

THE ILLINOIS POLLUTION CONTROL BOARD

SIERRA CLUB, ENVIRONMENTAL)
LAW & POLICY CENTER & POLICY)
CENTER, PRAIRIE RIVERS)
NETWORK AND CITIZENS AGAINST)
RUINING THE ENVIRONMENT,)
)
Complainants,)
)
vs) No. PCB 13-15
)
MIDWEST GENERATION, LLC,)
)
Respondent.)

TRANSCRIPT FROM THE PROCEEDINGS

taken before HEARING OFFICER BRADLEY HALLORAN
by LORI ANN ASAUSKAS, CSR, RPR, a notary public
within and for the County of Cook and State of
Illinois, at the James Thompson Center, Room
9-040, Chicago, Illinois, on the 2nd day of
February, 2018, A.D., at 9:00 o'clock a.m.

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1 HEARING OFFICER HALLORAN: Hi.
2 Good morning, everyone. My name is Brad
3 Halloran. I'm also a hearing officer with
4 the Illinois Pollution Control Board. I'm
5 assigned to this matter entitled Sierra Club,
6 Environmental Law and Policy Center, and
7 Citizens Against Ruining the Environment,
8 complainants versus Midwest Generation, LLC,
9 Respondent. It's docketed as No. PCB 13-15.
10 It's an enforcement, water.

11 Today is February 2, 2018,
12 Groundhog Day. This is continued on record
13 from February 1, 2018. That was yesterday.

14 At present, we have Mr. Seymour
15 on the stand under direct by Ms. Nijman from
16 Midwest. I think we should introduce everyone
17 again starting with Mr. Wannier.

18 MR. WANNIER: Yes. My name is Greg
19 Wannier, attorney for Sierra Club, representing
20 complainant.

21 MS. BUGEL: Faith Bugel also
22 representing complainant, Sierra Club.

23 MR. RUSS: Abel Russ, representing
24 complainant, Prairie Rivers Network.

1 MS. NIJMAN: Jennifer Nijman and
2 Kristen Gale for Respondent, Midwest Generation.

3 HEARING OFFICER HALLORAN: Thank
4 you.

5 And I do want to note for
6 the record I do have an Anad Rao from the
7 technical unit here and also attorney advisor
8 Jason James.

9 With that said, Mr. Seymour,
10 you can raise your right hand and Lori will
11 swear you in.

12 THE COURT REPORTER: Do you swear
13 the testimony you are about to give will be
14 the truth, the whole truth, and nothing but
15 the truth, so help you God?

16 THE WITNESS: I do.

17 (Witness sworn.)

18 HEARING OFFICER HALLORAN: Thank
19 you.

20 Please proceed.

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1 WHEREUPON:

2 J O H N S E Y M O U R, P.E.,
3 called as a witness herein, having been first
4 duly sworn, deposeth and saith as follows:

5 D I R E C T E X A M I N A T I O N
6 by Ms. Nijman

7 Q. Mr. Seymour, yesterday when we left
8 off with our discussion, we were in the middle,
9 I believe, of talking about the Joliet site.

10 Do you recall that?

11 A. Yes.

12 Q. Okay. And I believe you had said
13 yesterday that you had looked at, as part of
14 your overview of all the sites, but specifically
15 now as to Joliet, you had looked at groundwater
16 elevations and groundwater flow.

17 Do I have that correctly?

18 A. Yes.

19 Q. If you would, turn to Slide 19.

20 A. Okay.

21 Q. Now, we heard Mr. Gnat describe the
22 location of these monitoring sells.

23 Did you agree with his
24 description of the wells and the locations

1 **they were placed?**

2 A. Yes, I do.

3 **Q. And this map on Page 19 accurately**
4 **reflects the location of those monitoring**
5 **wells?**

6 A. Yes, I believe so.

7 **Q. And Mr. Gnat also talked about these**
8 **upgradient versus downgradient.**

9 **Did you agree with his**
10 **assessment of Monitoring Wells 11, 10, 9**
11 **and 8 as upgradient -- excuse me -- 11,**
12 **10 and 8 as upgradient?**

13 A. Yes.

14 **Q. Did you independently establish**
15 **groundwater flow for all of the sites?**

16 A. Yes, I did.

17 **Q. And did you also review Mr. Gnat's**
18 **assessment of groundwater flow?**

19 A. Yes, I did.

20 **Q. Do you agree with his process for**
21 **developing groundwater flow as he described**
22 **it?**

23 A. Yes.

24 **Q. Now, you heard Dr. Kunkel say that**

1 **he was concerned that there could be higher**
2 **unseen levels of groundwater in between**
3 **sampling events at Joliet.**

4 **What is your opinion on that**
5 **point?**

6 A. Well, I think it's somewhat
7 theoretical. We've got 26 or 27 quarters,
8 over seven years of data, and that -- I
9 believe that the data -- the groundwater
10 data that we have is -- is very thorough
11 and excellent and we haven't seen that
12 large of a swing that he im- -- implied.
13 So I don't see that in the -- in the facts.

14 **Q. And what, if any, is the impact**
15 **of the Des Plaines River on groundwater**
16 **flow at the site?**

17 A. Well, there's a direct connection
18 because the groundwater flow is into the
19 surface water and the -- where -- the level
20 of the surface water is the discharge point
21 so groundwater will flow to the lowest point.

22 So when you have a surface
23 water body and you have groundwater levels,
24 you intuitively will think the water will

1 flow to the surface water.

2 **Q. And you say "intuitively."**

3 **Is that a known principal?**

4 **Is that an accepted principal?**

5 A. Well, no. It's just I've done
6 this so often. You -- you sort of know it,
7 but it's physics. It's groundwater hydraulics.

8 **Q. Now, Dr. Kunkel seemed to suggest**
9 **that there could be flooding of the Des Plaines**
10 **River that could rise and fall impacting the**
11 **wells.**

12 **Do you agree with that**
13 **assessment?**

14 A. The -- the surface water can rise
15 and fall and it will affect the groundwater
16 and it's been measured over the -- that impact
17 has been measured over the years.

18 **Q. Would you explain that it affects --**
19 **what do you mean that it affects the**
20 **groundwater?**

21 A. When the surface water comes up,
22 the groundwater will come up. I know that
23 in some of the reports that Dr. Kunkel --
24 he explained the gradient reversal and Rich

1 did that yesterday.

2 The gradient reversal is
3 more immediate to the edge of the river.
4 It does not go back into the site that
5 much because again, this is a pressure
6 response. So the water doesn't flow from
7 the river to the wells.

8 The water pressure rises
9 and the gradient, meaning the direction
10 flow, really kind of mimics that rising
11 and falling and it only reverses a short-term
12 near the river.

13 And as the testimony of
14 Mr. Gnat yesterday, and I agree with
15 Mr. Gnat, we haven't seen gradient reversals
16 in all those 27 quarters. I have sites that
17 it happens and you do see it, but not here.

18 **Q. Dr. Kunkel originally stated in**
19 **his report, although he didn't testify**
20 **specifically about it, so I don't know whether**
21 **that opinion stands, but let's talk about it.**

22 **He originally stated in his**
23 **report that there is mounding from a pond at**
24 **Joliet 29.**

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**Do you agree with that
opinion?**

A. I disagree. Dr. Kunkel referred to mounding around Monitor Well 9. And as I stated in my report, and confirmed with further data, that he selected the highest water level of 9, and then compared it to approximately upgrading into Monitor Well 8.

And if monitor -- the water level of Monitor Well 9 is higher than Monitor Well 8, his conclusion was that would be mounding and it was sustained. I think some would have to agree, but what we find is that for the vast majority of the data, Monitor Well 9 is lower -- the water level is lower than in Monitor Well 8 and mounding does not occur.

So there may be some short-term effects, but remember, it's hard to tell. This is a very flat site. The groundwater elevation across the site might -- it's -- a couple thousand feet might vary about a half a foot to a foot. So that's really flat.

1 What that does is any
2 measurement that you make becomes critical
3 because you can measure to about an eighth
4 of an inch or a quarter of an inch or a water
5 level indicator. It's not that exact. And
6 so if you're talking about a half an inch
7 difference between wells, it's obviously
8 within -- a measurement error. So I don't
9 agree that mounding is occurring.

10 **Q. Thank you.**

11 **If you would turn to page --**
12 **Slide 20, we heard Mr. Gnat talk about the**
13 **groundwater flow direction and I'm showing**
14 **you a depiction -- the depiction that he**
15 **reviewed yesterday about depiction of**
16 **groundwater flow at Joliet.**

17 **Do you agree with the flow**
18 **direction towards the river as indicated on**
19 **this slide?**

20 **A. Yes. He's indicated in the red**
21 **lines flowing toward the river. And as he**
22 **said, the flow lines are perpendicular to**
23 **the equipotential lines or the elevation**
24 **lines that are the -- the blue lines.**

1 **Q. Now, earlier you stated that you**
2 **conducted a comparison of ash data from the**
3 **ponds with groundwater data.**

4 **Do you recall that?**

5 A. Yes.

6 **Q. And I think you also told me that**
7 **that was a common standard or common type**
8 **of comparison that you do in your field?**

9 A. Yes. Every site where you have
10 some impact to the groundwater, you're
11 going to compare it to some source of data
12 and that's what we're doing here. It's
13 the same thing.

14 **Q. And did you have the opportunity**
15 **to make that comparison for Joliet?**

16 A. Well, at -- at Joliet, we had --
17 I used the data from other sites. We have --
18 for the ash data, and so that -- we had had
19 very consistent readings from all the different
20 bottom ash -- well and Waukegan and Powerton
21 to say that we were looking for barium, boron
22 sulfate and TDS.

23 **Q. And I think you said yesterday,**
24 **because all of the stations were burning**

1 **the same coal in the same way, that's why you**
2 **combined those?**

3 A. Yes, exactly.

4 **Q. If you turn to that next page,**
5 **Page 21 of the slides, what is this table?**

6 A. This is a data -- a presentation
7 of the comparison of the constituents on
8 the left that were found in groundwater and
9 the next column is the constituent that we
10 look at in leachate from ash that had been
11 stored in the -- in the ponds.

12 And you can see where it
13 says barium, boron and sulfate here, is what
14 we're -- what we're focusing this table on.
15 Then across, you see each monitoring well.
16 So we -- we've looked at, you know, a year's
17 worth -- the most recent year's worth of data
18 to evaluate what was found in each -- each
19 well, each constituent, and where you see the
20 dark shading, that's where that -- the result
21 was inconsistent meaning what was found in
22 the groundwater was inconsistent with what was
23 found in the ash leachate.

24 That goes to what was -- if it

1 was inconsistent, it was because something
2 in the groundwater was not in leachate or
3 something that is in leachate is not in
4 groundwater.

5 And so we summed to the
6 number of times that the data were inconsistent
7 and then calculated a percentage. And at the
8 bottom, you see that the percentage's range
9 sort of focused mainly around 40 to 60 percent
10 inconsistent. When it's inconsistent, the
11 conclusion what we made is that what's in the
12 groundwater is not -- the data is not consistent
13 with what's found in the ash.

14 **Q. And turning to the next page, there**
15 **is an additional updated Table 5-4. I should**
16 **say on the prior page, Page 21, updated Table**
17 **5-5, is that Table 5-5 from your expert report?**

18 A. The expert report relied on previous
19 data. This includes all of the updated -- the
20 updated data obtained through the second quarter
21 of 2017.

22 **Q. And same for Page 22, the updated**
23 **Table 5-4, is that updated with the additional**
24 **2017 data?**

1 A. Yes. This is the same presentation
2 with the updated groundwater data.

3 **Q. And why did you --**

4 MR. RUSS: Can I ask for a
5 clarification? I'm sorry.

6 It says from '16 --

7 HEARING OFFICER HALLORAN: Let's
8 hold on. Ask me and then go ahead,
9 Mr. Russ. Objection?

10 MR. RUSS: Objection. Misstates
11 the exhibit.

12 It looks like this data is
13 from 2016 to 2014. So it's not the 2014
14 updated through 2017?

15 MS. NIJMAN: I can ask the
16 witness --

17 HEARING OFFICER HALLORAN: You
18 can clarify that. All right. Thank you.

19 BY MS. NIJMAN:

20 **Q. Mr. Seymour, would you explain what**
21 **data -- which years of data are included in**
22 **this exhibit?**

23 A. Yes. It begins -- it covers four
24 quarters of data beginning in the third

1 quarter of 2016 through the most recent data
2 that has been admitted to this hearing, the
3 second quarter of 2017. So that is the
4 updated data. It does not include the previous
5 data.

6 **Q. And is that the same for the next**
7 **slide, Slide 22?**

8 A. Yes, it is.

9 **Q. So your prior charts in your report**
10 **deal with the pre-2016 or up to your report,**
11 **the date of 2015, correct?**

12 A. What we agreed to do is that we would
13 have a full calendar year representing all the
14 seasons in 2014. So that data ended December of
15 2014.

16 **Q. Thank you.**

17 **Now, this Table 5-4 on Page 22,**
18 **what did you do here? Why -- you site to EPRI.**

19 **What does that mean?**

20 A. That's the Electric Power Research
21 Institute. It's an independent corporation
22 that does research for the power industry and
23 they had conducted research at many different
24 facilities as to what could be found in leachate

1 from CCRs. So we took their data, which
2 is -- and again compared their data to what
3 was found in groundwater and so you had a
4 dozen or so constituents in groundwater and
5 compared it to the dozen or so constituents
6 identified by EPRI.

7 **Q. And did you do that, as you said**
8 **yesterday, as a sort of a backup to the site**
9 **data?**

10 A. Yeah. As I mentioned yesterday, if
11 we start with the site-specific data, that's
12 the best data. And when we go to the lit- --
13 this is basically a literature study and
14 research. You go to that as a backup or a
15 corroboration to make sure we -- we're on
16 target with our conclusions.

17 **Q. And did it corroborate generally?**

18 A. Yes, it did. We followed the same
19 process and that -- at the bottom, you see
20 the percentages. They're still maybe the
21 50 to 60 percent consistent. So actually,
22 it's a little more -- I'd say, on average,
23 it's a little more inconsistent with the
24 EPRI data than with the site data.

1 **Q. And when you --**

2 A. But essentially, it's the same
3 conclusion.

4 **Q. When you say it's inconsistent,**
5 **do you mean there are constituents in**
6 **either the ash or groundwater that don't**
7 **match the other ash, the ash that's in**
8 **the EPRI report?**

9 **What are you saying?**

10 A. Yeah. The groundwater constituents
11 found at the site are inconsistent with the
12 ash data constituents. As I said, that
13 inconsistency is either when you find
14 something in one and not the other or you
15 don't find something in one, but you find
16 it in the other. That's what we define
17 inconsistent as.

18 **Q. If you would, turn to the next**
19 **slide, Page 23, of the binder in front of**
20 **you.**

21 A. Yes.

22 **Q. That's been marked as Exhibit 901**
23 **in the hearing here. Turning to what we've been**
24 **calling the historic ash filled areas at Joliet,**

1 does this -- we've heard a lot of descriptions
2 about the areas. Does this map
3 on Page 23 accurately depict the known former
4 ash filled areas that are at Joliet?

5 A. Yes.

6 Q. And is there any groundwater
7 monitoring -- are there any groundwater
8 monitoring wells in the areas of these
9 historic ash?

10 A. No.

11 Q. Now, the map says on the left
12 side -- there's a green circle that says
13 "Former Ash Placement Areas Sample 2005."

14 A. I see it.

15 Q. Is that part of the ash sampling
16 that you reviewed in this case?

17 A. Yes.

18 Q. And again, what was that ash
19 sampling?

20 What was the purpose of that
21 sampling?

22 A. The series of borings were obtained
23 and sampled and analyzed to evaluate whether
24 it could be beneficially reused.

1 **Q. And what were the findings?**

2 A. The findings of that initially
3 was that they found, I think, one out of
4 about 15 borings had some elevated levels.
5 So they came in and they removed that.
6 So the -- having removed, I'll call it the
7 higher concentration area, KPRG did a
8 calculation -- a statistical calculation
9 that basically concluded -- and I've looked
10 at the date also. They concluded that it
11 met Illinois statute for the chemical
12 constituents for groundwater reuse and it
13 could be beneficially reused.

14 **Q. What is your opinion as to whether**
15 **the historic ash from these areas of Joliet**
16 **are impacting groundwater?**

17 **Is there any evidence?**

18 A. I -- I do not see it. I don't --
19 I don't think it's impacting ground- -- it's
20 not impacting the groundwater.

21 **Q. Now, do you recall what Dr. Kunkel**
22 **said about a possible southwesterly flow from**
23 **the northeast area called alleged former ash**
24 **placement area and that he believed there**

1 **could be some southwest flow of groundwater**
2 **towards the monitoring wells impacting those**
3 **wells?**

4 **Do you agree with that?**

5 A. I think that's an exaggeration
6 that he's presented. In the hydraulics of
7 groundwater -- which is, of course, I've
8 had as a practice for many decades -- the
9 groundwater will flow to the river, but
10 there is a slight, I'll call it, angle.

11 And so there's a very slight southwest
12 angle, but it's -- I'll call it a factor.

13 You know, like a vertical
14 and horizontal component. And that component
15 down river is very small. When you look at
16 the contours that I would expect, the water
17 will not flow from that site to impact the
18 monitoring wells that we have seen around the
19 ponds at Joliet.

20 **Q. And when you say --**

21 A. And the nearest well is Monitor Well 1.

22 THE COURT REPORTER: I'm sorry.

23 Repeat that.

24 THE WITNESS: The nearest well

1 is Monitor Well 1.

2 BY MS. NIJMAN:

3 **Q. When you say "that area," are you're**
4 **talking about it wouldn't flow from what we've**
5 **been calling the northeast area marked on this**
6 **map as alleged former ash placement area?**

7 A. Correct.

8 **Q. This slide also identifies the area**
9 **of the Groundwater Management Zone.**

10 **Can you describe where that is**
11 **on this site?**

12 A. The Groundwater Management Zone is
13 marked in the green hatching that basically
14 surrounds the ponds and it goes from the
15 upgradient area all the way down to the
16 intake canal, which is the Des Plaines River.

17 **Q. And are all of the monitoring wells**
18 **within that Groundwater Management Zone?**

19 A. Yes, they are.

20 **Q. Are ground management zones a**
21 **standard practice in Illinois in site**
22 **investigations?**

23 A. They are -- they are common. They
24 are not necessary as a standard practice, but

1 they are common and it's well -- well used
2 in Illinois.

3 **Q. Is it statutory or regulatory?**

4 A. Yes. It is codified in both the
5 740 regulations and in the 620 regulations.
6 One is for what we call TACO, Tiered Approach
7 for Corrective Objectives, and then the 620
8 is the groundwater rules in Illinois.

9 **Q. Now, earlier when you were describing**
10 **your various reports and notes in this case,**
11 **you stated that you had some notes of a temporal**
12 **trend analysis.**

13 **Do you remember that?**

14 A. Yes.

15 **Q. And I think we've referred to them**
16 **at what's been marked as Exhibit 906 in your**
17 **binder.**

18 **What is a temporal trend**
19 **analysis?**

20 A. Temporal is meaning over time. And
21 so what we looked at over time, the groundwater
22 data, how it fluctuated from the chemistry
23 perspective, in other words, from the early
24 sampling throughout time until the most recent

1 sampling, how did the individual constituents
2 vary in the individual wells.

3 **Q. Looking at Slide 24, titled "Updated**
4 **Groundwater Constituent Temporal Trend Testing**
5 **Results Joliet 29," do you see that?**

6 A. Yes.

7 **Q. What is this slide showing?**

8 A. This is a summary slide where --
9 for the analysis. We used a linear regression
10 analysis, which is a mathematical that is used
11 in an Excel spreadsheet with the appropriate
12 QAQC. We identified the monitoring well, for
13 example, at the top left as MW-01. It says
14 trend direction decreasing and it gives a slope,
15 which is the concentration per year, the change
16 per year.

17 And in this case, it's a
18 negative slope. And conclusion was that that
19 line that was simulated by the data is a
20 decreasing slope, meaning a decreasing
21 concentration.

22 **Q. And is this data updated to the --**
23 **again, the second quarter of 2017 data?**

24 A. Yes. And this data includes all

1 the data from beginning of the sampling
2 through the second quarter of 2017.

3 **Q. Now, when Dr. Kunkel was testifying,**
4 **he showed us charts of boron and sulfate at**
5 **each well.**

6 **Do you know how he did his**
7 **trend review?**

8 A. Well, he sat through his testimony
9 last fall. He went site-by-site with a graph
10 of the data for each of the components --
11 constituents looked at over time and he
12 basically concluded by eyeball this is
13 increasing or decreasing or not changing.

14 **Q. And how is your method different**
15 **than eyeballing?**

16 A. Well, this method is a mathematical
17 method and it's an objective method. There's
18 no subjective influence. When you base it on
19 eyeballing, it's subject. There is maybe an
20 inherent bias. So this takes out that bias
21 and is a more objective method.

22 **Q. Now, Dr. Kunkel criticized your**
23 **notes here as not being Mann-Kendall or not**
24 **normalizing the data.**

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What is your response to that?

A. Well, I -- I find it rather ironic because he is criticizing a mathematical method in favor of a subjective eyeballing method and he's compared it that I didn't use another mathematical method when he didn't use any mathematical method.

And I'm familiar with Mann-Kendall. It's another tool, another way to compare it. It doesn't make it any better or worse. It's actually used for maybe a little different application.

What we're looking at here is the long-term trend as to what's going on and it's -- it's just to get an idea at the site in general as to what's going on.

Q. And if you turn to the next slide, does this present your conclusions as to the updated trend analysis at Joliet?

A. Yes. This is the Joliet trend. If we look at the top chart, it's a summary for each of the four constituents we looked at and you can see, for example, I'll just go through

1 one line, the increasing trend, barium is
2 increasing at two wells, boron is increasing
3 at two wells, manganese is increasing at one
4 well and sulfate is increasing in two wells.

5 So at the bottom, when you
6 look at the overall conclusion, it appears
7 that the concentrations are slightly decreasing
8 because mainly, that the indicators that are
9 decreasing are three wells to six wells. The
10 ones that are increasing are only one to two.
11 The ones that are no conclusion made are three
12 to six.

