is a
8 standard expression of Darcy's Law.

9 HEARING OFFICER: Can everyone hear Mr. Norris?
10 Do you want to pull that microphone a
11 little closer?

12 BY THE WITNESS:

13 A. Q is the total flux through a system. K is
14 the hydraulic conductivity of the materials in that
15 system. I is the gradient driving the flow, and A is
16 the area across which flow occurs.

17 In the top figure, the figures under
18 monitored zone, I have the same equation with the
19 subscripts M indicating applying that equation to the
20 monitored zone, the top 15 feet of bedrock. So it's
21 the same equation. The Q through the monitored
22 perimeter is equal to the K of that zone times the

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1 gradient within that zone times the area of the
2 perimeter.

3 That is expanded upon in the next line
4 where the area of the perimeter is shown to be 15,
5 which represents the 15 feet times the sum of the
6 linear distances around the perimeter, which would be
7 2,500 feet, 5,000 feet, and 2,500 feet.

8 And the final line there is merely
9 converting that area into the number of acres, which
10 would be multiplying those -- adding those numbers
11 together and multiplying by 15 and dividing by
12 43,560, converting that area of flow around the
13 perimeter into the number of acres of flow.

14 The basal flow --

15 Q. Mr. Norris, can I just interrupt you for a
16 moment?

17 A. Sure.

18 Q. What value did you use for the K value in
19 that series of equations?

20 A. I have not put a K value in that
21 calculation.

22 Q. So there was no specific K value used?

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1 A. No. That's correct.

2 Q. Would the same be true for your gradient,
3 small I?

4 A. That's correct.

5 Q. You used no number for gradient?

6 A. There's no number in there at this point,
7 that's correct. Those are just -- Those are just
8 markers in the equation.

9 The basal flow, which I used the
10 subscript V, which just is to indicate vertical. So,
11 again, we have QV is equal to KV times IV, the
12 vertical gradient, times AV, which would be the area.
13 The area of the vertical flow is 2,500 times 5,000,

14 which is equivalent to 276 acres -- I'm sorry --
15 287 acres.

16 Then Q, the next equation is I have written
17 the vertical conductivity in terms of the
18 conductivity of the upper zone in the application,
19 the average gradient -- or not the average gradient.
20 I'm sorry. The average hydraulic conductivity is, I
21 believe, 13.9. It's on a previous Karlock 7 exhibit.
22 Okay. Karlock Exhibit 7.22 actually has

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1 the numbers from the appendices, that the average
2 hydraulic conductivity of that upper 15 feet was
3 13.6 feet per day. The average hydraulic
4 conductivity for the deeper tests within the aquifer
5 was 10.9 feet per day. So the ratio between those
6 two is that the deeper hydraulic conductivity is
7 80 percent of the shallow, so you can express the KV
8 as being 0.8 KM.

9 The next figure is an expression of the

10 vertical hydraulic gradient as a function of the
11 hydraulic -- lateral hydraulic gradient in the upper
12 aquifer, the upper 15 feet. The upper 15 feet as
13 mapped and discussed in the application averages
14 around .005 to .006 depending on what the direction
15 is. The vertical gradients range from 0.1 to 0.0005
16 or 6.

17 I chose to disregard the highest hydraulic
18 conductivity and looked only at the lower hydraulic
19 conductivities, which are 10 percent of the lateral
20 gradient -- I'm sorry -- the -- I disregarded the
21 highest vertical gradient, considered only the lower
22 vertical gradients, which are about 10 percent of the

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1 lateral gradient, so I have used in the equation
2 instead of IV, I have expressed it as 10 percent of
3 the monitored zone gradient. And the area of
4 vertical flow is 83.3 times the area of the perimeter
5 flow or the monitored flow.

6 So those factors then can be combined and
7 you end up with the volume of vertical flow being
8 equal to 6.7 times the volume of the metered flow or
9 the monitored flow.

10 The final calculation is merely 6.7, which
11 is the relative portion of the vertical flow divided
12 by 7.7, which is the combined flow through the two
13 zones.

14 Q. The last statement on Karlock Exhibit D
15 states that 87 percent of flow penetrates below
16 monitoring wells?

17 A. Yes.

18 Q. How did you determine or arrive at the
19 87 percent?

20 A. As I indicated, that's 6.7 divided by 7.7.
21 6.7 is the relative proportion of vertical flow,

22 vertical flux. 7.7 would be the combined portions of

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1 vertical and horizontal. 6.7 divided by 7.7 is
2 87 percent.

3 MR. MORAN: Thank you, Mr. Norris.

4 HEARING OFFICER: Any redirect, Mr. Mueller?

5 MR. MUELLER: No, thank you.

6 HEARING OFFICER: Any other questions,
7 Mr. Flynn?

8 MR. FLYNN: No.

9 HEARING OFFICER: Mr. Power?

10 MR. POWER: No.

11 HEARING OFFICER: Mr. Runyon?

12 MR. RUNYON: No.

13 HEARING OFFICER: Mr. Bruck?

14 MR. BRUCK: No.

15 HEARING OFFICER: Mr. Porter?

16 MR. PORTER: No.

17 HEARING OFFICER: Mr. Smith?

18 MR. SMITH: No, sir.

19 HEARING OFFICER: Ms. Harvey?

20 MS. HARVEY: No questions.

21 HEARING OFFICER: Any other members of the
22 Planning Commission?

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1 Yes, sir.