13 So in general, that middle
14 group that it's decreasing and so they're
15 getting slightly better based on this overall
16 trend.

17 **Q. And when you did the trend analysis,**
18 **you didn't compare it to a standard, per se?**
19 **You just looked at whether it's going up or**
20 **down?**

21 **Do I understand that correctly?**

22 A. Yes, you do.

23 **Q. If you would, turn to what's been**
24 **marked as Exhibit 908, Tab 908 in your binder.**

1 A. Yes.

2 Q. So you may recognize this document
3 from Dr. Kunkel's testimony.

4 Can you explain what it is?

5 A. On the left are the charts that he --
6 base charts that he used that was submitted
7 prehearing. On the right, it's a representation
8 of boron concentrations. Overall, I believe
9 this is Monitor Well 1.

10 In the middle of this note is
11 testimony, what he stated, in that he stated in
12 this data are decreasing and at the bottom, you
13 can also see he's got the red line that
14 represents the back -- his representation of
15 back run for boron.

16 Q. And on this chart in the orange color,
17 this is -- it stays standard boron level two, so
18 that's the class one standard --

19 A. Yes.

20 Q. -- being shown?

21 A. Yes.

22 Q. Now, we heard Mr. Gnat talk about
23 this a little bit -- Dr. Kunkel, you said,
24 relied -- compared the data at Joliet and

1 **the other sites to background here, correct?**

2 A. That's what he said.

3 **Q. And what is your opinion of using --**
4 **well, Mr. Gnat explained that that background**
5 **was based on community water levels or community**
6 **water supplies throughout the state of Illinois.**

7 **Do you recall Mr. Gnat saying**
8 **that?**

9 A. I do.

10 **Q. Did you -- do you agree that that's**
11 **how these backgrounds are Dr. Kunkel created?**

12 A. The data that he used to present
13 this median value are from the community
14 water -- water wells, yes.

15 **Q. And what is your opinion of using**
16 **the community water levels as a background?**

17 A. Well, a couple things. They're
18 not site-specific, number one. That's the
19 first thing you look at because I think as
20 we learned yesterday, there aren't that many
21 well -- community wells near the site.

22 **So first, you look at**
23 **site-specific wells. That's my first objection.**
24 **That's not site-specific.**

1 If you want the second part,
2 I will give you the second part. That is,
3 what he's done, for example, for boron, he
4 uses a median value of .12 as background. He
5 represents it as the data used by IEPA and
6 that's just not true.

7 He also -- if you look at
8 the group document that he has, which is one
9 of the exhibits that is presented or attachments
10 to his reports, he gives a diagram that shows
11 the median value, as Rich mentioned yesterday,
12 the number -- the value, which half of the
13 numbers are greater than the median, half of
14 the numbers are values that are less than.

15 It doesn't represent what
16 the Illinois EPA expects, which is a statistical
17 representation. And on the diagram, they put
18 75th percentile level of confidence and a 90th
19 percentile level of confidence. What that is
20 that is statistical calculation. It takes all
21 the data and says if the value we measure are
22 less than a level of confidence saying, like,
23 for example, a 90 percent confidence level, if
24 it's that number you're 90 percent sure that it

1 is within that background range.

2 And conversely, if it's
3 above that number, you're sure that it is
4 above background. But if it's within that
5 range, it's within the background range.

6 It's not above background. But that's
7 comparing it to the community wells.

8 To really, what Illinois
9 EPA says is that it has to be a statistical
10 evaluation and he did not do that. He just
11 picked the median, which is -- which is
12 meaning that no matter what you meant, almost
13 no matter what you measure, even if it's not
14 impacting groundwater, half the values can
15 be above and half the values can below. So
16 it's not going to be an accurate representation
17 of background.

18 **Q. And just so we have the record clear,**
19 **in Mr. -- Dr. Kunkel exhibits that are in front**
20 **of you in the binder, would you turn to what's**
21 **been marked there as, I believe, Exhibit 405 --**

22 A. Okay. Yes.

23 **Q. If you turn to the document, Page 27,**
24 **it's got a Bates number on it.**

1 A. It does. Yes, Bates 019094.

2 Q. And on that page, under the heading
3 "Determining Background Values," the second
4 sentence says, "Background refers to the
5 concentration of chemical constituents
6 migrating through the groundwater towards
7 the regulated unit upgradient whether they
8 are of natural or anthropogenic origin.
9 Background also refers to the existing
10 concentration of chemical constituents
11 migrating in groundwater away from a regulated
12 unit (downgradient)."

13 Did I read that correctly?

14 A. Yes.

15 Q. So what is that saying?

16 What does that mean to lay
17 speak?

18 A. This means that for the purpose of
19 this rule, which is a rule for Illinois for
20 CCR units --

21 Q. The proposed rule, do you mean?

22 A. Excuse me, yes, the proposed rule.

23 It's -- they say what's in
24 the groundwater, if it's not caused by the

1 unit, it's considered part background. So
2 anthropogenic means by man, caused by man.
3 So there can be other constituents in the
4 groundwater that can be represented --
5 that can be present that aren't -- what
6 we would often call background from broader
7 perspective of unimpacted water.

8 So the rule in Illinois --
9 the proposed rule in Illinois considers this,
10 how you determine background, and I think
11 it's very much in line with this whole process
12 we've followed here for the past eight years,
13 since 2010.

14 As Mr. Gnat pointed out
15 yesterday, for the purpose of this study,
16 the background is what's in the upgradient
17 wells if it's not from the source.

18 **Q. Now, we talked just a second ago**
19 **about the upgradient wells of Joliet and I**
20 **think we said eight, ten and 11; is that**
21 **right?**

22 A. Monitor Well 8, Monitor Well 10
23 and Monitor Well 11, yes.

24 **Q. And did you review the boring logs**

1 **for those wells?**

2 A. Yes.

3 **Q. Do you know whether those three**
4 **upgradient wells are installed in ash fill?**

5 A. Those monitor wells are not
6 installed in any kind of ash fill nor
7 any other monitoring well nor are the
8 historical borings conducted in 1998.

9 **Q. Now, Dr. Kunkel concluded that they**
10 **were installed in ash fill.**

11 **Do you know why he made that**
12 **conclusion?**

13 A. I believe, in all fairness, the
14 documents that have been produced in this
15 process that had Joliet 9 borings logs
16 included with Joliet 29 power plant and
17 that some of those logs had ash in them,
18 but clearly the Patrick reports, which
19 documented the installation of monitoring
20 wells did not have ash.

21 So I think he was confused
22 in what he found historically versus what
23 was actually found at the site because the
24 incorrect boring logs were attached to the

1 original report.

2 I had identified that
3 very early. I told my staff engineer to look
4 harder and we were able to find the correct
5 boring logs.

6 **Q. And, in fact, Ms. Race, talked about**
7 **those correct borings logs?**

8 A. I believe so.

9 **Q. And just turn quickly to Maria Race,**
10 **Exhibit 604, are these the correct borings logs,**
11 **just for identification?**

12 A. Yeah. At this top, it says "Location
13 Joliet 29 for Boring Log 1." I'm sure if we go
14 through here, they will -- they will all say at
15 the top Joliet 29 Power Station. So these are
16 the correct ones from ENSR.

17 **Q. Mr. Gnat also talked about -- you can**
18 **put that aside. Thank you.**

19 **You also talked about the**
20 **potential for an upgradient off-site source**
21 **of chloride at Joliet 29.**

22 **Do you agree with his**
23 **testimony?**

24 A. Yes, I do.

1 **Q. And what is the basis for the**
2 **understanding that there is a source of**
3 **chloride?**

4 A. Well, Channahon Road is right there.
5 It's a heavy traffic road that parallels the
6 river and it's salted. It's well known it's
7 salted. The salt runoff water goes down into
8 the ditch that parallels the site and parallels
9 those upgradient monitoring wells and then
10 ditches even closer to a groundwater level.
11 And so it migrates to groundwater and then
12 migrates towards the river, which is under the
13 ponds and through the monitor wells and the
14 chlorides are being detected in the monitoring
15 wells.

16 **Q. Mr. Gnat also spoke yesterday about**
17 **nitrogen or nitrates and its connection to**
18 **fertilizer.**

19 **What is your opinion about**
20 **including nitrate as indicative of coal ash?**

21 A. I think it's unnecessary here.
22 Obviously, we end up -- it's not appropriate.
23 In addition, we have -- I haven't found it.
24 So I don't think that's appropriate.

1 **Q. Now, looking back at Tab 90- -- excuse**
2 **me -- what's been marked as Midwest Gen**
3 **Exhibit 908 of the binder. Take a look**
4 **at Monitoring MW-11 for boron.**

5 A. Yes.

6 **Q. Now, I think you just said MW-11**
7 **was an upgradient well, correct?**

8 A. Yes, it is upgradient.

9 **Q. All right.**

10 A. Excuse me. It is upgradient, but do
11 you want me to look at boron, did you say?

12 **Q. Boron, which is on Page 11 of this**
13 **document.**

14 A. I'm sorry. Okay. All right.

15 **Q. So based on your review of this**
16 **upgradient well, what did you see?**

17 **I'm sorry. Are you there,**
18 **Page 11?**

19 A. I'm there now. Pardon me?

20 **Q. On Page 11?**

21 A. Yes.

22 **Q. Okay. Based on your review of boron**
23 **at MW-11 upgradient well at Joliet, what did**
24 **you see?**

1 A. Well, the graph presents the boron
2 concentrations over time and the graph shows
3 that at two points back in late 2010, early
4 2011, and I believe that was prior to the
5 CCA, the compliance commitment agreements,
6 that the boron exceeded the standard twice
7 and then subsequently, after the CCA,
8 exhibits the -- of course the standard is
9 not a standard, but it did -- it looks like
10 it hit the boron standard once. So for all
11 for all those 27 monitoring points, there's
12 very little boron.

13 **Q. And, in fact, are there any other**
14 **wells at Joliet that had boron above the**
15 **Class 1 standard?**

16 A. Well, as a matter of fact, the
17 last number of quarters, there isn't anything
18 above the standards of anything.

19 **Q. And let's look at sulfate and just --**
20 **Page 19 of this Exhibit 908.**

21 A. What site, please?

22 **Q. Page 19 of Exhibit 908.**

23 A. Yes.

24 **Q. So this is -- it says, "Joliet 29**

1 **Monitoring Well 8 Sulfate Concentration."**

2 **Do you see that?**

3 A. Yes.

4 **Q. What conclusions do you -- explain**
5 **what you are seeing here as to levels of sulfate**
6 **concentration.**

7 A. Well, this is Monitor Well 8 and
8 it's the same graph of sulfate concentrations
9 over time in that we see that in the 2014
10 timeframe, maybe early 2015, the sulfate
11 concentrate -- concentration exceeded the --
12 what's greater than sulfate standard. Again,
13 it's within the GMZ zone. So it's not a
14 violation. It is by comparison levels. It
15 exceeded it twice and when you look at the
16 data, which, Jim --

17 **Q. He isn't here.**

18 A. Okay. We've got -- only twice of
19 all those times it exceeded the standard and
20 even Dr. Kunkel said that it's -- he said it
21 was at background -- his background, which
22 means it's fairly low. Now, it lasts, like,
23 eight to ten quarters. It's been very low
24 and much less than the Illinois standard.

1 **Q. And Monitoring Well 8 is also**
2 **upgradient, am I right?**

3 A. Yes.

4 **Q. Now, you said earlier that -- well,**
5 **you had an opportunity to review all of the**
6 **data for Joliet, the groundwater data?**

7 A. Yes.

8 **Q. And what are your overall conclusions**
9 **regarding the sample results at Joliet?**

10 A. Overall, and over the last year or
11 two, couple years, the data are less than
12 groundwater standard.

13 **Q. And prior to that?**

14 A. Occasionally, it was exceeded and
15 oddly, upgradient is inconsistent with what
16 you'd expect if the ponds were a source, for
17 example.

18 **Q. You said earlier that you conducted**
19 **a risk analysis for Joliet 29, right?**

20 A. Yes.

21 **Q. Okay. And what did you find as to**
22 **potential risk for Joliet 29?**

23 A. Overall, we found no unacceptable
24 risk to surface water. And to remind what

1 that entails, we took all the groundwater data
2 as if it was surface water. We took the
3 maximums and we took the averages and we
4 compared those values to the Illinois Water
5 Quality Standards, which is for surface
6 water, or Illinois Water Quality Criteria,
7 and there's -- you know, there's no risk
8 at all if it's less than the standard.

9 If it's greater than the
10 standard, then it means that we looked at
11 it further and we made a further evaluation
12 point-by-point to conclude whether there
13 was any unacceptable risk and we concluded
14 in normal risk assessment standard and practice,
15 there's no unacceptable risk to surface water.

16 **Q. And I think we've heard several**
17 **times that are also no potable water receptors**
18 **at Joliet, correct?**

19 A. Yes. There's no potable water wells
20 at all and they haven't an ELUC at Joliet so
21 there's no allowed -- no allowances to that
22 well. They're not -- the won't -- they're not
23 allowed to put them in.

24 **Q. Now, we see that there have been --**

1 you just identified a few coal cash constituents
2 in the past that have been detected in the
3 monitoring wells.

4 You would agree?

5 A. Yes.

6 Q. Okay. Even though, as you said,
7 Joliet went below Class 1, but -- and I
8 think what the trend was.

9 What was the trend --
10 overall trend of constituents of Joliet?

11 A. Over time, they have been again
12 slightly decreasing. As I mentioned, if
13 you look at the data, it's below -- I
14 believe every data is below the Illinois
15 standard currently.

16 Q. Uh-huh. So you testified that
17 the source is not the ponds, is that
18 right?

19 A. Yes.

20 Q. And in your opinion, the source
21 is not the historic land filled areas?

22 A. Yes.

23 Q. At least what we know of including
24 the berms; is that right?

1 A. Yes. What I -- I want to make it
2 clear that when I refer to the historic
3 areas, you know, we've got some areas called,
4 you know, alleged former and landfill areas.

5 We also -- in some sites,
6 not this one, but if you have in the boring or
7 in the fill that we've identified in the boring,
8 it would be a historic area.

9 As I mentioned, we don't find
10 it in the fill here. We just have these few
11 areas that are outside of the ponds that, based
12 on the data I've reviewed, I've concluded they
13 are not the source.

14 **Q. Thank you.**

15 **So then if there are these**
16 **few constituents, how did they get there? Can**
17 **you determine that?**

18 A. That's a -- that's a -- that's a
19 complicated question and I've obviously --
20 you know, people can struggle over it, but
21 it's really important, as I stated yesterday,
22 you know, these plants -- this plant is
23 very old. I think it's -- it might be 1955
24 or 1965. It's certainly more than 50 years

1 old. And as it was demonstrated yesterday,
2 in Joliet, there's a lot of confusion as to
3 what happened in the past. For example --

4 **Q. In the past being prior to 1999, for**
5 **instance?**

6 A. Precisely. Even farther back. I
7 mean, you know, there's only so much memory
8 and there's only so many records. So I believe
9 that there have been some historic uses of the
10 property that aren't documented. It's a power
11 plant and so there's ash-related constituents
12 at the site. It's just that we haven't
13 identified a specific source.

14 **Q. Now, in Illinois, as a professional**
15 **engineer with experience in doing investigations**
16 **of properties, what do you do when you can't**
17 **determine the source?**

18 A. Well, in Illinois, it's, I think,
19 a very progressive state in that this practice
20 of investigating is mature and it's
21 knowledgeable and it recognizes that chasing
22 the minutia is oftentimes a waste of time.

23 If you step back and look
24 at the problem, what Illinois allows is that

1 you manage the risk by establishing a GMZ or
2 establishing an ELUC. The way I like to
3 phrase it, I've done this at other sites
4 where you've got a box and you've got some
5 impacts and so you control that area. You
6 make sure nothing gets out of the box.

7 So you confine use of the
8 site. You eliminate risk. That's the most
9 practical way to manage the risk.

10 **Q. And based on your review of the**
11 **data and the risk at Joliet, what is your**
12 **opinion as to Midwest Generation's actions**
13 **to protect groundwater impact?**

14 A. Well, I think by the end of my
15 testimony, you'll hear this a number of
16 times and you'll think that they were very
17 responsible and proactive by putting together
18 the pond evaluation, the program that they
19 had.

20 They looked at maintaining
21 ponds, relining ponds and even eliminating
22 ponds that they didn't feel they needed to
23 use anymore and then they went through the
24 process. I thought it was a very -- a very

1 good program.

2 Q. And you said we'll probably hear
3 that a lot.

4 Is that your opinion for all
5 of the sites?

6 A. Yes.

7 Q. Turning back to Exhibit 901, and
8 I'm looking at Slide 26, this -- as you did
9 with Joliet, did you look at the site history
10 and surroundings of the Powerton Plant?

11 A. Of course.

12 Q. And looking at the Slide 26, we
13 heard from Maria Race about some of the history
14 and the pond relinings.

15 What on this slide did you
16 focus upon?

17 A. Excuse me. What slide are you on?

18 Q. Twenty-six, Powerton site history.

19 A. Okay. You're on Powerton. Okay.

20 Great. I wanted to be sure.

21 Q. Sorry.

22 A. Repeat the question, please.

23 Q. Generally, what of the site history
24 and the surroundings was important to you?

1 A. Well, when you have a -- want to have
2 a source identification, one of the things
3 I learned was that there could be an off-site
4 source.

5 So we looked at that and we
6 looked at historical records to see if there
7 was something we could find there so we could
8 focus our study.

9 **Q. And as with Joliet, you have on the**
10 **slide here pond ash samples. You looked at**
11 **pond ash samples?**

12 A. Yeah. We had some data from the
13 limestone basin and we looked at that data,
14 which was ash, bottom ash, and we compared --
15 I think we had two samples actually and we
16 compared all the data to the -- the groundwater
17 constituents.

18 So the leaching data, as I
19 mentioned before and the tables we saw
20 for Joliet. We followed the same process
21 to compare what's in the ash and what's in
22 the groundwater.

23 **Q. And we also note on this slide that**
24 **this -- the Powerton site has been operating**

1 **since the 1920s.**

2 **How does that relate to**
3 **your opinion of the historic nature of the**
4 **facilities?**

5 A. It's even, you know, older than
6 Joliet and it's -- again, the practices that
7 were followed up until the late '60s, 1960s,
8 when environmental consciousness was raised
9 and we started changing how we managed these
10 wastes, it was very different.

11 And so a lot of things
12 could have happened back then that haven't
13 been documented that we can't see at the
14 sites.

15 **Q. The other couple of points on here**
16 **are that there are historic areas and samples**
17 **of a historic area at Powerton, that there**
18 **are administrative controls and no potable**
19 **water risks, no risk receptors.**

20 **Was that similar to your**
21 **analysis at Joliet?**

22 A. Yes. And let me clarify what --
23 I might have misspoke earlier.

24 We have bottom ash samples

1 from the ponds when we reached those
2 comparisons. The limestone basin is the
3 data that we had from outside of the ponds.
4 This ash -- it was ash. It was not in the
5 pond.

6 We used that data to look
7 to see if the -- I'll call it historic fill
8 areas like berms and ash that we've seen in
9 borings, whether that -- those materials
10 could be a part of the source.

11 **Q. And turning to Slide 27, this has**
12 **been previously identified by witnesses as**
13 **the map of the basins at the Powerton site.**

14 **Would you agree?**

15 A. Yes.

16 **Q. And the next slide, Slide 28 --**

17 A. Yes.

18 **Q. -- would you describe what this is?**

19 **Is this similar to what you**
20 **did at Joliet?**

21 A. This is a very nice summary, which
22 I had at my deposition actually, but it's a
23 very nice -- very nice summary because there's
24 a lot of different ponds and this one has the

1 ash surge basin.

2 It's a summary of the
3 conditions of the ponds over history. So
4 at Powerton, we have ash surge basin, the
5 ash bypass basin, the metal cleaning basin
6 and the secondary ash basin.

7 Of those ponds, the ash
8 surge basin, the ash bypass basin and the
9 ash metal cleaning basin are the currently
10 regulated ponds. The secondary ash basin,
11 as we call it, is a finishing pond.

12 So the other -- the other
13 columns indicate when the liners were
14 constructed over time and then it was when --
15 the next column is when they were relined
16 with high density polyethylene and I also
17 call that the geomembrane. In the right
18 column, it talks about how frequently the
19 ponds have been cleaned up.

20 **Q. And on the date constructed/liners**
21 **column, the third column here, it's -- all**
22 **four of the ponds were 1978 construction; is**
23 **that correct?**

24 A. Yes. Yes, they were.

1 **Q. And the next column over, date relined**
2 **with HDPE, relined -- the ponds were relined**
3 **either in 2010 or 2013, is that what you say**
4 **here?**

5 A. Yes.

6 **Q. And then in the last column, what**
7 **are you showing under scheduled ash removal?**

8 A. Well, for example, the ash surge
9 basin, which is the primary ash management
10 pond, it's cleaned out every six to eight
11 years or as-needed. It's based on how much
12 coal they burned.

13 It's also pointed out that
14 since it was relined in 2013, which was
15 approximately five years ago, it has not been --
16 it has not been -- ash has not been removed.

17 **Q. And the secondary ash basis, you**
18 **just mentioned was a finishing pond.**

19 **Does that get emptied?**

20 A. No, it hadn't. It didn't need it.
21 And I think Mark Kelly had indicated why it
22 was just the last point before discharge and
23 it had de minimis ash.

24 As I explained yesterday,

1 you could have dust in the air accumulate
2 in the water. I think when they un-watered
3 the original lined facility, they had some
4 slop in the bottom. It was probably just
5 dust from the air that had accumulated
6 over the previous 30 years.

7 **Q. If you would, turn to the next slide,**
8 **Slide 29.**

9 A. Yes.

10 **Q. And that's the Powerton metal cleaning**
11 **basin cross section?**

12 A. Yes.

13 **Q. Do you recognize this as an accurate**
14 **comparison to the drawings that you reviewed?**

15 A. Yes. After looking at all the
16 drawings and construction reports and historical
17 documents, this is what's out there.

18 **Q. And just briefly, because they're**
19 **all pretty similar, what was the liner system**
20 **when the ponds were -- three ponds, metal**
21 **cleaning, ash surge and ash bypass when we**
22 **were relined?**

23 A. Well the conditions were this that
24 they had Poz-o-Pac from the previous liner

1 on the bottom. And on the sides, they had
2 Hypalon, which they removed the Hypalon, but
3 they did not remove the Poz-o-Pac, as Mark
4 Kelly testified.

5 Then above the Poz-o-Pac,
6 you've got a bottom geotextile cushion. On
7 top of the cushion is a HDB liner. On top of
8 the liner is another cushion. Above the
9 geotextile cushion is a 12-inch thick sand
10 cushion. Above the 12-inch thick sand cushion
11 is a crushed limestone warning layer that's
12 six inches thick.

13 **Q. And again, as to all the ponds at**
14 **all the stations, why were the liner systems**
15 **relevant for your analysis?**

16 A. Well, number one, fundamentally,
17 they were put in in 1978. As I pointed out
18 yesterday, people were not lining ponds like
19 that that much back then. So it's good that
20 they were there.

21 So when they were relined,
22 what I looked for was that they were relined
23 under an appropriate quality control, quality
24 assurance program and that they followed the

1 specs and design and I found that they did.

2 **Q. Now, you also, like you did at**
3 **Joliet, considered a comparison between**
4 **elevation of the bottom of the pond as**
5 **compared to the elevation of groundwater**
6 **for each of these ponds; is that right?**

7 A. Absolutely. I mean, this is --
8 in my history, you know, we originally
9 started to look at bottom uplift or uplift
10 pressures for soil layers because if you
11 put too much pressure under a soil layer,
12 it can crack because soil is not good in
13 tension. As you rise it, it cracks.

14 Here, we have geomembrane
15 and Poz-o-Pac, neither one of which are
16 likely to crack, but we looked at the water
17 levels anyway and you can see here the
18 bottom of the pond is elevation 457.5. The
19 average groundwater elevation is 445, which
20 is about 12 feet difference. And so my
21 assessment of this up- -- hydrostatic uplift
22 just will not happen.

23 **Q. Now, turning to the ash surge basin**
24 **on Slide 30, the bottom elevation is compared**

1 **to the groundwater elevation is a little closer.**

2 **Does that cause you any**
3 **concern?**

4 A. No. I've looked at this again.
5 There is no pressure underneath it. And as
6 it got closer, then we started to look at
7 some of the maximum water levels that we found
8 and again, it does not exceed the pressures
9 that would cause any concern for hydrostatic
10 uplift.

11 And for the record, the
12 liners at the ash surge basin the layering,
13 it's the same as for the metal cleaning
14 basin.

15 **Q. And you talked yet about the weight**
16 **of the water and the warning layers in the**
17 **sand.**

18 **Does that apply also for these**
19 **ponds?**

20 A. It does. Normally, when there's
21 water in the pond, that all weight to the
22 bottom, which keeps -- it's an additional
23 resisting force. But even without that water,
24 this pond and the other pond would not have

1 hydrostatic uplift.

2 But I think what is
3 important is that one-and-a-half-foot layer
4 of gravel and sand at the bottom of the pond,
5 I think Dr. Kunkel said that there -- he
6 brushed them off as almost insignificant,
7 I think he said. That's very wrong.

8 I mean, that's a foot and a
9 half. That sometimes is -- is very important.
10 It could be your safety factor for resisting
11 uplift. Not here. I'm just saying it is
12 important to count that weight in the assessment
13 for hydrostatic uplift.

14 **Q. If you would, flip to Slide 32, the**
15 **secondary basin.**

16 A. Yes.

17 **Q. Now, what's different about this pond?**

18 A. Well, this is kind of interesting
19 when I was reading the records. It's like
20 you lived a life of the construction guy who
21 has some unexpected condition come up and
22 he's got to tell somebody they have to spend
23 more money.

24 What happened here is when

1 they went to reline -- remove the Hypalon
2 liner and they found that the groundwater
3 levels were higher, and as you can see here,
4 it's very clear. On the left, the average
5 groundwater level is elevation 441.5. And
6 at the pond, they had to build it, you know,
7 at 440.

8 And to compound that, when
9 we talk about, you know, what the unexpected
10 condition at a very high Illinois River water
11 level, as Mark Kelly said, I don't know what
12 level at flood it was, but it was very high.
13 And not to disagree with Mark, but he described
14 the river water as coming into the excavation.
15 Really, that's -- that's groundwater.

16 Again, it's not river water
17 flowing that far. It raises the pressure. It
18 raises the groundwater. So the groundwater
19 is coming into the bottom. So they -- they
20 couldn't build it. And so they got with the
21 engineers, which is what they're supposed to
22 do, and they re- -- they designed an under-drain
23 system, which you can see here as that very
24 rocky-looking layer. It' a nice graphic.

1 And they built an under-drain
2 layer so they can drain the water -- the
3 groundwater to get the bottom dry so they
4 could build the pond liner and then they
5 filled the pond after which the bottom
6 uplift was not an issue or ground filtration
7 was not an issue.

8 And they only need to
9 operate this system if they were ever to
10 remove the water in the pond and they wanted
11 to reline it. As we heard yesterday, it's
12 not designed to be cleaned out. It doesn't
13 receive enough material to clean out. And
14 so hydrostatic uplift is a nonissue at this
15 pond.

16 **Q. You mentioned the design. Does**
17 **that -- is that consistent with your opinions**
18 **from yesterday afternoon about designing**
19 **for the purpose -- designing a pond for the**
20 **purpose of which it's going to be used?**

21 A. Yes. You know, call me a problem
22 solver. I'm an engineer, a geotechnical
23 engineer, which we have to deal with
24 subsurfaces, which is more difficult, but

1 yes. You have to design the unit for its
2 intended purpose and this is not intended
3 to be cleaned out.

4 As I commented earlier, you
5 know, the other ponds had the same type of
6 layering. This is a very different layering.
7 Number one, it has the drainage system at
8 the bottom and it's got a cushion in underneath
9 the geomembrane and then the geomembrane,
10 but there's is nothing on top of the geomembrane
11 because nothing is intended to drive on top
12 of there or work on top of there. It's just
13 water.

14 **Q. So do you recall Dr. Kunkel saying**
15 **that he believed there was an industry standard**
16 **for a distance between groundwater and a pond**
17 **bottom before the CCR rules of 2015?**

18 A. Yes, I do recall.

19 **Q. And what did he believe there was as**
20 **an "industry standard"?**

21 A. I think he used the industry standard
22 of five feet.

23 **Q. And do you agree that that was an**
24 **industry standard for Illinois?**

1 A. Not at all.

2 **Q. Does that go back to the same design**
3 **issue?**

4 A. In Illinois -- well, first of all,
5 in engineering, the engineer designs a pond
6 for its purpose. I've designed landfills
7 with liners like this and in all reality, my
8 colleagues have designed landfills and I'm
9 familiar with those designs.

10 Where it's -- it's just like
11 this; you have to be able to design it, to
12 construct it so that uplift is not an issue
13 and the engineers are allowed to do that.
14 They are allowed to solve that problem.

15 Then when it becomes -- becomes
16 operating after a certain point in time, they
17 don't need to run that groundwater through a
18 watering system. They can turn it off because
19 what happens is that essentially, the -- it's
20 an inward gradient. It goes from the groundwater
21 toward the inside of a landfill, for example.

22 Now, here you have a pond,
23 but the point is is that this is designed for
24 its purpose.

1 **Q. Now --**

2 A. There is no standard because
3 again, in Illinois there is no standard for
4 lined systems and in many states, there's
5 no standard regulatory-wise. It's really
6 an engineering practice to solve the problem.

7 **Q. Now, Dr. Kunkel also testified**
8 **about potential issues with liner stability**
9 **if groundwater reaches the liner.**

10 **Do you agree were that?**

11 A. I don't. I don't at all.

12 **Q. What do you -- what is your opinion**
13 **as to the foundation of a pond?**

14 A. Well, the foundation here, it's --
15 most of these ponds have a competent soil
16 subgrade. It's not soft subgrade. It's a
17 competent subgrade. And where you have
18 water, as Dr. Knuckle said, come up to the
19 bottom of the foundation and then go down,
20 he was concerned about the rising and falling
21 causing settlement and collapse.

22 When I read that, I couldn't
23 believe it because I've designed foundations
24 where water level goes up and down all the

1 time and it's been designed for it. It's all --
2 I'm not going to get complicated with the
3 affective stratus and total stratus, but it
4 doesn't happen that way especially in these
5 types of materials.

6 If you get any settlement
7 at all within a granular, it's a very
8 microscopic intergranular.

9 THE COURT REPORTER: Within a
10 what? I'm sorry. Within a granular?

11 THE WITNESS: Intergranular.

12 THE COURT REPORTER: Thank you.

13 THE WITNESS: I'll speak slowly.
14 I'm getting very excited. I'm sorry.

15 THE COURT REPORTER: It's not
16 that you're not speaking slowly. You're
17 not finishing your complete word. You
18 need to be articular and complete your
19 words, please, so I can get the entire
20 record for you. Thank you very much.

21 BY THE WITNESS:

22 A. Just briefly, there's intergranular
23 stress and shifting that is very small. It's
24 almost not measurable. So to imply that the

1 bottom would collapse, I just couldn't believe
2 it.

3 BY MS. NIJMAN:

4 Q. Now, at the Powerton ponds, do
5 you believe there's any risk of issues with
6 liner stability due to this water on the liner
7 issue that Dr. Kunkel raised?

8 A. I'm not concerned at all.

9 Q. Now, you said earlier yesterday that
10 you reviewed the construction documentation
11 for the ponds and I just want to make clear
12 that you reviewed the construction documentation
13 packages for the ash surge basin, secondary
14 ash basin, metal cleaning basin and the bypass
15 basin.

16 Are those the exhibit documents
17 you reviewed?

18 A. Yes.

19 Q. Did you identify any issues with the
20 construction of the liners at Powerton?

21 A. No.

22 Q. At Powerton, how did you learn about
23 the ash removal process?

24 A. Well, we heard from Mark Kelly. I

1 spoke to him previously. We spoke to him
2 previously to prepare my report. They
3 described the processes quite methodical
4 and careful including use of equipment
5 and staying away from the liner and I felt
6 that their dredging, as they call it, or
7 cleanup process, removal process, was very
8 methodical and all that type of process
9 that they followed reduces the possibility
10 for an accident or incident on the liner.

11 **Q. Based on your review of the**
12 **Powerton data and the construction, the**
13 **documentation, what is your opinion as**
14 **to whether the ponds are leaking constituents**
15 **to the groundwater at Powerton?**

16 A. I don't think they're leaking.

17 **Q. Turning to Slide 33, again we heard**
18 **from Mr. Gnat the description and location of**
19 **the monitoring wells at Powerton.**

20 **Does that map identify all**
21 **of the monitoring wells?**

22 A. Yes.

23 **Q. And you see MW-16 at the bottom of**
24 **this map.**

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Is that an upgradient well?

A. Yes.

Q. Now, turning to the next slide, Slide 34, Mr. Gnat also said there are two distinct groundwater units.

Did you agree with his description of the units on Slides 34 and 35?

A. Yes.

Q. And again, just to confirm, did you agree with his description of the groundwater flow in each of these units based on Slides 34 and 35?

A. Yes.

Q. On the Slide 35 --

A. Yes.

Q. -- Mr. Gnat gave a bit of a description. It says, "The groundwater conramap for gravelly sand unit." It's dated 5/2017. And he gave a bit of a description as to the middle contour lane on this map that's got a big hump in it.

Do you see that?

A. Yes.

Q. And do you -- did you agree with

1 **his assessment of what was going on there?**

2 A. Yes, I did. The way it was explained
3 is the upper zone, shown on Slide 34, it's
4 called a shallow silted clay unit. It's a
5 lower permeability unit. And so the water in
6 that unit is higher than in the gravelly sand,
7 which is a lower unit.

8 And so what he explained is
9 that that gravelly -- excuse me -- the silty
10 sand unit is not everywhere. It pinches out.
11 It ends along the edges of the pond, on the
12 west edge of the pond -- excuse me -- east
13 edge of the pond.

14 So what happens is the water
15 in the upper level is actually kind of going
16 over the edge and spilling into the local
17 area next to -- in the gravelly sand unit
18 causing a slightly higher level and it gives
19 the appearance of a mound. In essence,
20 it is, but it's from groundwater seeping
21 from the upper unit to the lower unit.

22 HEARING OFFICER HALLORAN: And,
23 Mr. Seymour, I think that's a perfect speed.
24 Thank you. I understood.

1 THE WITNESS: I'll take any
2 compliment I can get, Mr. Hearing Officer.

3 BY MS. NIJMAN:

4 Q. Okay. If you would, turn to the
5 next slide. There are two slides that again
6 are -- and I think we can move a little more
7 quickly now that you've explained what these
8 are.

9 The next two slides are your
10 updated tables 5-5 and 5-4 from your report;
11 is that accurate?

12 A. Yes.

13 Q. And did you do the same analysis
14 of comparing the groundwater data to the
15 leachate data as you did with Joliet?

16 A. Yes, I did.

17 Q. Just generally, what are your
18 conclusions here at Powerton?

19 A. At Powerton, again you see a lot
20 of the data spread over a little wider range,
21 but in general, around 50 percent or so to 60
22 percent are inconsistent.

23 So that means again that
24 the -- what we found in groundwater compared

1 to the site-specific ash leachate doesn't
2 match meaning that the ponds aren't the source.

3 **Q. When you say "the ponds aren't the**
4 **source," this is one of the pieces of evidence**
5 **you used for that conclusion?**

6 A. Yes. As I mentioned, we also
7 looked at the construction of the ponds and
8 the operation of the ponds as well.

9 **Q. Thank you.**

10 **Turning to Slide 38, this**
11 **was discussed in previous testimony as**
12 **identifying a former ash basin and the**
13 **limestone -- former limestone runoff basin**
14 **at Powerton.**

15 **Do you see that?**

16 A. Yes.

17 **Q. Are there any groundwater monitoring**
18 **wells around the former ash basin at Powerton?**

19 A. Yes. There's approx- -- I think
20 there are five wells beginning with Monitor
21 Well 1 on the far right, sort of, a little
22 bit upgradient/sidegradient of the pond.

23 **Going counterclockwise, you**
24 **have Monitor Wells 2, 3, 4 and 5, 5 as being**

1 on the western margin of the former ash basin.

2 **Q. And have you reviewed the groundwater**
3 **data for those monitoring wells around the**
4 **ash?**

5 A. Yes, I have.

6 **Q. And what is your opinion based on**
7 **that review as to whether ash in this former**
8 **ash basin is impacting groundwater?**

9 A. Well, the data are less than the
10 groundwater standard downgradient.

11 My conclusion is that this --
12 the ash that's there is not a source to
13 groundwater impacts.

14 **Q. And how does that information then**
15 **form the rest of your opinions about historic**
16 **ash areas at all the stations?**

17 A. Well, that's not the only data that
18 we have. Obviously, we have a number of data
19 from the leaching from the historic fill areas
20 and that it supports the opinion that I have
21 in that the ash is not the cause of what we're
22 seeing in the wells.

23 **Q. Now, we also discussed earlier**
24 **yesterday that you had sample results from**

1 **the area marked here as the limestone runoff**
2 **basin; is that right?**

3 A. Yes.

4 **Q. And what did those, briefly, sample**
5 **results -- CCB sample results show?**

6 A. We found similar results to the
7 other sites with a little bit of exceptions.
8 We had some chromium and some selenium and --
9 but they were -- they were detected. They
10 were not -- I don't think they're maybe slightly
11 above the Illinois Ground Waste Standard.

12 When you averaged them out
13 for their waste mass, the -- statistically,
14 it was less than the Illinois Groundwater
15 Standard. But otherwise, it was the same
16 as the other materials we've seen.

17 **Q. And even though it was called**
18 **the limestone runoff basin, what is your**
19 **understanding as to the type of ash that**
20 **was in there during the sampling?**

21 A. It wasn't what kind of ash. It
22 was --

23 **Q. Well, what is the bottom ash from**
24 **the --**

1 A. It was bottom ash. I think it might
2 have had a few materials mixed in, but it was
3 mainly bottom ash.

4 **Q. Turning to Slide 39 --**

5 A. Yes.

6 **Q. -- this slide represents -- we've**
7 **heard from prior testimony about the Groundwater**
8 **Management Zone, would you agree?**

9 A. Yes.

10 **Q. And are all the monitoring wells at**
11 **Powerton within that Groundwater Management**
12 **Zone?**

13 A. Yes, they are.

14 **Q. Now, in your report of 2015, you**
15 **discuss assessing a spacial trend at Powerton.**

16 **Do you recall that?**

17 A. Yes.

18 **Q. What is a spacial trend?**

19 A. Well it's a trend where -- my -- my
20 definition really is we're looking for the
21 locus location of a plume or source. And so
22 we look over an area, the space in the
23 horizontal area, where you might look at an
24 area that is at the location of the source, it

1 would be at a higher concentration, and
2 going farther away from that source, you
3 have a lower concentration. So you want to
4 see that distance or space, you look for
5 that change in the data.

6 **Q. And so it could tell you if there's**
7 **a source or plume?**

8 A. Yes.

9 **Q. What would you -- well, I think**
10 **you answered this.**

11 **What would you expect to**
12 **see spacially if there was a source area, a**
13 **known source area?**

14 A. You would hope -- you would expect
15 to see that the data would be consistent over
16 time as well. So it's time and space so that
17 if you have a high -- a source, an ongoing
18 source in a particular location, it would be --
19 every time you looked at it, it would be
20 similar, that would be high relative to the
21 others.

22 If it's a changing or a
23 discontinuous source, it -- it would not
24 quite look like that, but we're looking at

1 it from a -- something that's present and
2 that it would be higher and this location
3 from quarter-to-quarter consistently.

4 **Q. If you turn to the next slide, I**
5 **think the page number got cut off, it's**
6 **Slide 41.**

7 A. Yes.

8 **Q. Does this represent the spacial**
9 **analysis in simple terms that you did?**

10 A. Yeah. It's -- it's -- obviously,
11 the squiggly lines get to be complicated, but
12 the high concentrations are higher on the
13 graph and I highlighted the different wells
14 that had the high concentrations, for example,
15 for boron.

16 **Q. You mean -- I'm sorry.**

17 **When you said peak**
18 **concentrations, is that -- what are these**
19 **arrows referring to?**

20 A. Yeah. Well, there's two kinds of
21 lines on the graphs, the squiggly kinds,
22 which are the trafficking of the concentrations
23 over time of each individual well and the
24 blue arrows point out generally where the

1 peak concentrations are, which as I said -- so
2 it would be the center of a source.

3 So, for example, you see
4 Monitor Well 13 -- Monitor Wells 9 and 13,
5 12, 10, 19, they all have peaks that are
6 higher and it's not -- it's not consistent.

7 **Q. So you are not seeing a consistent**
8 **source area?**

9 A. Correct. And we looked at manganese
10 and again, we have three or four wells that
11 are peaks and sulf- -- over time and sulfate,
12 there's several -- same thing, several wells
13 that -- we don't see the consistency of the
14 data. So it's hard to say that there is a
15 specific source.

16 **Q. Well, as you did with Joliet, you**
17 **also conducted a temporal or a time trend**
18 **analysis at Powerton?**

19 A. Yes, I did.

20 **Q. If you turn to the next slide,**
21 **Slide 42.**

22 A. Yes.

23 **Q. Is this the updated data for temporal**
24 **trend at Powerton?**

1 A. Yes. And again, it goes -- uses the
2 data from 2010 through 2017.

3 **Q. And similar to Joliet, you used**
4 **the statistical linear regression analysis?**

5 A. Yes, we did.

6 **Q. Turning to Slide 43, what were your**
7 **conclusions of the trend testing at Powerton?**

8 A. Well, again you look at the table
9 summarizing the results of how we found
10 increasing, decreasing or where we could
11 make no conclusion because the line wasn't --
12 was statistically inconclusive. Overall,
13 the groundwater concentrations are neither
14 increasing nor decreasing. They're about
15 the same.

16 **Q. Now, you heard Mr. Gnat discuss**
17 **Monitoring Well 16 yesterday as an upgradient**
18 **and we just mentioned that it's an upgradient**
19 **well.**

20 A. Yes.

21 **Q. Did that well, to your recollection,**
22 **monitoring well, show any impact from an**
23 **off-site source?**

24 A. You can have nitrate and maybe boron

1 like one point.

2 **Q. Does that suggest there's something**
3 **upgradient -- further upgradient off-site?**

4 A. Yeah. If it's high enough
5 concentrations that look out of the ordinary,
6 and they do, we'd expect that it's coming
7 from upgradient. So it's like -- a little
8 bit like Illinois EPA expectant for CCR
9 sites that there can be constituents in the
10 groundwater upgradient to the unit that would
11 be considered part -- part background.

12 **Q. And you also heard Mr. Gnat and**
13 **Mr. Kelly talk about the deicing that occurs**
14 **on all the roads at Powerton.**

15 **Would that impact chloride**
16 **results across the property?**

17 A. Yes, it would. It would recognize
18 that when the salt melts from runoff, it's
19 going to go to various areas. They have
20 strong water pond, for example, and it's
21 going to have like a -- percolate into the
22 ground and impact groundwater quality for
23 chloride.