2 MR. PAARLBERG: Ralph Paarlberg from the RPC.

3 CROSS-EXAMINATION

4 BY MR. PAARLBERG:

5 Q. After the '02 hearings, there were
6 provisions put in the agreement to not allow the
7 overlay of the new landfill on top of the old because
8 of concerns about the subbase liner leakage,
9 whatever.

10 Do you have an opinion on that? It seems
11 to have crept back in?

12 A. Yeah. I did not look at that or involve
13 myself with that. I think that is certainly
14 primarily and almost exclusively an engineering
15 issue. It's really outside my expertise.

16 MR. PAARLBERG: Thank you.

17 HEARING OFFICER: Anyone else of this witness?

18 Mr. Harrison?

19 MR. HARRISON: Bruce Harrison. I do have a
20 question.

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1 FURTHER RECROSS-EXAMINATION

2 BY MR. HARRISON:

3 Q. From the testimony you've heard so far and
4 the data that you have available to you, in your
5 professional opinion, do you believe Waste Management
6 is doing an adequate job of protecting the public,
7 health and welfare at the present landfill?

8 MR. MUELLER: Mr. McCarthy, I'm going to object
9 to that question as beyond the scope.

10 MR. HARRISON: I'm going to say something to the
11 objection that he raised. In some of the testimony
12 that I heard previously, I believe that he testified
13 to some comments on the existing landfill, and that
14 was what my question was directed to.

15 HEARING OFFICER: I think it is beyond the scope
16 of his testimony, but if he has an opinion, he can
17 state it.

18 BY THE WITNESS:

19 A. The performance of the operator relative to
20 what the monitoring has shown at the existing

21 facility is not a performance that would be
22 acceptable were it under my direction, were I

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1 involved technically. The result has not, I think,
2 at this point put anyone's safety directly at risk.

3 In spite of the performance of the
4 operator, the IEPA has insisted on some remedial
5 activities. I think those remedial activities could
6 have been initiated far sooner than they were, but I
7 guess I'm sort of ambivalent. I think the operator
8 certainly could have done a better job; but so far,
9 the approach of the operator, as far as I can tell,
10 hasn't damaged anybody yet.

11 Q. As a follow-up question, I believe some of
12 your testimony was about the quality of the water or
13 the sample that changed?

14 A. Yes.

15 Q. Can you explain that so I can understand
16 it?

17 A. Well, there has been water quality

18 degradation in the vicinity of the existing landfill.
19 That water quality degradation has led to issues of
20 noncompliance with permit requirements at various
21 times in the past. One of the -- Part of the process
22 of that is an opportunity to demonstrate that the

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1 degradation is not being caused by the landfill. And
2 there can be a lot of ways to bring yourself back
3 into compliance without making any changes in your
4 operations, without making any changes to water
5 quality, but getting the State to say okay, it's all
6 right that that's happened, it's not your fault, or
7 in particular, it didn't happen because of a leachate
8 release from the landfill.

9 My professional opinion is that the
10 operator has been able to convince the State of some
11 things that I don't think accurately reflect the
12 hydrogeology that's going on there, but that has
13 brought them back into compliance. It hasn't changed
14 the water quality. And while the changes in water
15 quality that have occurred may not be the result of
16 the leachate leak, I do think that they are the
17 result of the construction and installation of the
18 landfill and the changes that that landfill has made
19 to the site.

20 So while some of the water contamination,
21 some of the water degradation is the result of
22 material from within the landfill escaping, others of

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1 those changes are legitimately not related to
2 leachate releases, but they are related to the
3 operation. And those kinds of changes are not
4 something that either the State regulations address
5 or the operator then is worried about doing something

6 to correct.

7 Q. Is it your opinion as a hydrogeologist that
8 this situation will deteriorate in the future?

9 A. The situation at the existing facility?

10 Q. Yes.

11 A. There, apparently, is going to be
12 remediation of at least parts of it, the parts that
13 are directly attributable to materials that have come
14 out of the landfill.

15 With respect to some of the other changes,
16 I think the jury is still out as to whether some of
17 those changes have reached their new, steady state
18 yet or whether they may continue to develop. I don't
19 know in that case.

20 MR. HARRISON: Thank you.

21 HEARING OFFICER: Any other questions of this
22 witness?

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1 (NO RESPONSE.)

2 Hearing none, Mr. Mueller, have you offered
3 Karlock Exhibit D and E?

4 MR. MUELLER: Actually, I don't think I've
5 offered any of my exhibits, so I would offer them all
6 now, A, B, C, D and E. And with respect to A and C,
7 I still owe you the ten copies, which I'll have when
8 I return here tomorrow.

9 HEARING OFFICER: Any objection to the admission
10 of those exhibits?

11 MR. MORAN: No.

12 HEARING OFFICER: Anyone else have any
13 objections?

14 (NO RESPONSE.)

15 They will be admitted.

16 I'd like to take a few minutes. This has
17 been raised by Mr. Flynn, and the applicant has

1 STATE OF ILLINOIS)
2) SS.
3 COUNTY OF WILL)

4 I, Tiffany M. Pietrzyk, a Certified
5 Shorthand Reporter and Notary Public in and for the
6 County of Will, State of Illinois, do hereby certify
7 that I reported in shorthand the proceedings given at
8 the taking of said hearing and that the foregoing is
9 a true and correct transcript of my shorthand notes
10 so taken as aforesaid and contained all the report of
11 proceedings given at said hearing.

12
13 Dated this 15th day of January, A.D. 2004.
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20 TIFFANY M. PIETRZYK, CSR RPR
21 CSR No. 084-004371
22