24 **Q. And again, for Powerton at**

1 **Exhibit 907, you conducted a risk analysis**
2 **for the site?**

3 A. Yes, we did.

4 **Q. And did you generally -- I think**
5 **you said this already. You generally found**
6 **the same conclusion?**

7 A. Precisely. Even with the
8 updated data, it was the same conclusion,
9 no unacceptable risk to surface water.

10 **Q. And we heard -- I think even**
11 **Dr. Kunkel, no potable water receptors at**
12 **Powerton?**

13 A. That's correct.

14 **Q. Based on your review of the data**
15 **and the risk analysis at Powerton, what**
16 **is your opinion of Midwest Generation's**
17 **actions regarding protection of the**
18 **environment?**

19 A. Well, I hold them in high regard.
20 I think a responsible -- they conducted a
21 responsible program all around with planning
22 for maintenance and relining and their
23 operations and the dredging and the removals,
24 complying with the requests of the Illinois

1 EPA throughout the CCA process. So I think
2 they acted very responsibly and in some cases
3 proactively.

4 **Q. Now, we just saw from a couple**
5 **of your slides that there are constituents**
6 **of coal ash found in the groundwater above**
7 **Class 1 at Powerton, correct?**

8 A. Yes.

9 **Q. And you said ponds are not a source**
10 **and you don't believe the historic areas are**
11 **not a source. How -- same questions for Joliet.**

12 **How did the constituents get**
13 **there?**

14 A. Remember the -- I think one of the
15 first slides was a very old power plant and
16 again, it's similar to -- to Joliet in that
17 the things that happen historically that,
18 you know, we don't do anymore that probably
19 happened to cause impacts of the groundwater,
20 it's kind of like a smudge that's remaining
21 and it's being properly managed by the
22 Illinois program. So it's those things you
23 can't specifically identify, but something
24 is there obviously.

1 **Q. Is it -- we are moving on to Waukegan.**

2 **Looking at Slide 44, again**
3 **Waukegan site history and surroundings, we**
4 **heard Maria Race talk about it. We heard**
5 **Mr. Gnat talk about it.**

6 **Just briefly, describe what's**
7 **on this slide.**

8 A. Well, again we talk about how old
9 the power plant is. This is a 1923 vintage
10 power plant. I followed the same process
11 for all the projects. I looked at the records.
12 We found sample results, the historic areas,
13 off-site impacts, the whole list here,
14 administrative controls, ELUCs, which is
15 E-L-U-C-s, Environmental Land Use Controls,
16 potable water use.

17 So we looked at the --
18 followed the same process to evaluate Waukegan.
19 This is obviously more complicated with the
20 off-site impacts.

21 **Q. We'll get into that in a second.**

22 **Turning to Slide 45, the map**
23 **of the ponds at Waukegan, would you agree that**
24 **that's an accurate depiction of the pounds?**

1 A. Yes.

2 **Q. And the next slide is Slide 46, a**
3 **description of the Waukegan impoundments.**

4 **Would you briefly describe**
5 **that?**

6 A. Sure. It's the same type of table
7 that we presented before that summarized the
8 history of the units. They have the east
9 ash pond, the west ash pond and it shows
10 the original construction, the 1997 -- excuse
11 me -- 1977, when they were relined in the
12 2000s and the scheduled ash removal, which
13 changed over the years depending upon how
14 much coal they burned.

15 **Q. And on the column of scheduled ash**
16 **removal, we heard from Mr. Veenbaas that**
17 **just the inlet side is -- ash is removed**
18 **generally mostly from the inlet side.**

19 **Did you understand that to**
20 **be the case?**

21 A. Oh, perfectly. It's totally
22 understandable. It's a -- it's -- a bottom
23 ash pond is a little coarser and it settles
24 up fairly quickly in the water column and

1 so where the -- where the sluice comes in,
2 you're going to have most of the ash fall out
3 and as it travels around that U, the water
4 becomes clarified prior to discharge.

5 **Q. And these ponds were lined in, I**
6 **think this says, 1977 with a Hypalon liner?**

7 A. Yes.

8 **Q. I don't know if anyone has described**
9 **that.**

10 **What is Hypalon?**

11 A. Hypalon is an older style liner
12 that was used. It's -- it's a -- maybe the
13 best way to describe it is if -- obviously
14 polyethylene is like this -- a little bit
15 like this notebook and the -- the Hypalon is
16 a little more rubbery. So it's a little --
17 it's less dense, but still a very common
18 water barrier and it's still used.

19 **Q. Looking at the date relined with**
20 **HDPE and the layers at the two ponds, are**
21 **they similar?**

22 A. Yeah, they are. They are the same.

23 **Q. Looking at the next slide, Slide 47,**
24 **the cross section of the Waukegan east and**

1 **west ash ponds, do you see that?**

2 A. Yes.

3 **Q. Would you just briefly describe the**
4 **lining system?**

5 A. Well, recognize the Waukegan site
6 is along Lake Michigan and is pretty much
7 built on the beach and at the base, you have
8 a sand -- a natural subgrade prepared for
9 the overlying layers. They have a designed
10 12-inch thick sand cushion layer. Excuse me.
11 On the prepared subgrade, they have the HDPE
12 liner 60 mil thick, M-I-L. And above that,
13 the sand cushion layer and above the sand
14 cushion, they have the limestone warning
15 layer, which is six inches thick.

16 **Q. And as with the other ponds we've**
17 **looked at for the other sites, you note**
18 **groundwater elevation and pond bottom elevations**
19 **here.**

20 **Would you describe your**
21 **analysis?**

22 A. Sure. The pond bottom is at
23 elevation 585.5 and the groundwater toward
24 the lake, which is to the east, that which

1 would be the east pond, is around elevation
2 582. Moving farther away from the lake,
3 the groundwater comes up and the average
4 is 583. That means that the water levels
5 are several feet below the bottom of the
6 pond and hydrostatic uplift is not a
7 concern.

8 **Q. Did you consider the maximum**
9 **groundwater elevations for Waukegan?**

10 A. Yes, we did. Some discussion
11 has been provided over the -- surface water
12 levels control the groundwater. It's the
13 same with Lake Michigan. It doesn't stay
14 constant over the 20 or 30 years. It's
15 probably changed about a foot and a half
16 up and down. I did consider that and I
17 looked at historical data and the pond bottom
18 has always been -- excuse me -- the
19 groundwater levels, I would expect to
20 always be below the pond bottom. Of course,
21 when it's full, it don't matter. It's not
22 an issue at all for hydrostatic uplift.
23 There's a huge head on top of the liner.

24 **Q. Well, I was just going to ask you**

1 **that.**

2 **What is your opinion as to**
3 **uplift even assuming that the groundwater**
4 **might reach the pond bottom -- the liner on**
5 **the pond bottom?**

6 A. Well, obviously there's water in
7 the pond, but there's -- if it reaches the
8 bottom of the pond essentially, it's the
9 geomembrane and it's got water height on
10 top of it to resist the pressure, but I
11 don't -- I don't think that should be an
12 issue.

13 Obviously, the pond's design
14 life and the history of the lake, I -- I don't
15 even think the lake is going to come up that
16 high to ever make it a problem.

17 **Q. Now, we talked to -- we already**
18 **heard from Mr. Veenbaas and Mr. Lux about**
19 **the ash removal process.**

20 **Did you also speak to anyone**
21 **to confirm the ash removal process at Waukegan?**

22 A. Well, they use LaFarge. So we spoke
23 to a Mr. Nowicki. So we had several -- and
24 he was at two or three -- three of the plants,

1 I believe. With his description -- with
2 Mr. Lux's description and Mr. Veenbaas's
3 description, all were very similar. They
4 all followed what I call a methodical, careful
5 program and, yes, they had the incidence where
6 they thought a pump caused a hole in the liner
7 and they fixed it.

8 In my opinion, when -- when
9 you do see these holes, they are always above
10 the water level. They are always identified
11 and they are always patched. Now, if -- so I
12 look at that as a good thing in that they have
13 a process that they follow to fix it and they
14 don't ignore it. That's obviously a positive
15 to Midwest Gen.

16 **Q. Now, I'm flipping back. You don't**
17 **have to, but I just wanted to flip back to**
18 **Slide 8 for a second where -- and that was the**
19 **slide from yesterday where you talked about**
20 **the analyses of bottom ash from the Midwest**
21 **Gen ponds and -- well, you could --**

22 A. I know what's on that slide.

23 **Q. Yes. Okay.**

24 **So does that -- where was**

1 **bottom ash sampled at Waukegan?**

2 A. It was sampled from the pond. We
3 heard Fred Veenbaas testify that he took the
4 sample himself.

5 **Q. Well, that was the -- I'm sorry.**
6 **I'm confusing you.**

7 A. Excuse me.

8 **Q. That was the little sample in the**
9 **jar that we brought here.**

10 **If you turn to Slide 8, I'm**
11 **referring to the --**

12 A. Yeah, I --

13 **Q. -- CCV sampling.**

14 A. Sure. Yeah, I see.

15 **Q. So which ponds was CCV sampling done**
16 **at Waukegan?**

17 A. Well, it just says Bottom Ash 1 and
18 Bottom Ash 1. I'm not -- I don't recall which
19 pond specifically or from, but it was from the
20 bottom ash ponds at Waukegan.

21 **Q. And what does that data show you?**

22 A. It says that, you know, we find
23 barium, we find boron, we find sulfate at
24 the very bottom and a lot of -- there's a

1 lot of non-detects and non-analyzed, a
2 couple of those. We find them consistently
3 in TDS. So that's what we find consistently
4 and I think importantly what we don't find
5 is manganese.

6 **Q. Okay. And looking at those levels,**
7 **are they at or below the Class 1 standards**
8 **for Illinois?**

9 A. They are.

10 **Q. And given the levels on that slide,**
11 **what, if any, of those constituents would you**
12 **expect to see in the groundwater?**

13 A. Barium, boron, sulfate and TDS is
14 what we would expect to find.

15 **Q. Did you?**

16 A. We did. And what's important,
17 though, what we didn't find. We found it
18 in most -- in many cases, but again, there's
19 a lot of things that we found in the groundwater
20 that -- that are not in the ash. So it's not
21 consistent with the ash sample.

22 **Q. And again, that's describing your**
23 **comparison of the constituents of the actual**
24 **ash with what's in the groundwater.**

1 A. Yes.

2 Q. Based on your review of the Waukegan
3 information, what is your opinion as to whether
4 the ponds at Waukegan are leaking constituents
5 to groundwater?

6 A. I don't think the ponds are leaking.

7 Q. And do you know if Illinois EPA agrees
8 with your opinion as to the Waukegan ponds?

9 A. I believe there was a comment over
10 the course of the testimony this week citing
11 that Len Dunaway concluded that the ponds were
12 not -- he did not think the ponds were a likely
13 source and that comes from that transcript from
14 the hearing, I believe, that Fred Veenbaas
15 attended maybe.

16 Q. Yes.

17 Looking at Slide 48, the map
18 of Waukegan with the groundwater wells, again
19 we've heard that described by Mr. Gnat, do
20 you agree this is an accurate depiction of
21 the monitoring well locations?

22 A. Yes.

23 Q. And the downgradient wells, what would
24 those be?

1 A. On the right closest to the lake
2 Monitoring Wells 1, 2, 3, 4 and 16, which
3 is a recent addition downgradient as well.

4 **Q. And looking at Page 49 of Exhibit**
5 **901, that shows the groundwater contour map**
6 **that Mr. Gnat discussed yesterday.**

7 A. Yes.

8 **Q. Do you agree generally with the**
9 **contour lines here?**

10 A. I agree generally. I think I made
11 the observation that on the far north end
12 toward the power plant, I think I would have
13 curved the contours a little farther, a little
14 flatter, a little farther away from the lake,
15 but for the barrier of concern, it's pretty
16 accurate.

17 **Q. For your opinions, did you review**
18 **the groundwater monitoring data at Waukegan?**

19 A. Yes.

20 **Q. And you just identified the**
21 **downgradient wells.**

22 **Did you compare upgradient**
23 **versus upgradient at Waukegan from the pond?**

24 A. I did.

1 **Q. And generally, what did you find?**

2 A. I found that upgradient of the
3 ponds was higher concentrations than
4 downgradient.

5 **Q. What does that tell you?**

6 A. Well, it's sort of the opposite.
7 I mean, it tells you it's not the pond,
8 number one. It's kind of like the -- it
9 tells me that the source is to the west
10 of the ponds.

11 **Q. We've already briefly touched upon**
12 **the analysis that you conducted -- the**
13 **comparison of the indicators on the next**
14 **two slides.**

15 A. Yes.

16 **Q. Turning to -- just generally your**
17 **conclusions on that comparison, what did you**
18 **find?**

19 A. Well, if you look at the bottom
20 line again, you know, 40, 50, 60 percent,
21 kind of focus here on the mid-50 percentages,
22 if -- the data don't match. So if I were to
23 make a conclusion as to a source, which is a
24 very important conclusion, I would want to

1 have the groundwater data match, the ash data,
2 much more closely.

3 Q. If you turn to Slide 52, and again
4 I apologize, some of the page numbers got cut
5 off in the photocopying, this is the Waukegan
6 map of the established environmental land use
7 control boundaries.

8 Do you see that?

9 A. Yes.

10 Q. Could you describe in the entirety
11 where the -- well, let me ask it this way.

12 Does this map accurately
13 reflect the environmental land use controls
14 across the property at Waukegan?

15 A. Yes.

16 Q. And as you did with Powerton, did
17 you assess the spacial trends at Waukegan?

18 A. Yes.

19 Q. And again, that's to assess a source
20 or a plume, is that a fair description?

21 A. Yes.

22 Q. Turning to the next slide, Slide 53,
23 what are you showing here?

24 A. We have a similar graph where those

1 blue arrows indicate the peaks for the
2 monitoring wells. As I commented earlier,
3 you expect the sources to be the same or
4 similar over time and you see them somewhat
5 fluctuating like, for example, with the
6 manganese.

7 Even with Monitor Wells 4,
8 5, 6, 7, 12, 15 and Monitor Well 14, they
9 all are peaks at one point in time. Then
10 for sulfate, again, we have, you know,
11 Monitor Wells 5, 7 and 16 have peaks over
12 time. So it just tells me again that the
13 data aren't consistent to say that the well
14 is at a location of a source.

15 **Q. Let me ask you about barium.**

16 **Looking at the left top**
17 **time concentration chart, is the line at**
18 **2.0 the Class 1 standard?**

19 A. It is.

20 **Q. And barium is very low. It's way**
21 **down below it, the bottom of this time**
22 **concentration chart.**

23 **How does that compare to**
24 **what you saw in the ash -- from the ash ponds?**

1 A. Well, we did find low levels of
2 barium and -- and -- and so this is somewhat
3 reflective of what we found in the ash. It
4 would be consistent, but it's at much, much
5 lower levels. So I don't doubt that there
6 could be some anthropogenic or natural source.

7 **Q. Well, what about manganese, how does**
8 **that compare?**

9 A. Well, that's the thing in my whole
10 analysis. When -- there's certainly manganese
11 at all of these sites. And we have -- I have
12 yet to see an ash sample from the site that
13 has manganese.

14 **Q. So there is manganese in the**
15 **groundwater, but not in any of the ash?**

16 A. Correct.

17 **Q. Is there any explanation for that**
18 **based on how manganese moves or is transported**
19 **through the environment?**

20 A. Well, no. I don't think so. I
21 know Dr. Kunkel discussed using it initially
22 in his report and removing it from his trend
23 analysis talking about some less stability in
24 the environment.

1 But the environments that
2 we're seeing here and what we're measuring,
3 I would not expect the -- that to be an issue.
4 But there's manganese present in the environment
5 and it moves with the groundwater similar to
6 a sulfate. If it's a little bit less stable,
7 I would bet it's not even measurable in these
8 results.

9 **Q. And turning to the next slide,**
10 **Slides 54 and 55, are these the updated results**
11 **of your temporal trend testing for Waukegan?**

12 A. Yes, they are.

13 **Q. And just looking straight at Slide 55,**
14 **what did you conclude?**

15 A. Again, they are neither increasing
16 nor decreasing for the same reasons. You have
17 about the same number of wells and parameters
18 increasing as decreasing. So you can't make
19 a -- it's not going up or down.

20 **Q. Now, we heard Mr. Gnat talk about a**
21 **tannery property and a General Boiler property.**

22 **Do you remember that**
23 **testimony?**

24 A. Yes.

1 Q. I'd like to show you what has
2 been previously marked at Exhibit 624 in
3 this case.

4 HEARING OFFICER HALLORAN: Is
5 that Respondent's 624?

6 MS. NIJMAN: Sorry. No. This
7 is -- yes, Midwest Gen Respondent 624.

8 HEARING OFFICER HALLORAN: Thank
9 you.

10 BY MS. NIJMAN:

11 Q. And that actually might not be the
12 right one. It's 623. I apologize, Respondent's
13 Exhibit 623, yes, 623.

14 Have you reviewed this
15 document?

16 A. Yes.

17 Q. And if you would, turn to Bates
18 page Midwest Gen 51281. Oh, yes. It was
19 produced several times so there's different
20 pages. Let me just help you with the page
21 number.

22 In Exhibit 623, it's Bates
23 MWG 472.

24 A. Yes, I have it.

1 **Q. And if you would, read the first**
2 **line -- well, first of all, what is this**
3 **page?**

4 A. This looks like kind of a
5 newspaper of sorts. It's labeled task force
6 on Waukegan neighbors. It looks like it's
7 from a website.

8 **Q. And what are they discussing in the**
9 **first paragraph?**

10 A. Well, it's a lakefront redevelopment
11 report. It's Waukegan. It's on the lake and
12 it says, "To north along the lakefront is the
13 site of the former General Boiler company a
14 19-acre parcel on Dahringer Road between the
15 Midwest Generation Power Plant and the North
16 Shore Sanitary District facility."

17 **Q. And then if you turn to the top**
18 **of the second paragraph, would you read**
19 **that?**

20 A. "In 1998 and 1999, further
21 environmental analyses were performed
22 on portions of this property and it was
23 confirmed that the northern section
24 contained arsenic above remediation benchmarks

1 in a fly ash fill area."

2 **Q. So there was fly ash fill area**
3 **on the General Boiler property?**

4 A. That's what was pointed out in the
5 late 1990s.

6 **Q. Now, would you read the next sentence,**
7 **please?**

8 A. "Because the 'remedial objectives
9 and/or remedial action for the fly ash area
10 (had) yet to be developed' the cleanup
11 possibilities for this area could not be
12 determined."

13 **Q. So what is your understanding**
14 **reading this of what's being quoted?**

15 A. It's from a report of some kind.

16 **Q. And we don't have the underlying**
17 **report?**

18 A. I don't believe so. We have a
19 number of reports on this study, but I
20 don't -- I don't think we have one that's
21 quoting that. It might have been a --
22 it's -- we don't have it, to my knowledge.

23 **Q. Now, Dr. Kunkel dismissed this**
24 **discussion as anecdotal.**

1 **Do you agree that we should**
2 **dismiss the discussion of a fly ash area on**
3 **a neighboring source?**

4 A. Well, it would be consistent. I
5 think that, you know, it is, you know, a
6 citizen web page, if you will, but I believe
7 there is something here. So I would say that
8 we know there are studies that have been
9 conducted.

10 So I would say it couldn't
11 be simply discounted, but it doesn't -- it's
12 not the same as having a consultant's report
13 in front of you.

14 **Q. I'm sorry. Just so we're clear,**
15 **it should not be discounted? Should not be**
16 **discounted?**

17 A. Correct. You should consider this.

18 **Q. Okay. If you turn to Slide 56 and**
19 **it was unfortunately cut off, the page number,**
20 **Slide 56, what's represented here?**

21 A. Well, this is an aerial view looking
22 west of the Waukegan station and the surrounding
23 properties. The wells have been developed that
24 were shown. For example, for the tannery site,

1 they have the red box.

2 **Q. I'm sorry. Let me back up for**
3 **just one second. I want to understand what**
4 **properties we're looking at.**

5 **The area outlined in blue,**
6 **what property is that?**

7 A. That's the General Boiler property.

8 **Q. And the area outlined in red, what**
9 **property is that?**

10 A. That's the tannery property.

11 **Q. And this map is showing the wells**
12 **on all of those properties?**

13 A. Yes.

14 **Q. Including the Waukegan?**

15 A. Yes.

16 **Q. And in the notes on the right side**
17 **of the page, what are you showing there?**

18 A. Well, it indicates what the units
19 are. They're all the same, but the data
20 come from different periods of time and,
21 for example, the Griess-Pfleger site through
22 1997 and other General Boiler in 1998, the
23 ELUC wells, which are around the edges of
24 the General Boiler and Griess-Pfleger from

1 2017 and the on-site groundwater wells are
2 current from 2017.

3 **Q. Now, are those -- is the General**
4 **Boiler site upgradient from the Waukegan**
5 **property?**

6 A. Yes.

7 **Q. And is the tannery site upgradient**
8 **from the Waukegan property?**

9 A. Yes.

10 **Q. Now, we saw earlier the groundwater**
11 **flow map.**

12 **In your opinion, in the**
13 **groundwater flow, could components of**
14 **groundwater from the General Boiler property**
15 **reach the Midwest Generation property?**

16 A. Yes.

17 **Q. And similar question; do the**
18 **components of the groundwater from the**
19 **tannery property reach the Midwest Gen**
20 **Waukegan site?**

21 A. Yes.

22 **Q. What did you conclude as to off-site**
23 **sources based on this map at Page 56 and the**
24 **next map at Page 57?**

1 A. Well, of course, we're interested
2 in if there's something that's found on the --
3 on the Midwest Gen properties. So we looked
4 at barium and manganese, which is found and
5 indicated on these maps.

6 It's very clear that there
7 are significant upgradient sources of each,
8 of barium and manganese, upgradient and even
9 upgradient of the tannery property there's
10 impact. So this whole area has been impacted
11 by these facilities -- these old abandoned
12 facilities.

13 **Q. And to be clear on Slide 56, we're**
14 **talking about barium and on Slide 57, we're**
15 **looking at manganese results?**

16 A. Yes.

17 **Q. And do you have a similar conclusion**
18 **for both the barium and the manganese?**

19 A. Yes. You can see there are
20 concentrations that are quite significant.
21 MW-6, for example, on Figure 2 for manganese
22 is 3.5 parts per million compared to those
23 levels on site of -- you know, the highest
24 on site is around .6. Downgradient to the

1 pond, it's, you know, .1, .07, .002. So
2 downgradient to the pond is even less. So
3 it's clear that the ponds are not the source
4 and that the source is coming from upgradient.

5 **Q. And what about other potential**
6 **constituents?**

7 **Why only look at manganese**
8 **and barium?**

9 A. Well, the framework that the off-site
10 studies were conducted is different than what
11 we're conducting. Commonly, when you analyze
12 the soils and groundwater, there's a standard
13 suite of parameters that you look at when
14 it's done for a -- I'll call it a remedial
15 investigation. You've got a problem you're
16 trying to understand what's going on.

17 So they test for what we
18 commonly call the RCRA 9 metal. That doesn't
19 include boron, for example, sulfate, they're
20 not -- they're not hazardous waste metals.
21 And so these -- these are -- they look for
22 hazardous waste metal. So, you know, it would
23 have been nice to have boron data, but that
24 was not the focus of their study.

1 **Q. They were looking at hazardous**
2 **materials?**

3 A. Correct.

4 **Q. Looking at the -- next, we are**
5 **moving to -- well, I'm sorry, one more question**
6 **on Waukegan.**

7 **As with Powerton and Joliet,**
8 **you -- did you do a -- conduct a risk analysis**
9 **at Waukegan?**

10 A. We did the same as Joliet for
11 Powerton and for Waukegan and we found the
12 same conclusion. Under the normal risk
13 assessment practices, we found no unacceptable
14 risk.

15 **Q. And that updated data appears at**
16 **Tab 907 of your binder, Exhibit 907?**

17 A. Yes.

18 **Q. Again, just so we are all clear,**
19 **I think everyone has testified no potable water**
20 **receptors at Waukegan?**

21 A. Correct.

22 **Q. Based on your review of the data**
23 **and the risk at Waukegan, what is your opinion**
24 **as to Midwest Generation's actions regarding**

1 **protection of groundwater?**

2 A. I think they have been -- had a
3 responsible program with considerate, caring
4 professional that managed the -- managed the
5 sites and I think they were proactive again
6 with their -- with looking at the conditions
7 of the ponds back in the early 2000s, mid-2000s,
8 and they spent the money to upgrade it and fix
9 it. I think they were responsible owners of
10 these facilities.

11 **Q. Moving to Will County.**

12 HEARING OFFICER HALLORAN: It's
13 10:45. We've been at this an hour 45
14 minutes. I'd like to take a break. Is
15 that okay?

16 MS. NIJMAN: Absolutely.

17 HEARING OFFICER HALLORAN: Thank
18 you. We'll be back at 11:00.

19 (Whereupon, after a short
20 break was had, the following
21 proceedings were held
22 accordingly.)

23 HEARING OFFICER HALLORAN: It
24 looks like everyone is ready. We are back

1 on the record. It's approximately 11:00
2 o'clock. Mr. Seymour is still on the
3 stand and Ms. Nijman is directing. You
4 may proceeding. Thank you.

5 MS. NIJMAN: Thank you.

6 BY MS. NIJMAN:

7 **Q. So we were just turning to the**
8 **Will County site before the break and**
9 **turning to Slide 58 of your Exhibit 901,**
10 **this slide presents the Will County site**
11 **history and surroundings.**

12 **Would you briefly describe**
13 **this?**

14 A. Yes. This is again the summary of
15 the similar process that I used for the other
16 plants where, you know, it's a plant that's
17 a 1955 plant. So, you know, over 50 years
18 back, this was operating -- actually 62 years.

19 And so I reviewed the
20 situation there and I looked at the various
21 ponds. I looked at the ash sample results
22 that for comparison to groundwater. I looked
23 at the historic areas and the samples analysis
24 that we had for more recently 2015.

1 Then, of course, I had
2 reviewed CCAs and the administrative controls,
3 which include the establishment of a GMZ and
4 an ELUC, E-L-U-C, and also looked at the risks
5 from groundwater from potable well use and
6 surface water.

7 **Q. And turning to the next slide, the**
8 **site map, we've heard the ponds identified**
9 **and described by Mr. Gnat, among others, does**
10 **this map provide an accurate representation**
11 **of your understanding of the various**
12 **impoundments, active and inactive?**

13 A. Yes. The two highlighted blue ponds,
14 Pond 2-S and Pond 3-S also called Pond 2-South
15 and 3-South, those are the currently -- the
16 more active pounds and I believe one of them
17 may be going inactive soon, but to the north,
18 we have Pond 1-South and Pond 1-North and
19 those are not active.

20 **Q. And just as to 1-North and 1-South,**
21 **we have stipulations as to those ponds:**
22 **Stipulation 48, there are two inactive ponds**
23 **at the Will County station: Ponds 1-North**
24 **(1-N) and 1-South (1-S); Stipulation**

1 **49, Ponds 1-N and 1-S at the Will County**
2 **Electric Generating Station have Poz-o-Pac**
3 **liners; Stipulation 50, Ponds 1-N and 1-S**
4 **were removed from service in 2010 and**
5 **neither received any ash or process water.**

6 **Now, turning to the next**
7 **slide, similar to the other stations, did**
8 **you review the history of the impoundments**
9 **for Will County?**

10 A. I did. And it has the same format
11 as the other tables for -- for Will County.
12 We looked at columns to the right are -- one
13 describes the ash ponds present, the date they
14 were constructed with the liners, original,
15 and then the date when they were relined with
16 high density polyethylene and then the last
17 column is scheduled ash removed.

18 **Q. And generally, looking at the date**
19 **constructed, the liners, what was the date**
20 **all of these original liners were constructed**
21 **on the ponds?**

22 A. These all had Poz-o-Pac liners back
23 in 1977.

24 **Q. And how thick was the Poz-o-Pac at**

1 **Will County?**

2 A. Well, the -- in general, they're
3 36 inches thick. They put them in in six-inch
4 layers. So they're quite, quite thick.

5 **Q. Now, looking at the next column,**
6 **dates relined, how would -- as to Ponds 2-South**
7 **and 3-South right now, how would you generally**
8 **describe the relining systems?**

9 **Are they similar or different?**

10 A. Well, they both have -- they're very
11 similar. So they're similar. They both have
12 HDPE. They both have geotextile cushions. They
13 both have a sand cushion layer. So they are
14 very, very similar.

15 **Q. Okay. And turning to the next page,**
16 **Slide 61, entitled "Will County South Ponds 2**
17 **and 3," does this represent the cross section**
18 **for those ponds?**

19 A. Yes, it does.

20 **Q. And would you describe from bottom**
21 **to top what the liner is for those ponds as**
22 **relined?**

23 A. Sure. The dark brown is the native
24 soils are subgrade. Above that and underneath

1 the bottom of the ponds, we have -- it's
2 Poz-o-Pac 24 plus inches toward the edge
3 of the bottom of the pond. And then we've
4 got -- above that, we have the bottom
5 geotextile cushion. Above that, is the HDPE
6 liner. Above the liner is the top geotextile
7 cushion.

8 Then in Pond 2-S, we have
9 what's called a geocell along the bottom edge
10 and up the side slopes. And on both Ponds 2-S
11 and 3-S, they both have the sand cushion of
12 12 inches. On top of that, they have the
13 crushed limestone warning layer that is six
14 inches thick.

15 **Q. Noting towards the middle of the**
16 **cross section, we've got Poz-o-Pac at the**
17 **bottom and then it's slightly different right**
18 **above it.**

19 **What is that area?**

20 A. Well, in the -- away from the edge
21 of the pond, that is natural fill. When
22 it was originally installed, they had the
23 foot of total Poz-o-Pac in the bottom and then
24 they had a foot of fill and above that, they

1 put a foot of Poz-o-Pac.

2 In the relining, they took
3 out the top foot of Poz-o-Pac and so in some
4 areas, there was a natural -- there's a fill
5 at the bottom of the pond at that point
6 compared to the sides of the pond -- the
7 Poz-o-Pac on the sides.

8 **Q. So if I understand correctly, the**
9 **Poz-o-Pac on the sides was 36 inches and in**
10 **the middle of the ponds had a film material**
11 **in the middle of the Poz-o-Pac?**

12 A. Correct.

13 **Q. Other than the liner systems, you**
14 **also note the elevations of groundwater in**
15 **the pond bottom elevation at Will County.**

16 **Would you discuss that**
17 **analysis?**

18 A. Sure. The pond bottom elevation
19 is 528.5 feet for both ponds. The groundwater
20 varies between the different ponds. For the
21 average for Pond 3-South is elevation 581,
22 which is about a foot and a half less than
23 the pond bottom. In round Pond 2-S, we have
24 an elevation of 582.5, which is the same as

1 the pond bottom.

2 **Q. And do those higher elevations**
3 **cause you concern for hydrostatic uplift?**

4 A. Well, it would be of concern when
5 the ponds were empty and being cleaned out.
6 And so what I looked at is I looked at that
7 elevation, which does not cause hydrostatic
8 uplift because the water pressure -- the
9 pressure of water having the weight of about
10 half of soil and concrete -- like, one foot
11 of soil is equal two feet of water.

12 And so you have to have
13 more feet of water pressure than soil to
14 counterbalance or to push the liner up. So
15 in this situation, that weight of that 18
16 inches is very important of that cushion and
17 the stone on top of the geomembrane because
18 as that water level would rise around Pond 2-S,
19 is could cause hydrostatic uplift.

20 So I looked at that and
21 basically that foot and a half of sand and
22 stone at the bottom resists the maximum
23 water level that we recorded, which is about
24 1.3 or a foot and a quarter higher and so it

1 still adds a margin of net down pressure even
2 at the highest maximum groundwater levels in
3 the area and, of course, that would only be of
4 concern when the pond is empty.

5 So the bottom line is you
6 should watch it. You should be careful when
7 you do unline the pond. You probably check
8 the water levels and make sure it's not too
9 high, but even then, it's just something to
10 be looked at, but I'm -- I'm not that concerned
11 about having hydrostatic uplift occur.

12 HEARING OFFICER HALLORAN: Again,
13 Mr. Seymour, perfect speed. Thank you for
14 me anyway. Thank you.

15 BY MS. NIJMAN:

16 **Q. In fact, did you do some mathematical**
17 **calculations of downward forces at this pond**
18 **because of the concern you're just discussing?**

19 A. We did. I did.

20 **Q. And did those calculations result in**
21 **the conclusion you just stated?**

22 A. That calculation was done a couple
23 few years ago and since that time, I've updated
24 it because I have now considered the maximum

1 water levels. Obviously, it was raised in the
2 course of this matter.

3 And I also -- and again, in
4 this testimony, I wanted to present the worst
5 case as though there was no Poz-o-Pac just in
6 case it was -- because I had actually used
7 30-inch Poz-o-Pac in my calculation. That
8 was a -- it should have been 24.

9 So I looked at it as if there
10 was no Poz-o-Pac, just a geomembrane liner at
11 the bottom at the maximum water level. There
12 was no hydrostatic uplift because it's resisted
13 by the sand and gravel sitting on top of the
14 geomembrane.

15 **Q. At Will County, how did you learn**
16 **about the ash removal process? I mean, we've**
17 **heard some testimony here.**

18 **Did you do anything else?**

19 A. Yes. Will County ash was removed
20 by LaFarge. We spoke to Mr. Nowicki and then,
21 of course, Fred Veenbaas was here and we heard
22 his testimony and we talked to him and Chris
23 Lux. So we talked to the operators, if you
24 will, of these facilities and the contractor

1 that does the removal.

2 Again, it was the methodical
3 approach. They had contingency plans if they
4 did have an accident meaning a nick in the
5 liner that could cause a hole. So I felt it
6 was a responsible program.

7 **Q. In your experience, where would**
8 **these nicks in the liner from equipment**
9 **occur, the top of the liners or where would**
10 **they occur?**

11 A. Well, they would occur where the
12 geomembrane was exposed. In other words,
13 where it was not below the water. It would
14 be next to impossible to damage it when it's
15 full of water because there is no equipment
16 in the pond. So it's always going to happen
17 around the edges where the liner is exposed
18 or when its being cleaned out, it could occur
19 again above where the water is at that time,
20 but it could be from equipment hitting the --
21 hitting the geomembrane where there's exposed
22 geomembrane.

23 **Q. And did you learn of any circumstances**
24 **where there is exposed geomembrane during the**

1 **clean-outs?**

2 A. Yes. There was -- there was a
3 good-sized tear that was found when there
4 was no water in the pond at some point in
5 time during the clean-out.

6 My understanding is
7 it was repaired prior to filling the pond
8 and so that would not have caused the leak.

9 **Q. So that was the one circumstance**
10 **at a pond that was not in use?**

11 A. That was pond 3-S back around the
12 2009 timeframe, I believe.

13 **Q. What is your opinion based on your**
14 **review of Will County data and the construction**
15 **information as to whether the Will County ponds**
16 **are leaking constituents to groundwater?**

17 A. I don't think they are leaking.

18 **Q. Looking at Slide 62, that's the Will**
19 **County map with the monitoring wells identified.**
20 **We heard Mr. Gnat discuss those.**

21 **Is this an accurate depiction**
22 **of the monitoring wells at Will County?**

23 A. Yes.

24 **Q. And I think he stated Monitoring Wells**

1 1, 2, 3, 5 and 9 are upgradient; is that
2 correct?

3 A. I don't think that's what --

4 Q. Oh, I'm sorry. Go ahead. Why don't
5 you tell me.

6 A. I -- I would have said that Monitoring
7 Wells 1, 2, 3, 4, 5 and 6 would be upgradient.

8 Q. Thank you.

9 And looking at the next
10 slide, Slide 63, we heard Mr. Gnat discuss
11 the groundwater flow direction. This is the
12 groundwater contour map dated 5 of 2017 at
13 Will County.

14 Did you agree or do you agree
15 with Mr. Gnat's description of the groundwater
16 flow as depicted here?

17 A. Yes, I do.

18 Q. And again for Will County, if you
19 look at the next two slides, 64 and 65, you
20 did a comparison of the ash data from ponds --
21 constituents from ash data and ponds with
22 constituents in the groundwater.

23 What were your conclusions?

24 A. Well, we followed the same process

1 and my main conclusion was that at the bottom
2 line, 50 to 60 percent of the data, the
3 constituents in the groundwater do not match
4 the constituents in the ash.

5 **Q. In the ponds?**

6 A. Excuse me. Yes, the ash in the ponds.

7 **Q. And --**

8 A. This first table is using the
9 site-specific data at Table 5-5.

10 **Q. And as we've said earlier, the**
11 **second table at 5-4 is the comparison with**
12 **the constituents of ash from the EPRI**
13 **published data, correct?**

14 A. Correct. And we found a little
15 more consistency oddly, but it was still
16 about 50 percent of the data are inconsistent
17 meaning the data between the groundwater and
18 the ash in the ponds don't match.

19 **Q. Turning to the next slide, Slide 66.**

20 A. Okay.

21 **Q. We heard from Maria Race some**
22 **discussion about this area at the bottom,**
23 **alleged slag bottom ash placement area?**

24 A. On the bottom southern property

1 line, yes.

2 Q. Yes. Is that the area that -- I'm
3 sorry. I'm referencing the wrong section.

4 In green, at the top near
5 pond 1-N, CCR placement area sample 2015,
6 that's what I wanted to ask you about.

7 A. I see that.

8 Q. And do you recall Mr. Gnat talking
9 about the sampling done in that area?

10 A. I do.

11 Q. And are those part of the historic
12 ash samples that you relied upon for your
13 opinions in this case?

14 A. I did. They are.

15 Q. And generally what did you find based
16 on that sampling?

17 A. Again, we found similar parameters
18 across the different sites where we had some
19 barium and boron. Additionally, we had a
20 little iron in this one and we did not have
21 the sulfate, but the barium and boron were
22 consistent with the other samples from the
23 other sites.

24 Q. Turning to the next line for

1 **Will County, Slide 67, does that represent**
2 **the Groundwater Management Zone accurately,**
3 **in your opinion?**

4 A. Yes.

5 **Q. And that's been discussed in**
6 **testimony by Mr. Gnat and where are all**
7 **the groundwater monitoring wells included**
8 **within that Groundwater Management Zone?**

9 A. Yes.

10 **Q. Now, did you also review the**
11 **groundwater concentrations for Will County**
12 **to conduct a spacial analysis?**

13 A. I did.

14 **Q. And did you use the same procedure**
15 **for Will County as you did with the other**
16 **sites?**

17 A. We did. And as you can see, we
18 used the same four analytes.

19 **Q. Okay. Turning to Slide 69, is**
20 **that what you're referring to?**

21 A. I'm sorry. Yes.

22 **Q. And what did you find?**

23 A. Again, we had not very many --
24 nothing exciting with barium, which is

1 probably a good thing. But boron, we had
2 again several well, Monitor Wells 7.4 and
3 5 and what's interesting is, you know,
4 Wells 4 and 5 for boron, they're upgrading
5 wells.

6 And manganese, we found
7 it at Wells 4 and 8 and 3 recognizing that
8 Wells 4 and 3 are upgradient, which would
9 indicate it's not coming from the ponds.
10 Well 8 is downgradient.

11 And it's similar for sulfate
12 where they found the peaks. Again, where
13 you're looking for a source, it's upgradient
14 of the pond because these are upgradient
15 wells.

16 **Q. And what did this tell you about**
17 **what -- did the peaks tell you from different**
18 **wells?**

19 A. It told me that the ponds aren't --
20 the source is not the ponds, that there's
21 some upgradient, I'll call it, as I said before,
22 some historical use of the property that is
23 causing the impacts.

24 **Q. And as you did with the other sites,**

1 **did you do a temporal trend analysis for**
2 **Will County?**

3 A. I did.

4 **Q. Looking at the next slide, Slide**
5 **70, is that -- does Slide 70 reflect the**
6 **updated groundwater constituent temporal**
7 **trend testing results for Will County?**

8 A. It does recognizing these are the
9 first ten wells that were installed. The
10 more recent wells were installed by Midwest
11 Gen to respond to the CCR rule and there
12 wasn't the amount of data to analyze. We
13 did not analyze the new wells.

14 But these data again go
15 from 2010 to 2017. We did the same linear
16 regression analysis to see what slope the
17 line is. We looked at what was increasing,
18 what was decreasing or where we would make
19 no conclusion.

20 **Q. On the next slide is Slide 71.**

21 **What did you find at Will**
22 **County?**

23 A. Again, in summary, in the middle,
24 in the big bullets, it appears that the

1 groundwater concentrations are neither
2 increasing nor decreasing for same reason.

3 If you look at the numbers,
4 about the same number of wells or parameters
5 are increasing as decreasing. So it's neither
6 increasing or decreasing.

7 **Q. Is a fair way to describe that it's**
8 **not getting worse?**

9 A. Correct.

10 **Q. In lay speak?**

11 A. Yes.

12 **Q. Now, for Will County, you also, like**
13 **you did or all the other sites, you did a risk**
14 **analysis and that would be at -- what's marked**
15 **as Exhibit 907 in your binder?**

16 A. Yes.

17 **Q. What did you find for Will County?**

18 A. The same as the other three sites
19 under an accepted risk assessment practices that
20 we found.

21 **Q. And as with the other sites, were**
22 **there any potable wells in the area that are**
23 **at issue?**

24 A. There are no potable water use at

1 this site like the other sites. In addition,
2 there's the ELUCs that don't allow the
3 installation of potable water wells.

4 **Q. And that would apply to all the**
5 **sites --**

6 A. Yes.

7 **Q. -- where the ELUCs are?**

8 A. Correct.

9 **Q. Based on your review of the data**
10 **and your risk assessment at Will County,**
11 **what is your opinion of Midwest Generation's**
12 **actions regarding protection of groundwater?**

13 A. My opinion of Will County would be
14 the same as the other plants. Again, it was
15 a responsible program. It was -- I worked
16 for a number of power utilities and to have
17 an organized evaluation program normally is
18 good and it's normally other clients, it's
19 ad hoc and plant-base driven.

20 So here, it was nice to have
21 a corporate program to look forward a little
22 farther than what plants often do and I found
23 it to be a very responsible owner of these
24 facilities.

1 **Q. So I'm going to ask you the same**
2 **question we have for the other facilities.**

3 **You're saying it's not the**
4 **ponds. You're saying it's not the historic**
5 **areas at Will County. So how did the**
6 **constituents of coal ash that are in the**
7 **groundwater get into the groundwater?**

8 A. You know, the first bullet in my
9 analysis all along has been that these are
10 old facilities and, you know, we've looked
11 at the ponds. I called them historic areas,
12 which are defined by borings mainly. So
13 there's other historic use and upgradient
14 influences that are causing these impacts.

15 And there's no specific
16 source that could be identified and that
17 in my opinion, the way to manage these --
18 these impacts are the way that it's been
19 agreed to by the Illinois EPA and Midwest
20 Gen. It's to monitor, put a GMZ, put an
21 ELUC, control the risk, and you're going
22 to have no risk at all.

23 **Q. So is it important to locate these**
24 **potential little sources -- residual sources**

1 **that might be out there?**

2 MR. RUSS: Object to little.

3 HEARING OFFICER HALLORAN: Rephrase.

4 BY MS. NIJMAN:

5 **Q. Is it important to locate each**
6 **individual potential source -- historic source**
7 **that might be there?**

8 A. I've worked at much more complicated,
9 much more contaminated sites with lots of things
10 going on and you can waste a lot of effort going
11 after every possible area.

12 And in situations like that --
13 again, I think I mentioned earlier that Illinois
14 has a more practical approach that cuts to the
15 solution quickly. I -- as I mentioned before,
16 you put the problem within a box and you control
17 at that box. You control the risk. In that
18 case, it's not necessary to know all of these
19 other historic use sources.

20 **Q. Is it unusual at these old historic**
21 **sites you are talking about to have unknown**
22 **sources when a site is 50, 80 years old?**

23 A. Not at all. It's more likely than
24 not, put it that way. Much more likely than

1 not.

2 **Q. Have all of your opinions in your**
3 **report as updated and your opinions today**
4 **and yesterday, are they true and correct**
5 **to a reasonable degree of scientific certainty?**

6 A. Yes. That's my opinion.

7 MS. NIJMAN: Mr. Hearing Officer,
8 I'd move to admit Exhibits -- Midwest Gen's
9 Exhibits 900 through 908.

10 HEARING OFFICER HALLORAN: Okay.

11 MR. RUSS: I'm sorry. May I have
12 just a moment?

13 HEARING OFFICER HALLORAN: Any
14 objection, Mr. Russ?

15 MR. RUSS: Yes. Can I have a
16 moment to confer, please?

17 HEARING OFFICER HALLORAN: Sure.

18 MR. RUSS: No objection.

19 HEARING OFFICER HALLORAN: All
20 right. Thank you, Mr. Russ.

21 Respondent Exhibits 900,
22 901, 902, 903, 904, 905, 906, 907, and
23 908 are admitted.

24

1 (Respondent Exhibit Nos. 900
2 through 908 were admitted
3 into evidence.)

4 MS. NIJMAN: Our direct is complete.

5 HEARING OFFICER HALLORAN: Thanks.

6 Let's go off the record:

7 (Whereupon, a discussion
8 was had off the record.)

9 (Whereupon, after a short
10 break was had, the following
11 proceedings were held
12 accordingly.)

13 HEARING OFFICER HALLORAN: All
14 right. We are back on the record. It's
15 approximately 11:40. Mr. Russ is starting
16 his cross-examination of Mr. Seymour.

17 You may begin, sir. Thank
18 you.

19 MR. RUSS: Thanks.

20 C R O S S - E X A M I N A T I O N

21 by Mr. Russ

22 **Q. Hello, Mr. Seymour.**

23 **A. Hi.**

24 **Q. The first thing I want to look at is**

1 **your CV, which I believe is in your binder at**
2 **the end of Exhibit 900.**

3 A. Okay.

4 **Q. Or it is Exhibit 900. I'm sorry.**

5 **Do you have any degrees in**
6 **hydrology?**

7 A. No.

8 **Q. Do you have any degrees in geology?**

9 A. My degree is in geotechnical
10 engineering, which is a combination of civil
11 engineering and geology.

12 **Q. Okay. Can you please identify any**
13 **projects on your CV where you were responsible**
14 **for evaluating groundwater quality data to**
15 **determine the source of contamination?**

16 A. Yes.

17 HEARING OFFICER HALLORAN: Mr. Russ,
18 could you keep your voice up?

19 MR. RUSS: Yep.

20 HEARING OFFICER HALLORAN: Thank
21 you.

22 BY MR. RUSS:

23 **Q. Do you want me to ask it again?**

24 **Can you please identify any**

1 **projects on your CV where you were responsible**
2 **for evaluating groundwater quality data to**
3 **determine the source of contamination?**

4 A. Yes. There's a project in Monroe,
5 Michigan. It's called DTE Energy. It may not
6 be fully explained in here.

7 **Q. Is it on Page 48961?**

8 A. 48961, Monroe Power Plant, yes. It's
9 an ash pond and there was seepage at the toe of
10 the slope and that we looked at the chemistry,
11 including Tritium, to look at whether or not
12 the source was the pond.

13 **Q. Who is "we," for the record?**

14 A. Me and my colleagues.

15 **Q. Oh, okay. Thank you.**

16 **Any other?**

17 A. Well, we looked at, for example,
18 the Berlin & Farro Superfund site, which is
19 not an ash fund. Let me look. It should be
20 here. Yes, on Bates 58963 (sic.), Berlin &
21 Farro Liquid Incineration Site, that was a
22 remedial investigation. There, we were
23 looking for remaining sources.

24 If you look at the same page

1 further up, National Industrial Environmental
2 Services, that was a hazardous waste treatment
3 facility where we looked at groundwater and
4 we looked at a couple of organic evaporation
5 ponds. We looked at a hazardous waste landfill
6 and we looked at some acid treatment ponds.

7 At the McGraw-Edison facility
8 on Bates 48962, that was again a Superfund
9 site and we were looking for the sources and
10 conducting a study to arrive at a remedy.

11 For the Motor Wheel Disposal
12 Site, that was a Superfund site where we
13 looked at sources for cost allocation
14 understanding what came from where.

15 For the -- a number of sites,
16 manufactured gas plant sites, a utility --
17 a manufacturer on the same page, Page 48962,
18 where they have a lot of MGP sites where we
19 looked at various possible sources.

20 **Q. Which one is that? I'm sorry.**

21 A. It's at the top left. It says,
22 "Utility Company, Multiple Sites, Wisconsin."

23 **Q. Thank you.**

24 **Sorry to interrupt you, but**

1 **the first one is an FGD site.**

2 **Were the rest of these**
3 **ash coal ash related or not?**

4 A. They were not.

5 **Q. And when you --**

6 A. And they had the similar, you know,
7 groundwater evaluations, but it's -- they
8 weren't coal ash constituents.

9 **Q. Okay. And was that all while you**
10 **were working for Geosyntec?**

11 A. No. That was a lot of prior -- some
12 of it was with Geosyntec and some was with my
13 previous company.

14 **Q. And when -- when you were working with**
15 **your company, whether it was with Geosyntec or**
16 **the previous company on these projects, were**
17 **you personally responsible for evaluating the**
18 **groundwater data or was that sometimes someone**
19 **else within the company?**

20 A. It's a combination, but more often
21 than not, I was responsible. You can appreciate
22 when you first start, my first site in 1982 with
23 Environmental Contamination, I was the guy doing
24 all of the work.

1 **Q. Right. That's how it goes. Okay.**

2 **Thank you.**

3 A. Excuse me, Mr. Russ. You said FGD
4 site.

5 **Q. That's what it looked like.**

6 A. No. With the Monroe project, it was
7 fly ash.

8 **Q. Oh, I'm sorry. It looks here like**
9 **it says flue gas desulphurization gypsum.**

10 THE COURT REPORTER: I'm sorry.
11 could you say that again louder?

12 MR. RUSS: Yeah. Flue gas
13 desulphurization gypsum.

14 BY MR. RUSS:

15 **Q. Am I reading that wrong?**

16 A. Well, let me find it again because
17 at each project, I've done so many things it
18 may not be listed here, Mr. Russ.

19 **Q. This is the Monroe Power Plant on**
20 **48961. This is the first one we talked about.**

21 A. Yeah. That was the first study.
22 It's built in 19- -- I think 2009 and then
23 I worked on that project for eight more years
24 and so within that span -- period of time is

1 when I did the study.

2 **Q. Okay. And so the confusion over**
3 **whether that was fly ash or flue gas**
4 **desulphurization material, which --**

5 A. It was fly ash. The study was to
6 look for a flue ash -- excuse me -- FGD, flue
7 gas desulphurization facility that could be
8 located within that ash pond or at another
9 location.

10 **Q. Okay. Thank you. That clarified**
11 **that.**

12 **And just to get this crystal**
13 **clear on the record, you said you were**
14 **responsible for getting it done, the groundwater**
15 **analysis, does that mean you were doing it**
16 **yourself?**

17 A. I did everything. I was sampling
18 the groundwater, tabulating the data and
19 analyzed the data -- evaluated the data, yes.

20 **Q. Okay. But you didn't necessarily**
21 **do that for each of these --**

22 A. Put it this way; if you know what
23 you're doing, you can tell people what data
24 you need to see and you know how to do it --

1 **Q. Okay.**

2 A. -- after doing it -- after doing it
3 for so many years.

4 **Q. Okay. Thank you.**

5 **Now, moving your report, you**
6 **don't have to open it yet, but in your report,**
7 **you discussed groundwater impacts at these**
8 **sites, right?**

9 A. Yes.

10 **Q. And by impacts, you were referring**
11 **to elevated concentrations of certain**
12 **constituents in the groundwater?**

13 A. Yes. That's a fair statement.

14 **Q. And these constituents included**
15 **chemicals that you would describe as inorganics;**
16 **is that right?**

17 A. They were inorganic and elemental or
18 as compounds.

19 **Q. For the Powerton site, you noted that**
20 **the inorganics that are in the groundwater are**
21 **characteristic of coal ash.**

22 **Do you remember that?**

23 A. They probably were something like that
24 in general.

1 **Q. Do you still hold that opinion that**
2 **the inorganics in the groundwater at Powerton**
3 **are characteristic of coal ash?**

4 A. I would say that they are
5 characteristic, but not consistent with what
6 we previously heard regarding what's in the
7 ponds and what we've identified.

8 HEARING OFFICER HALLORAN: Let's
9 go off the record for a minute.

10 (Whereupon, a discussion
11 was had off the record.)

12 BY MR. RUSS:

13 **Q. Can we look at your deposition? I**
14 **have a few copies of it here.**

15 **Go to Page 46 of your**
16 **deposition.**

17 A. Excuse me. Page 46 on the bottom or
18 the actual deposition?

19 **Q. Page 46 on the deposition. I think**
20 **the pages on the bottom will have a parenthesis**
21 **range of four pages for each page?**

22 A. Okay. Yes.

23 **Q. So deposition Page 46, Ms. Cassel has**
24 **indicated on the top of the page -- she's asking**

1 **questions about the Powerton site, right?**

2 A. Yes. I see that.

3 **Q. And she asked you a series of**
4 **questions, but the answer you gave on Lines**
5 **17 and 18, could you recite that, please,**
6 **out loud?**

7 A. Yeah, I will. I was just --

8 **Q. Oh, okay. Sure.**

9 A. -- reading all around it --

10 **Q. Yes.**

11 A. -- to make sure I understood it.

12 **Q. Yes.**

13 A. Leading up to it, it asks if there's
14 a specific source. And I say, "Answer: No
15 specific source.

16 And then Ms. Cassel said,
17 "Question: Any general sources?"

18 "Answer: The inorganics that are
19 in the groundwater are characteristic of coal
20 ash materials."

21 **Q. Okay. And then --**

22 MS. NIJMAN: Can you keep reading?

23 BY THE WITNESS:

24 A. "Answer: My point is that the ash

1 that we sampled and analyzed and where we
2 evaluated it, it doesn't appear to be
3 contributing enough to cause what we're
4 seeing. And so I'm concluding by process
5 of elimination there's something else."

6 BY MR. RUSS:

7 **Q. Thank you. I appreciate the rest**
8 **of that answer too.**

9 **Now, some of the inorganics**
10 **we are talking about here are boron and sulfate;**
11 **is that right?**

12 A. Some of them are, yes, boron and --
13 inorganic compounds -- sulfate.

14 **Q. And so when you use the phrase**
15 **"groundwater impact, that included in some**
16 **cases elevated concentrations of boron and**
17 **sulfate?**

18 A. In the groundwater data, it had,
19 in some cases, elevated boron and sulfate.

20 **Q. Now, one the opinions that you gave**
21 **in this case is that the recent groundwater**
22 **impacts are not a result of the ash currently**
23 **stored in the ponds at the sites; is that right?**

24 A. Consistently, what we've seen in the

1 analysis -- by the matching analysis, we've
2 concluded that the data of the groundwater is
3 inconsistent with the ponds being the source.

4 **Q. Is your opinion, that the recent**
5 **groundwater impacts instead are more likely**
6 **than not a result of historical uses at the**
7 **site and the surrounding industrial companies**
8 **and conditions?**

9 MS. NIJMAN: I'm going to
10 objection as to overbroad.

11 HEARING OFFICER HALLORAN: Sustained.
12 Rephrase, please.

13 BY MR. RUSS:

14 **Q. I was actually reading from your**
15 **report.**

16 **Could you turn to your report**
17 **on Page 43?**

18 **HEARING OFFICER HALLORAN: Is**
19 **that Exhibit 901, sir?**

20 MR. RUSS: 901 is the presentation.

21 MS. NIJMAN: Is it 903?

22 MR. RUSS: It's 903.

23 BY THE WITNESS:

24 A. I found it.

1 BY MR. RUSS:

2 Q. Thank you. It's on Page 43 of Exhibit
3 903.

4 A. Page 43.

5 Q. And I'll catch up with you here.
6 I think it's the last sentence there. It
7 says, "Thus, it is my opinion that the recent
8 groundwater impacts are not a result of the
9 ash currently stored in ponds at the sites,
10 but instead are more likely than not a result
11 of historical uses at the sites and the
12 surrounding industrial companies and
13 conditions."

14 HEARING OFFICER HALLORAN: Okay.
15 We've got to speak up and slow down. We
16 have a court reporter trying to take in
17 all you have. It's my obligation to get
18 a clear record, a legible record.

19 MR. RUSS: Did you catch what
20 I said?

21 THE COURT REPORTER: It's a
22 struggle. I mean, you're talking too
23 low and you're really reading fast so
24 I'll have to get the document to make

1 sure I have it correctly.

2 MR. RUSS: Okay. All right.

3 I'll slow it down.

4 BY MR. RUSS.

5 Q. So what it says here is, "Thus,
6 it is my opinion that the recent groundwater
7 impacts are not a result of the ash currently
8 stored in ponds at the sites, but instead are
9 more likely than not a result of historical
10 uses at the sites and the surrounding industrial
11 companies and conditions."

12 MS. NIJMAN: Same objection
13 to over- -- based on the previous 25
14 pages.

15 HEARING OFFICER HALLORAN: I'm
16 not sure what the question was, Mr. Russ.

17 MR. RUSS: I was asking if that
18 was still his opinion.

19 HEARING OFFICER HALLORAN: Yes,
20 that's fine. You can, you know, flesh it
21 out on redirect if need be, Ms. Nijman.

22 Can you answer that?

23 BY THE WITNESS:

24 A. Yes. It is still my opinion.

1 MR. RUSS: Thank you.

2 HEARING OFFICER HALLORAN: Thank
3 you.

4 BY MR. RUSS:

5 Q. Are you familiar with the coal
6 ash rule? I'm assuming you are because we've
7 been looking at it already today, the EPA
8 coal ash rule or CCR rule, as it's been
9 referred to.

10 A. I'm familiar with it, as established
11 yesterday.

12 Q. And are you aware of the liner
13 requirements in the coal ash rule?

14 A. I am very knowledgeable of that.

15 Q. And is it true that the coal ash
16 rule requires at least two feet of compacted
17 soil with a hydraulic conductivity of not
18 more than one time ten to the negative seven
19 centimeters per second or the equivalent of
20 the subgrade for ash in ponds?

21 A. I'd have to look at the rule. I
22 would say that the permeability for two-foot
23 thick is a requirement for the soil or barrier
24 layer for a new facilities.

1 **Q. Uh-huh. And when they say "compacted**
2 **soil," what does that mean to you?**

3 A. It's a common -- in my business,
4 when you have compacted soil, it's normally
5 a low permeability soil to achieve the
6 hydraulic conductivity characteristics.

7 **Q. And is there anything other than**
8 **clay that can achieve that permeability?**

9 A. Yes.

10 **Q. Okay.**

11 A. Many things, as we have seen here
12 in these cases.

13 **Q. Can we go back to your deposition**
14 **then, which is Page 207 -- in this case,**
15 **207 and 208?**

16 **And could you just please**
17 **read on Page 208, Lines 8 through 10.**

18 MS. NIJMAN: Hold on a second.

19 I'm not there yet.

20 BY THE WITNESS:

21 A. Page 208.

22 BY MR. RUSS:

23 **Q. Uh-huh.**

24 A. You said Lines 8 through 10?

1 **Q. Yes.**

2 A. Okay. I can see it. You want
3 me to read it out loud?

4 **Q. Yes. Just Lines 8 through 10.**

5 MS. NIJMAN: Well, are we
6 reading the whole question and answer?
7 I don't think you can just read a
8 portion of the answer.

9 HEARING OFFICER HALLORAN: I
10 agree.

11 BY MR. RUSS:

12 **Q. Well, okay. Let's go back to --**
13 **I guess we'd have to start with Line 16 on**
14 **Page 207 to get the whole exchange on that**
15 **one.**

16 A. I'm fine with that.

17 **Q. Okay.**

18 A. Line 16 begins "Question: Okay.
19 So -- I'm sorry -- you said your understanding
20 is the ponds, the Midwest Generation ponds that
21 we're discussing, do not have liners with the
22 permeability that I mentioned?"

23 "Answer: Correct."

24 "Question: What is the basis for

1 your statement?"

2 "Answer: That -- the records
3 that we've researched and what has been
4 indicated to us and the -- what I have
5 documented if my report on the figures we
6 just went through. There's been no report
7 of a compacted clay liner of low permeability
8 as you've requested."

9 "Question: Okay. I said 'compacted
10 soil' just to be clear.

11 Do you know about compacted
12 soil with that particular hydraulic conductivity
13 under the liners at the ash ponds?"

14 "Answer: I apologize. The only
15 soil that is that low of permeability is clay.
16 It's the same. I'm sorry."

17 **Q. Okay. So you just said that there --**
18 **I believe you said there were other kinds of**
19 **compacted soil that would have the same**
20 **permeability?**

21 A. Mr. Russ, I -- I -- I agree I said
22 that and I think -- when I think of the rule,
23 I think of the requirements for liners including
24 the alternate. So, in fact, clay soil is what

1 you use to achieve that permeability and there
2 are alternates to receive that permeability.
3 So I was thinking the permeability versus the
4 compacted soil. That's my understanding.

5 **Q. Okay. Okay.**

6 A. That's the clay and the equivalence
7 for what they call the alternate in the rule.

8 **Q. Okay. So just to be clear, are you**
9 **aware of any other compacted soils that would**
10 **have that permeability other than clay?**

11 A. I -- not to my knowledge.

12 **Q. Okay. Okay. Thank you.**

13 **And then I think we started**
14 **getting into this with this part of the**
15 **transcript, but as far as you know, none of**
16 **the ponds at these four sites have a subgrade**
17 **that fits that description, do they?**

18 A. The description of a compacted
19 clay bottom liner in the rule is for the
20 new facilities and it's not necessarily a
21 requirement for the existing facilities. So
22 these ponds are existing. So it's not there,
23 but it's also not a requirement.

24 **Q. Understood. But just for the record,**

1 do any of these ponds at the four sites have
2 a two-foot compacted clay liner with that
3 permeability?

4 A. They do not, to my knowledge.

5 Q. Thank you.

6 Are you familiar with -- and
7 I know you are -- Poz-o-Pac?

8 A. Yes. I am familiar with Poz-o-Pac.

9 Q. And Poz-o-Pac is a cementitious
10 material made with fly ash; is that correct?

11 A. That's one of the ingredients. It's
12 also of lime or cement aggregate like a sand.

13 Q. And some of the ponds of these four
14 sites are lined with Poz-o-Pac, correct?

15 A. Yes, they are. Many of them.

16 Q. And Poz-o-Pac liners can crack,
17 right?

18 A. The conditions that they would
19 crack would have to, of course, be between
20 the loading and weathering of those like
21 freeze/thaw so they can crack.

22 Q. Okay. And if a Poz-o-Pac liner
23 is cracked and is put under liquid load,
24 the liquid will push through the cracks;

1 **is that correct?**

2 MS. NIJMAN: I'm sorry.

3 Objection. Is this a hypothetical?

4 HEARING OFFICER HALLORAN: I'm
5 sorry?

6 MS. NIJMAN: Objection, vague.
7 Is this a hypothetical?

8 MR. RUSS: I don't think it's
9 a hypothetical. I guess if a Poz-o-Pac
10 liner is cracked, will water pass through
11 it.

12 BY THE WITNESS:

13 A. Well, if you phrase it in the
14 question of if, I would consider that like
15 a hypothetical. But, of course, if you
16 have crack in a material, the water can
17 flow through if you put the water head
18 on top of it.

19 BY MR. RUSS:

20 **Q. Right. Well, okay. I can stop**
21 **there.**

22 **Is it your opinion that a**
23 **landfill -- well, first of all, does the**
24 **term "mobile waste" mean anything to you**

1 **in your professional experience?**

2 A. Did you say mobile waste?

3 **Q. Mobile.**

4 A. Not really.

5 **Q. Okay. Let's go back to your**
6 **deposition again so we can get clarification**
7 **on this. Go to Page 222 of your deposition.**

8 A. Okay.

9 **Q. If you start on Line 9 and read**
10 **through Line 2 on Page 223, please.**

11 A. Okay. I've read it.

12 **Q. Did you use the term "mobile waste"?**

13 A. Yes. It was a mis- -- probably a
14 misstatement. What you're thinking was the
15 mobility of the constituents. The waste isn't
16 really moving. It's the constituents in the
17 waste, for clarification.

18 **Q. And --**

19 A. Again, this is -- as we have
20 been discussing, this is non-site-specific,
21 this is general?

22 **Q. This is general. This is not specific**
23 **to any site. I'm just wondering if you still**
24 **have this opinion that if a landfill is -- I'll**

1 read it. "If you had a landfill that was closed
2 that had highly mobile waste and that the waste
3 were placed below the groundwater table and they
4 were allowed to migrate off-site, then I would
5 say that would not be a safe practice."

6 Is that still your opinion?

7 MS. NIJMAN: I'm sorry. If
8 you could continue reading; "BY MS. CASSEL:
9 Okay." "Answer: -- as a hypothetical."

10 MR. RUSS: I'm going to object.
11 I think that was --

12 HEARING OFFICER HALLORAN: You
13 can keep reading. I have sustained.

14 BY MR. RUSS:

15 Q. So then Ms. Cassel said, "Question:
16 Okay."

17 You said, "Answer: -- as
18 a hypothetical."

19 "Question: Understood."

20 I think that was the end of
21 the answer.

22 A. That's fine. What's the question,
23 sir?

24 Q. My question?

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Do you still have this opinion?

A. I think that in situations like that, then, it's highly mobile waste that has the characteristics of -- that could cause other effects. If it's allowed to leave containment area, it would be exposed to receptors, if you will, then it would be not safe if you were truly causing a health risk in excess of what's allowable by state and federal law.

Q. And I want to ask you a couple of questions about two terms that you used.

One is "highly mobile waste." I know you -- now, you're saying constituents. But what you do mean by "highly mobile"?

MS. NIJMAN: Objection, misstates testimony.

HEARING OFFICER HALLORAN: Overruled.

He can answer if he's able.

BY THE WITNESS:

A. Sure. Again, when I look at the constituents, some constituents are absorbed. Both organic and inorganic could be absorbed or precipitated as it moves through the

1 environment. And so less -- less of it moves
2 or moves more slowly. Others are more freely
3 moved like with water, they consider those to
4 be mobile. Some organic wastes are like
5 that and some inorganic chemicals are like
6 that and some inorganic constituents are
7 like that.

8 BY MR. RUSS:

9 **Q. And then I also was wondering about**
10 **the significance of the waste being placed**
11 **below the groundwater table.**

12 **How does that contribute to**
13 **it being an unsafe practice?**

14 A. Well, I -- again, I didn't say that
15 it would be unsafe. It would be under certain
16 circumstances, but what it really does is the
17 groundwater, if it's migrating under -- through
18 that material, then it would carry off those
19 materials to -- again, assuming it's to a
20 source, a receptor, that would make it unsafe.

21 **Q. Okay. Thank you.**

22 **Would this opinion also apply**
23 **to coal ash leaving coal ash in the landfill**
24 **below the groundwater table if it migrated**

1 **off-site, it would be an unsafe practice, in**
2 **general terms?**

3 MS. NIJMAN: Objection, overbroad.

4 HEARING OFFICER HALLORAN: I'm
5 sorry, Ms. Nijman?

6 MS. NIJMAN: Overboard,
7 objection.

8 HEARING OFFICER HALLORAN: He
9 can answer if he is able.

10 BY THE WITNESS:

11 A. If he had the conditions, as I
12 mentioned, where you have coal ash below the
13 groundwater table, put it in a situation where
14 it can migrate laterally to an exposure point
15 where it could be subject to ingestion in a
16 concentration that exceeds an acceptable risk
17 limit, then I would consider that as unsafe.

18 BY MR. RUSS:

19 **Q. Okay.**

20 A. Or at least in excess of regulatory
21 allowances because even with the regulatory
22 allowances, I think calling it unsafe may be
23 a little bit too simple. It's really because
24 we live with these cleanup levels of acceptable

1 risk.

2 Because you have a risk, they
3 can say you have to manage that risk. That
4 doesn't mean it's necessarily unsafe.

5 **Q. Are there also situations where a**
6 **constituent might be unsafe at a level lower**
7 **than the current regulatory standard?**

8 A. That's a very complicated question,
9 Mr. Russ, because there's a lot of chemistry
10 out there and that's a very big question. So
11 maybe you have to hone me in because there
12 are -- it's almost more of a question applicable
13 for a professional risk assessor because there
14 are a lot of chemistry that I'm not aware of.

15 **Q. That was my old job.**

16 **So let's take a chemical**
17 **like manganese, for example. We were reading**
18 **in the coal ash rule that there's no MCL for**
19 **manganese. So it hasn't been found to cause**
20 **a lot of damage cases, I think, is the term**
21 **they used.**

22 **Could manganese be unsafe**
23 **even though there's no MCL by which to evaluate**
24 **its safety?**

1 A. My understanding of manganese is
2 that it's got very limited health impacts
3 also and so that again you have to ask a
4 toxicologist that question. What I know
5 is I follow the regulations and, yes, I know
6 a little bit about how you set MCLs and so
7 on, but that's really a toxicology question.
8 I don't -- I don't see that applicable here.

9 **Q. Well, okay. In general, let's not**
10 **talk about manganese specifically, but is it**
11 **possible that there could be a health risk**
12 **at a level below which the regulatory standard**
13 **has been set?**

14 MS. NIJMAN: Asked and answered,
15 overbroad.

16 MR. RUSS: He can probably answer
17 the question.

18 THE WITNESS: I think I answered --

19 HEARING OFFICER HALLORAN: I'm
20 sorry.

21 THE WITNESS: I said I think I
22 answered it.

23 HEARING OFFICER HALLORAN: I
24 agree. Sustained.

1 Let's go off the record.

2 (Whereupon, a discussion
3 was had off the record.)

4 BY MR. RUSS:

5 **Q. Now, concerning the Joliet site,**
6 **you looked at the various potential sources**
7 **of groundwater impact at Joliet 29, didn't**
8 **you?**

9 A. I've examined the data, yes.

10 **Q. And you looked at off-site sources**
11 **as possibly causing groundwater impacts of**
12 **Joliet 29?**

13 A. Just in general. Again, Joliet
14 doesn't really have the impacts that the
15 other sites have. So yes, you can see that
16 there's chloride in the wells based on
17 Mr. Gnat's testimony and things I've heard
18 and understood from before, yeah, they
19 looked at the chloride source, but not much
20 else really.

21 **Q. Okay. So you have not identified**
22 **any off-site sources that could be contributing**
23 **to impacts other than chloride, have you?**

24 MS. NIJMAN: Asked and answered.

1 BY THE WITNESS:

2 A. That's kind of what I said --

3 THE COURT REPORTER: Wait, wait.

4 HEARING OFFICER HALLORAN: Speak
5 up.

6 MS. NIJMAN: Sorry. Asked and
7 answered.

8 HEARING OFFICER HALLORAN: He may
9 answer if he's able.

10 BY THE WITNESS:

11 A. I think I did answer by saying we
12 looked at chloride and that's all.

13 BY MR. RUSS:

14 **Q. Is it your opinion that the groundwater**
15 **impacts at Joliet may be related to coal ash**
16 **from historic uses?**

17 A. What I've said is I don't understand
18 the specific source, but it appears to be
19 historic uses and that the site again is one
20 of the sites that has the lowest impacts and
21 it is currently below the Illinois standards.

22 **Q. Okay. Can we turn to your deposition**
23 **at Page 37?**

24 A. Yes, Mr. Russ.

1 Q. Can you read the question and the
2 answer -- let me see. I'm sorry. This is a
3 long back and forth, but starting with the
4 question on Line 6. Ms. Cassel -- I'll just
5 get you to the answer here, but Ms. Cassel
6 asked, "Question: Are there any particular,
7 specific non-coal ash ponds or ash fill
8 sources that you opine are impacting the
9 groundwater?"

10 "Answer: I have not opined
11 that on Joliet."

12 "Question: So is it your opinion
13 that the historical uses of the sites and the
14 coal ash ponds are impacting the groundwater
15 at Joliet?"

16 "THE WITNESS: Pardon me. Repeat
17 the question."

18 "MS. CASSEL: Could you read the
19 question, please?"

20 The question was read back.
21 There is an objection.

22 You said, "I can understand
23 part of it. I can answer part of it.

24 The power plant is over 50

1 years old and there are many historic uses at
2 the site that may have caused the impacts that
3 we're seeing, and they have caused the impacts
4 that we're seeing, and they may be related to
5 coal ash from historic uses."

6 Is that right?

7 A. Yes. That's what it says.

8 Q. Okay. And do you still have that
9 opinion?

10 A. Yes. I think that's consistent
11 with my opinion. As I mentioned, at Joliet,
12 there's some impacts and we don't have specific
13 sources and the site is under proper management
14 right now to avoid risk.

15 Q. Thank you.

16 And it's your opinion that
17 for at least some of the ash outside of the
18 ponds, you can rule that out as a source?

19 A. Well, what I have said is that in
20 Joliet, there is no identified ash outside
21 of the pond.

22 Q. And specifically, the material that
23 you can rule out is the material for which you
24 have leach test data; is that right?

1 A. Correct.

2 **Q. So by process of elimination, if --**

3 A. Excuse me, Mr. Russ. There is the
4 northeast area and the south area and I'm
5 thinking of the borings. So that I mentioned
6 the borings as I've identified historic
7 materials.

8 **Q. But the material that you had leach**
9 **test data for, where was that from at the**
10 **Joliet site?**

11 A. We had the Joliet data from the area
12 sampled by KPRG kind of southwest of the ash
13 ponds. Then for the data in the ponds, we
14 used other pond data for characteristics.

15 **Q. And do you have leach test data**
16 **from the landfill for the northeast side of**
17 **the site?**

18 A. There is the -- they call it the
19 alleged landfill northeast of the site, which
20 is reportedly there. To my knowledge, there's
21 been no sampling and analysis and there's been
22 no need to have that done.

23 **Q. So on Page 41 of your deposition --**

24 A. Yes.

1 **Q. -- starting at Page 40, Line 23,**
2 **"Question: So your conclusion that there are**
3 **historic uses that may be impacting the plant**
4 **is solely based on general knowledge of what**
5 **is done at a coal plant?"**

6 **"Answer: And looking at it by**
7 **process of elimination, what we've seen out**
8 **there so far doesn't appear to be an active**
9 **source. So it must be from some other historic**
10 **use."**

11 **What did you mean by "what we**
12 **have seen out there so far"?**

13 **A. Well, merely the observations that**
14 **you have, the documentation that again, where**
15 **the -- what area was sampled and that we know**
16 **that there was ash in the ponds, for example.**
17 **So it's really those kind of observations that**
18 **we are making the conclusions.**

19 **Of course, there are, you know,**
20 **boring logs that don't have ash, for example.**
21 **You put all of those things together, you come**
22 **to a conclusion.**

23 **Q. Thank you.**

24 **Specifically, when you say**

1 **"what we've seen there," what were you referring**
2 **to "there" in terms of specific sources?**

3 A. I said there are no specific sources
4 to the groundwater impacts that we've been
5 able to find, but from some of the historic
6 areas where -- as I mentioned, the area that's
7 been sampled by KPRG, there's a northeast
8 area that's adjacent to the site and there's
9 the borings that don't show ash and then there's
10 the ash in the pond. That's what I mean by
11 what I see among the documentation.

12 **Q. Okay. Were the leach tests that --**
13 **from the Joliet 29 site that you saw**
14 **representative of the ash that may or may**
15 **not be buried in the alleged ash landfill**
16 **to the northeast?**

17 A. Well, the records show a lot of,
18 you know, use of the western Wyoming coal,
19 if you will, in that when we look at that
20 and say, well, there's coal and coal
21 ash does have similar characteristics also,
22 you can then say, well, it could be.

23 But again, we've not
24 specifically targeted that as a source because

1 there's no need to. It's not regulated. The
2 US EPA has stated we've looked at these kinds
3 of facilities and if it doesn't have the
4 hydraulic head or the -- I'll call it the
5 drivers to cause them to regulate.

6 Illinois is, I think, in
7 the same position -- they're in a position
8 right now to change things.

9 **Q. So just to get back to my questions,**
10 **were the leach test data that you had**
11 **representative of that area?**

12 A. I assume that it is because it's --
13 if it is coal ash, if it is there, I would
14 say it would be reasonably representative
15 provided it is again a similar power plant
16 and so on.

17 **Q. You assume that it is?**

18 A. I'm thinking that it is, yes.

19 **Q. Okay. And what was the material**
20 **that was sampled for the leach test at Joliet**
21 **29?**

22 A. It was the material again that
23 KPRG sampled in the borings southwest of -- at
24 least outside the pond, southwest of the pond.

1 **Q. All right. Do you know what it**
2 **consisted of?**

3 A. It was primarily ash. It probably
4 had some soil. I know they found some soil
5 in some areas and I think they excluded that
6 from their analysis.

7 **Q. Do you know whether it was bottom**
8 **ash or fly ash?**

9 A. I don't recall what it said. So I
10 don't remember.

11 **Q. Okay. I think that's enough of**
12 **Joliet.**

13 **At Powerton, your opinion that**
14 **at Powerton, the inorganics that are in the**
15 **groundwater are characteristic of coal ash?**

16 A. Again, did I conclude that in my
17 report? You were so helpful to point that
18 out to me before.

19 **Q. You concluded that in your deposition.**
20 **Do you want to look at that**
21 **again to refresh your recollection?**

22 A. Could you show me, please?

23 **Q. Page 46.**
24 **So on Page 46 of your**

1 deposition, starting at Line 6, the question
2 for Ms. Cassel was, "Question: Can you tell
3 me at Powerton what specific sources outside
4 the Powerton Plant you allege are sources of
5 groundwater contamination at that plant?"

6 "Answer: We have not -- I have
7 not opined on any specific source."

8 "Question: Do you have any opinion,
9 as we sit here today, of any other sources
10 outside of the Powerton Plant?"

11 "Answer: No specific sources."

12 "Question: No specific source.

13 Any general sources?"

14 "Answer: The inorganics that are
15 in the groundwater are characteristic of coal
16 ash materials."

17 A. Yes, Mr. Russ. I think we read this
18 earlier. I apologize, but I answered this
19 before.

20 Q. That's right. I was asking in a
21 general way.

22 MS. NIJMAN: I'm also going to
23 object with a continuation where he then
24 says "And I'm thinking something old and

1 historic, but not something current." We
2 need to read the completed answers.

3 HEARING OFFICER HALLORAN: I agree,
4 Mr. Russ.

5 MR. RUSS: Okay. Would you
6 like me to reread it?

7 HEARING OFFICER HALLORAN: Not
8 the whole thing. You can finish where
9 you left off.

10 BY MR. RUSS:

11 Q. So the rest of that answer was,
12 "My point is that the ash that we sampled and
13 analyzed and where we evaluated it, it doesn't
14 appear to be contributing enough to cause what
15 we're seeing. And so I'm concluding by process
16 of elimination there's something else."

17 I'm actually glad --

18 MS. NIJMAN: Question, please
19 continue.

20 MR. RUSS: Well, I can, but I
21 don't know if that has anything to do
22 with what I was just asking.

23 HEARING OFFICER HALLORAN: Continue,
24 please.

1 BY MR. RUSS:

2 Q. "Question: Okay. So you aren't --"

3 "Answer: But what I'm --"

4 "Question: I'm sorry."

5 "Answer: And I'm thinking something
6 old and historic, but not something current."

7 MR. RUSS: Is that an okay place
8 to stop?

9 MS. NIJMAN: Yes. Thank you.

10 BY MR. RUSS:

11 Q. So back on Page 46 there, you
12 mentioned the ash that you sampled and
13 analyzed doesn't appear to be contributing;
14 is that right?

15 A. I believe that's what we said, but
16 again I don't want to limit it to a specific
17 sample because remember, samples are taken to
18 represent a median or medium.

19 MS. NIJMAN: I'm also going
20 to object to it mischaracterizes what's
21 written here, but it's in the record.

22 HEARING OFFICER HALLORAN: So
23 noted.

24

1 BY MR. RUSS:

2 **Q. Then you concluded by process of**
3 **elimination that there's something else,**
4 **meaning something that you didn't sample or**
5 **analyze; is that right?**

6 A. It's meant that when you look at
7 all the data, not just sample analysis, but
8 there's observations of borings, there are
9 things that haven't been tested that we've
10 correlated by engineering analyses to say --
11 to then use the process of elimination that
12 there's something else that has not been
13 characterized.

14 But remember, a simple sample
15 is not intended to be the only thing. It's to
16 represent that median.

17 **Q. So you said engineering correlation?**

18 A. Correct.

19 **Q. What does that mean?**

20 A. In engineering, technical engineering
21 specifically, we conduct soil borings and
22 analyses and you are only sampling a certain
23 frequency, a certain amount of material.

24 So what you do is you correlate

1 the data. You might test this soil sampling in
2 this boring, but not a soil sample here, but
3 it's the same material. So you correlate the
4 properties across that median.

5 **Q. So the material at Powerton that**
6 **you tested for the leach tests, where did**
7 **that come from?**

8 MS. NIJMAN: Objection to
9 "you."

10 BY MR. RUSS:

11 **Q. I'm sorry. That Midwest Generation**
12 **had tested.**

13 A. That we had the limestone rock basin
14 was one set of samples. I'm pretty sure we
15 had it also in -- from the bottom ash from the
16 ponds.

17 **Q. Right. As far as the ash outside**
18 **of the ponds, it was just the limestone basin**
19 **that was sampled?**

20 A. Yes, that's correct, as I remember.

21 **Q. Right. And you correlated that data**
22 **to what other data on-site?**

23 A. Well, the fact that you have ash
24 in borings and you have ash in the ponds and

1 you have ash in the runoff of the basin, you
2 correlate that to the materials outside of
3 the pond that has not been tested.

4 **Q. So is it safe to say that you assumed**
5 **that the material in the limestone basin was**
6 **representative of the ash that was found**
7 **elsewhere on the site?**

8 A. Well, you can look at it from two
9 perspectives. It's a limestone basin, but
10 you also have the other data from the bottom
11 ash samples representing the bottom ash. So
12 it's a characterization of that material
13 that's been correlated to other areas of the
14 site, correct.

15 **Q. Okay. Okay. I'm going to move to**
16 **Will County.**

17 **There are no off-site sources**
18 **contributing to the groundwater impacts at**
19 **Will County; is that right?**

20 A. I think we have to be careful how
21 we define site. Recognize at Will County,
22 there is a substation property that's not
23 part of the ownership of Midwest Gen. So
24 you could almost think of that property also.

1 We have not analyzed that,
2 but I'm saying there are -- in general, I
3 would say you are correct, we have not analyzed
4 off-site sources. It's a water lot area.

5 **Q. In fact, it's an island, isn't it?**

6 A. A peninsula.

7 **Q. Peninsula.**

8 **And why is that significant**
9 **in terms of potential impacts from off-site**
10 **sources?**

11 A. They are limited areas to be off-site
12 is really why.

13 **Q. Would the water -- surface water on**
14 **either side of the peninsula serve as a barrier**
15 **from the migration of off-site sources of**
16 **contamination?**

17 A. We call it -- in hydrogeology, it's
18 a boundary condition. So the answer would be
19 we're not going to have something come across
20 the water, so to speak.

21 **Q. Okay. Thank you.**

22 **Is it your opinion that at**
23 **Will County, the groundwater impacts are from**
24 **historic on-site uses of coal ash?**

1 A. I think -- is that also in my
2 deposition report? It probably is.

3 **Q. Let's go there.**

4 A. Can I have the wording correct or
5 accurate?

6 **Q. Page 54. So here --**

7 MS. NIJMAN: Of the deposition
8 or report?

9 MR. RUSS: I'm sorry. Deposition,
10 Page 54.

11 BY MR. RUSS:

12 **Q. I'm going to start on Line 24 and**
13 **I'll keep my eyes up and somebody can tell**
14 **me when it's okay to stop.**

15 **"Question: Can you tell me what**
16 **historic uses in Will County you allege are**
17 **the source of the groundwater contamination**
18 **at that site?"**

19 **"Answer: It would be the same**
20 **as Powerton. I don't have specific historical**
21 **uses or conditions that would have caused it,**
22 **but again, I'm dealing with what I know and**
23 **what I know versus what I don't know."**

24 MR. RUSS: Is that an okay place

1 to stop?

2 MS. NIJMAN: Uh-huh.

3 BY MR. RUSS:

4 **Q. Okay. So when you say it's the**
5 **same as Powerton, what did you mean by that?**

6 A. Well, again, it's the process. You
7 kind of go through the process. When I say
8 what I know and what I don't know, I mean, that
9 I would not be a real good expert if I didn't
10 look.

11 And so I've looked at tons
12 of dates on all of these sites. So there's
13 prior reports and current testing. So I've
14 looked at a lot of things. And again, my
15 conclusion has been that there are other
16 historic uses that have not been identified
17 specifically.

18 HEARING OFFICER HALLORAN: I'm
19 sorry, Mr. Seymour.

20 THE WITNESS: I'm sorry.

21 THE COURT REPORTER: I've looked
22 at tons of dates on all of these sites.
23 So there's prior reports and current
24 testing. So I've looked at a lot of

1 things. And again, my conclusion has
2 been that there are other -- and then
3 you trailed off. If you could pick up
4 from there, that would be fabulous.

5 BY THE WITNESS:

6 A. There are other -- other uses that
7 are not specific that have not been identified
8 that are contributing to the impacts of the
9 groundwater.

10 BY MR. RUSS:

11 **Q. Okay. And is it your opinion that**
12 **the inorganics at Will County in the groundwater**
13 **are characteristic of coal ash?**

14 A. The inorganics in the groundwater are
15 also found in coal ash, but again, we have been
16 very careful to -- when you say "characterize,"
17 you know, I'm looking at characteristics of
18 this ash versus what's in this groundwater.

19 **Q. Right.**

20 A. And I've -- I'm trying to make it
21 clear that I don't think it's a match, but
22 there are characteristics in general of coal
23 ash.

24 **Q. Okay. Thank you.**

1 And I was just -- I was
2 asking that question because you said it's
3 the same as at Powerton and at Powerton,
4 you had said that constituents in groundwater
5 was characteristic of coal ash.

6 HEARING OFFICER HALLORAN: Would
7 you keep your voice up, Mr. Russ, please?

8 MR. RUSS: Yes.

9 BY MR. RUSS:

10 Q. So is that a fair comparison between
11 Powerton and Will County?

12 A. I believe so, yes.

13 Q. Okay. Thank you.

14 You used leach tests from --
15 coal ash outside of the ponds at Will County.
16 You had some leach test data; is that right?

17 A. Yes.

18 Q. That Midwest Generation or Midwest
19 Generation's consultants had generated; is
20 that right?

21 A. Yes. I said that's a KPRG report.

22 Q. All right. And do you know where
23 that sample came from geographically?

24 A. Well, it was a series of samples,

1 really. It was to characterize the area so
2 that I think there was about 50 or 20 borings.
3 They took the samples and analyzed each boring.
4 So they had a lot of tests.

5 **Q. Do you know where the borings were**
6 **located?**

7 A. It's in the -- I don't know if it's
8 been produced, but it's in the file somewhere.

9 **Q. It's on your desk. I believe it's**
10 **Exhibit 284?**

11 A. Here?

12 **Q. It's on this pile here on the left.**

13 A. Okay.

14 **Q. I think the map you were talking about**
15 **is on Page 49569?**

16 A. Yes.

17 **Q. It's a close-up of an area. So I'm**
18 **not sure if you will be able to identify the**
19 **area?**

20 A. I know the area.

21 **Q. You do know?**

22 **Can you tell me where it is?**

23 A. Well, it's at Will and it's to the
24 east of the north end of, I believe, Pond

1 1-North. If I had a larger map I could be
2 more specific.

3 **Q. Yes. Let's look at Exhibit 30-E,**
4 **which is also in that same stack on Page 42352.**

5 A. Thank you. I've got it.

6 **Q. Sir, can you identify on that drawing**
7 **where this area is located?**

8 A. It's south of Monitoring Well 1 and
9 east of Pond 1-North.

10 **Q. Okay. And do you have a sense of**
11 **how large that area is looking at it here?**

12 A. It could be determined, but it looks
13 like that's several hundred feet -- by a couple
14 hundred feet.

15 **Q. Do you remember Mr. Veenbaas's**
16 **testimony about an area where bottom ash**
17 **was stored near the ponds?**

18 A. I don't specifically recall.

19 **Q. Okay. That's fine. I'll move on.**

20 **Have you seen leach test**
21 **data for any other coal ash outside of the**
22 **ponds at Will County?**

23 A. I don't think so. I have not.

24 **Q. Again, how do you know that the**

1 **leach test for the area that was sampled in**
2 **that exhibit is representative of the coal**
3 **ash elsewhere on the site?**

4 A. Well, again, it goes back to the
5 source of the coal and the process of the
6 burning and we have seen the consistency at
7 all of the plants in that they have used,
8 you know, coal, that boilers haven't changed
9 and so I'm assuming that, yeah, in correlating
10 the data, that this is representative of ash
11 and when you look at this data, it's very
12 similar to what we found in the ash ponds.

13 **Q. So you are assuming that that ash**
14 **is similar to the other ash on the site?**

15 A. Again, I --

16 MS. NIJMAN: Objection, misstates.

17 HEARING OFFICER HALLORAN: I'm
18 sorry, Ms. Nijman?

19 MS. NIJMAN: Objection, misstates
20 testimony.

21 HEARING OFFICER HALLORAN: He can
22 answer if he is able.

23 BY THE WITNESS:

24 A. You say assume. I say it correlated

1 the data, which is the end result. It' similar,
2 the same.

3 BY MR. RUSS:

4 Q. Okay. What kinds of materials --
5 have you seen various -- have you seen -- let
6 me see. How do I want to phrase this?

7 Have you seen the boring logs
8 at Will County?

9 A. I have.

10 Q. Have you seen ash material in those
11 boring logs?

12 A. Yes.

13 Q. Have you seen the ash material in
14 those boring logs described in the same way
15 or different ways?

16 MS. NIJMAN: Objection, vague
17 overboard.

18 BY THE WITNESS:

19 A. I think if you --

20 THE COURT REPORTER: Wait.
21 You have to let the hearing officer rule,
22 please, after there's an objection.

23 HEARING OFFICER HALLORAN: Is
24 there a way you can rephrase?

1 MR. RUSS: Yes, I can, actually.

2 BY MR. RUSS:

3 Q. Let's just turn to your deposition
4 again on Page 226.

5 A. Okay.

6 Q. I'm going to start on Line 11.

7 "Question: Can you tell me again
8 what the basis was for the statement that a
9 lot of the ash at these sites is bottom ash
10 and not fly ash?"

11 "Answer: That's my understanding,
12 that fly ash is reusable and that they use
13 bottom ash as fill. Now, I'm not saying it's
14 only bottom ash. It's lots of different things
15 if you look at the boring logs."

16 MR. RUSS: Is that an okay
17 place to stop?

18 MS. NIJMAN: Yes.

19 BY THE WITNESS:

20 A. Okay.

21 BY MR. RUSS:

22 Q. So when you said many things in
23 the -- lots of different things, what was
24 that in reference to?

1 A. Well, they described it in the
2 boring logs because different people might
3 describe it differently. Some people know
4 that it's specifically bottom ash. You've
5 heard it called cinders, I think, sometimes
6 is common. I think even Fred Veenbaas has
7 said something very similar. It's a similar
8 terminology.

9 So that's what I meant.
10 so that's called -- they might call it
11 cinders and I think sometimes it could be
12 slag, but as Ms. Race said, that's a little --
13 a little bit different, but so these are
14 coal ash materials. Mostly what we see is
15 bottom ash.

16 And as I said, again, I'm --
17 I've heard that they don't put bottom ash
18 out there. They -- excuse me. They don't
19 put fly ash out there.

20 **Q. They don't put fly ash out there?**

21 A. To my knowledge, they -- they send
22 the fly ash off-site. They don't leave it
23 on-site. Its sent off-site.

24 **Q. And have they been -- have they been**

1 **doing that -- when did that start as far as you**
2 **are aware?**

3 A. I think that that is kind of a very
4 difficult question to answer, Mr. Russ. I
5 apologize.

6 **Q. You may not know.**

7 A. It goes back. I mean, you deal
8 with the data that you get from 1998 in
9 the ^^ENSE reports. Probably sometime
10 before that based on the process they
11 were following at that time. So quite a
12 while.

13 But specifically, you know,
14 I'm not the plant operator or the owner. So
15 I don't think I know precisely.

16 **Q. So can you say with certainty that**
17 **the material that was found in those boring**
18 **logs was purely bottom ash?**

19 A. Well, there's soil in it and there's
20 other things in it, too. It's fill normally.
21 So it's not characterized as bottom ash
22 normally. It's just a part of a matrix.

23 **Q. Can you say with certainty that**
24 **the only kind of ash in those boring logs**

1 **is bottom ash?**

2 A. I think you have to define certainty.
3 I mean, is that like 100 percent? Because I
4 heard -- I heard something called likely a
5 differently the other day by Mr. Kunkel.
6 I think I would say that it's a reasonable
7 assumption that it's more likely a bottom
8 ash material than a fly ash and they don't
9 make, like, other CCRs at this site to my
10 knowledge.

11 **Q. Right. Okay.**

12 **Waukegan. Is it your opinion**
13 **that some of the contamination at Waukegan is**
14 **coming from on-site historic uses of coal ash?**

15 A. Is that the same kind of statement
16 in my deposition or report, Mr. Russ? I think
17 we're going over the same questions; is that
18 correct?

19 **Q. Yes.**

20 A. I think it's a fair understanding if
21 put in the proper context.

22 **Q. Okay. Then I won't -- we don't have**
23 **the worry with your deposition then.**

24 **Actually, I think maybe we**

1 **should. So if we turn to Page 58 of your**
2 **deposition --**

3 MS. NIJMAN: I'm sorry.

4 Objection. He answered the question.

5 Is this --

6 MR. RUSS: I'm going to ask
7 another question, but I just want to
8 set it up.

9 MS. NIJMAN: Thank you.

10 BY MR. RUSS:

11 **Q. Okay. Now --**

12 A. For clarification, I think when you
13 said other historic uses, there's also the
14 upgradient issues at Waukegan.

15 **Q. That's what I want to get into now,**
16 **yes.**

17 **So is your opinion at Waukegan**
18 **that some of the boron sag on-site is coming**
19 **from upgradient off-site sources?**

20 A. Yes.

21 **Q. Is it your opinion that some of the**
22 **boron is not coming from upgradient off-site**
23 **sources?**

24 A. Well, again we've looked at it from

1 a very big perspective and then a small
2 perspective.

3 From the big perspective,
4 we see the impacts of the similar constituents
5 of coal ash and the evidence of coal ash
6 west of the Midwest Gen property that is
7 migrating onto the site. That's why we
8 have an ELUC, for example. And then --

9 **Q. Sorry to interrupt you.**

10 **Did you say there are off-site**
11 **data or boron data?**

12 A. There's barium and manganese -- you
13 know, there's barium, for example. There's
14 boring logs and anecdotal that there's influence
15 from coal ash constituents.

16 **Q. Have you seen any off-site boron**
17 **groundwater data?**

18 A. I don't recall. I think again I
19 specifically may not have done boron.

20 **Q. How about sulfate? Have you seen**
21 **any off-site sulfate data?**

22 A. Not that I recall.

23 **Q. Okay. So but you believe that some**
24 **of the boron that we have seen on-site was**

1 **coming from off-site --**

2 A. Yeah.

3 **Q. -- based on historic uses off-site?**

4 A. That and the groundwater gradients
5 and the fact that this boron is -- yes, and
6 it's coming from off-site.

7 **Q. Page 58 -- to the question of whether**
8 **some of it is coming from on-site, on Page 58 --**
9 **so I'm going to start with the question on**
10 **Line 5 on Page 59 actually.**

11 **Ms. Cassel asks, "Question: So,**
12 **to be clear, for your prior answer, you were**
13 **saying that some of the boron you're alleging**
14 **is coming from this off-site property, this**
15 **tannery, but not all of the boron that's found**
16 **in the monitoring wells at issue here is coming**
17 **from that tannery?**

18 **Is that accurate?**

19 **"Answer: That's accurate**
20 **considering there are other characteristics**
21 **of coal ash that aren't characteristic of a**
22 **tannery."**

23 **MS. NIJMAN: I'll object to**
24 **the entire prior page discussing the**

1 precursor to all of that last point.

2 MR. RUSS: I'm happy to read
3 all of that in too.

4 HEARING OFFICER HALLORAN: We
5 can read the whole thing in.

6 MR. RUSS: Yes. Where would
7 you like me to start, Page 57. It looks
8 likes it would have to be page 57?

9 HEARING OFFICER HALLORAN: Lori,
10 I will give you the deposition.

11 MR. RUSS: I'm sorry. Ms. Nijman,
12 I'm asking you where would you like me to
13 start reading?

14 MS. NIJMAN: Page 57, Line 8.

15 MR. RUSS: Okay.

16 BY MR. RUSS:

17 Q. "Question: Do you remember --
18 regardless of the documents, your bases for
19 stating that those particular constituents
20 have migrated onto the Waukegan property?"

21 "MS. NIJMAN: Object to the
22 form of the question, basis is listed."

23 "MS. CASSEL: Jennifer, I
24 would object to the spoken objections.

1 If he understands the question, he can
2 answer. You've gotten your objection
3 on the record. I would appreciate if
4 you could let him answer."

5 "THE WITNESS: Could you please
6 ask it again. It's --"

7 "MS. CASSEL: Could you repeat
8 that question, please?"

9 The last question was read by
10 the reporter.

11 "MS. NIJMAN: Asked and answered.
12 In the record."

13 "THE WITNESS: Okay. Well,
14 basically people like focus on boron, as
15 an example, of an im- -- something that's
16 coming onto the property. And that's
17 boron on the upgradient side in a number
18 of wells west of the existing facility
19 that have boron and the groundwater
20 contours, in general, move west to east
21 toward the property. So I'm saying that
22 the boron -- some of the boron, not all
23 of it could be coming from the off-site
24 property."

1 "MS. CASSEL: Where does the
2 remainder of the boron come from, in your
3 opinion?"

4 "MS. NIJMAN: Objection, vague."

5 "THE WITNESS: As I've stated
6 in the report, I believe there is some
7 historical uses at these as these properties
8 that have caused some old releases. And
9 based on the data that we have obtained
10 to date, when we look at the sampling,
11 that where it's leaching greater than
12 the groundwater quality criteria.

13 And so I don't have an
14 answer what, specifically, the historic
15 sources are. I'm saying I know what I
16 don't know in that I don't -- I know
17 that it's not coming from what we've
18 measured, but it must be coming from
19 somewhere else on-site that I've not
20 specifically identified."

21 "Question: So, to be clear,
22 for your prior answer, you were saying
23 that some of the boron you're alleging
24 is coming from this off-site property,

1 **this tannery, but not all of the boron**
2 **that's found in the monitoring wells at**
3 **issue here is coming from that tannery.**

4 **Is that accurate?"**

5 **"Answer: That's accurate,**
6 **considering there are other characteristics**
7 **of coal ash that aren't characteristic of**
8 **a tannery."**

9 MR. RUSS: I'll stop there if
10 that's okay.

11 MS. NIJMAN: That's fine.

12 BY MR. RUSS:

13 **Q. And so rather than reading the rest**
14 **of this in, can you explain what you meant**
15 **when you said there are characteristics of**
16 **coal ash that aren't characteristic of a**
17 **tannery?**

18 A. Well, when you look at the groundwater,
19 you know, you think that some other trace metals
20 or, you know, what would be kind of an idea
21 of -- that there are just things in a tannery
22 is going to be fairly limited.

23 You know, chrome and are also
24 in coal ash. So again, I'd have to look at

1 the list, if you will. Again, it's something
2 I have not analyzed other than in general and
3 I know it's listed at the tannery that came
4 from at that area, what we found, and there are
5 differences.

6 **Q. Do you still have the opinion that**
7 **some of the boron in the monitor wells at**
8 **Waukegan was coming from an on-site source?**

9 A. Yes, I believe so. I think that's
10 clearly stated in my deposition.

11 **Q. Okay. Thank you.**

12 **The reason I keep asking it**
13 **that way is because I think we've all looked**
14 **at a lot more information since the deposition**
15 **and I just want to make sure.**

16 **At Waukegan, did you have**
17 **any leach test data from ash outside of the**
18 **ash pond?**

19 A. No.

20 **Q. Are you familiar with the area that**
21 **we have been talking about, the former slag**
22 **flash area immediately west of the ash ponds**
23 **at Waukegan?**

24 A. Are you talking about what some

1 have called kind of a grassy area from the
2 west of the ponds to the west of the property
3 line?

4 **Q. To the boilers.**

5 A. I know of the area, yes.

6 **Q. Do you have any knowledge of what is**
7 **in there?**

8 A. No. I think I have shown that
9 nobody knows what's in there.

10 **Q. And so you don't have any data to**
11 **characterize the leachability of any material**
12 **that might be stored there; is that right?**

13 A. There's nothing -- there's no
14 borings or samples from that area. So we
15 are looking at what's upgradient and what's
16 downgradient.

17 **Q. Okay. And I think I'm hoping to do**
18 **that in a little bit. Maybe I can skip to that.**
19 **Yes, sure. We can get at that.**

20 **So before I do that, though,**
21 **without looking at a diagram, are you roughly**
22 **familiar with where the monitoring wells at**
23 **Waukegan are located?**

24 A. Yes, I am. I would like to have a

1 map in front of me just so I don't --

2 **Q. Sure.**

3 A. -- make a mistake.

4 **Q. Okay. So I believe -- I'm not sure**

5 **which exhibit, but we have a few of those**

6 **groundwater monitoring reports there.**

7 A. It might be here. I'll look here.

8 **Q. Which exhibit is that, for the record?**

9 A. I'm looking at 268-P Annual Quarterly
10 Groundwater Monitoring Results for the Waukegan
11 Generating Station. It might be in here. Oh,
12 here we go.

13 **Q. Okay. Just let me know when you have**
14 **that map in front of you.**

15 A. Well, recognizing this map doesn't
16 include a lot of the non-monitored --
17 non-quarterly monitored wells.

18 **Q. Right. Maybe we can look at the map**
19 **that has all of the wells.**

20 A. Can you help me with that?

21 **Q. Do you have Dr. Kunkel's binder on**
22 **your desk?**

23 A. Is this it?

24 **Q. No.**

1 A. Is this it?

2 Q. Yes.

3 A. Go it.

4 Q. Just for purposes of having a map in
5 front of you, this is Exhibit No. 411,
6 Complainants' Exhibit No. 411, site maps of
7 Waukegan. Wells MW-8 and MW-9 are located
8 in that former fly ash slag storage area;
9 is that right?

10 MS. NIJMAN: I'm sorry.

11 MR. RUSS: I'm sorry.

12 MS. NIJMAN: What page or what
13 map are you looking at?

14 MR. RUSS: Yes. These aren't
15 numbered. This is --

16 BY THE WITNESS:

17 A. The demonstrative?

18 BY MR. RUSS:

19 Q. Yes.

20 A. After 410?

21 Q. Approximately 20 pages.

22 A. Twenty pages?

23 Q. There are two maps of Waukegan on those
24 pages.

1 **So are MW-8 and MW-9 in the**
2 **former fly ash flag storage area?**

3 A. That could be debatable because it
4 looks likes they are on the edges.

5 **Q. Okay. What you said earlier, you**
6 **look at upgradient and downgradient. The**
7 **concentrations of boron in Wells 1 through 4,**
8 **I'm talking about the ponds now, are lower**
9 **than they are in upgradient wells. I believe**
10 **you said that earlier today; is that right?**

11 A. Yes.

12 **Q. How did that happen to be the case**
13 **if they're lower downgradient than they are**
14 **upgradient?**

15 A. Well, there are upgradient sources.
16 Again, I mentioned earlier, when you kind of
17 look -- when you go farther away -- if there's
18 no additive, the concentrations will decrease.

19 **Q. If there's --**

20 A. Farther away from where it originated.

21 **Q. Is it always the case that there will**
22 **be some attenuation as you move away from the**
23 **source?**

24 A. Well, the attenuation in this case

1 will pretty much be an addition of infiltration
2 or groundwater that's mixing in decreasing
3 concentrations.

4 **Q. Right. Is that always the case?**

5 **Will there always be some**
6 **attenuation when you move from a source to**
7 **a downgradient well?**

8 HEARING OFFICER HALLORAN: Keep
9 your voice up, please? I have cars,
10 traffic, everything behind me.

11 MR. RUSS: Okay.

12 HEARING OFFICER HALLORAN: Thank
13 you.

14 BY MR. RUSS:

15 **Q. I'll ask the question again.**

16 A. Thank you.

17 **Q. Is that always the case that there**
18 **will be some attenuation in groundwater**
19 **concentrations as you move from a source to**
20 **a downgradient well?**

21 MS. NIJMAN: Objection, vague,
22 hypothetical.

23 BY THE WITNESS:

24 A. I think the word always is too

1 encompassing.

2 HEARING OFFICER HALLORAN: Overruled.

3 You can answer.

4 Go ahead, Mr. Seymour. I'm sorry
5 for interrupting.

6 BY THE WITNESS:

7 A. I think I interrupted. I apologize.
8 This is not my profession as far as testifying.

9 The word always, to me, is a
10 bit broad and because groundwater hydrogeology
11 is very complicated and if you think you know
12 everything, for example, this is the high
13 concentration moving downgradient and it's
14 lower, I've seen the opposite happen and
15 you don't know why.

16 It's normally because you
17 don't have a monitoring well everywhere
18 where it might be the highest or the lowest.
19 So it's not -- you don't always see that in
20 real life.

21 BY MR. RUSS:

22 **Q. But you did see it in this case**
23 **with this site?**

24 A. From the west of the ash ponds to

1 the east of the ash ponds, it decreases,
2 yes.

3 **Q. Do you expect that it would have**
4 **decreased from those ELUC wells we were**
5 **talking about, Wells 10 through 14, moving**
6 **towards the lake?**

7 A. Well, again it -- this is the
8 compilations of our studies. It can and it
9 will and in general, if you can measure it
10 in all the locations. So you could make
11 that accurate assessment because it isn't
12 always the case because you don't have the
13 data to show it because again, you only have
14 so much data to look at and if it doesn't, it
15 wouldn't surprise me. If it does, it would
16 be expected.

17 **Q. Okay. So staying with Wells 1**
18 **through 4 for a minute, do you remember**
19 **roughly what the concentrations of boron**
20 **was in those wells?**

21 A. They were down around the -- I
22 think they were less than the -- well, I can
23 look at it.

24 **Q. Yeah. That would be great. I don't**

1 **know what exhibit that is.**

2 A. I know it's very low. In my world,
3 it seemed very low by comparison, but we have
4 some graphs here at this January 22, 2015,
5 groundwater monitoring report.

6 **Q. Okay.**

7 A. And just in general, I can tell you
8 what was going on at that time.

9 The boron levels for Monitor
10 Wells 1 through 4 -- excuse me -- 2, 3 and 4
11 were down around the Illinois groundwater
12 standard. That standard would apply in the
13 GMZ zone, of course.

14 **Q. I'm sorry. Is there a GMZ at Waukegan?**

15 A. Excuse me. There is -- there is not.
16 You're right.

17 **Q. Thank you.**

18 A. There's ELUC. And in Monitor Well
19 1, it's above the standard, but the levels --
20 remember the standard is two milligrams per
21 liter.

22 **Q. So it's around two?**

23 A. The standard is two.

24 **Q. Yeah.**

1 A. And three of the wells are below
2 that standard and one is above Monitor Well 1.

3 **Q. Hypothetically, if the concentrations**
4 **in those wells doubled over the course of a year**
5 **and the upgradient concentrations of boron**
6 **didn't change at all, what would that tell you**
7 **about the ash ponds?**

8 A. I think that's a very general question,
9 Mr. Russ.

10 I think, in general, if you
11 examine a site, it could mean one of a couple
12 things. One is that something has moved
13 through that you had not previously depicted,
14 in other words, I would call it a slug. So
15 it could have been a higher concentration
16 upgradient and its passed below the ponds
17 here and then you finally detected it.

18 So it could be coming from
19 upgradient as a slug. I think that that is
20 one of the situations and as you had said,
21 if it is from a leaking pond, if that was
22 the case, you could see that, but I'm saying
23 there is more than one scenario where there
24 could have happened.

1 **Q. All right. And for the record,**
2 **that has not happened here. That's just a**
3 **hypothetical, but in that case, if the ponds**
4 **were leaking and that was happening, the**
5 **downgradient concentration of boron would be**
6 **lower and the upgradient concentration. It**
7 **would have doubled from -- is that right,**
8 **given your understanding of the upgradient**
9 **concentrations?**

10 A. You know, I -- I -- this is very
11 hypothetical. I really would have to --
12 you know, it's never that simple. You have
13 to look at, say, the whole -- the whole
14 problem, if you will, and you just can't
15 look at it from Point A to Point B with one
16 compound.

17 You would have to look at
18 the other data as well because again, these
19 groundwater -- it does not behave as you
20 should -- as you think it should.

21 **Q. Sure. The reason I'm asking about**
22 **these is because you've used the gradient**
23 **and the upgradient and the downgradient route**
24 **to form a lot of your other opinions. So**

1 I'm trying to flesh out how that works for
2 you.

3 A. I understand. And when I formed my
4 other opinions, I had the ability to look at
5 all the data and make a conclusion.

6 Q. Sure.

7 A. And what you're presenting me with
8 is this hypothetical information.

9 Q. Yeah. I guess the point I'm -- okay.
10 Let me just ask this one more way and then maybe
11 take a break for lunch.

12 Are you roughly familiar with
13 the concentration of boron in MW-5?

14 A. In general, we know that is of higher
15 concentration than downgradient.

16 Q. In looking at the exhibit you just
17 had in front of you, roughly what was it?

18 A. Well, in 2015, Monitoring Well 5
19 looked to be between 30 and 40 --

20 Q. Okay.

21 A. -- in general, milligrams per liter.

22 Q. So that's roughly 15 to 20 times
23 higher than in the downgradient well; is that
24 right?

1 A. It is much higher, yes, in that
2 regard. Again, this is as of actually the
3 end of 2014, I believe. So it doesn't
4 represent all the data, but it's in
5 that range.

6 **Q. Using the data, how do you know**
7 **that the ponds aren't leaking?**

8 A. Well, if you think that the area
9 upgradient of the pond was higher, it's
10 lower downgradient. You're going to --
11 again, looking at all the data that we've
12 looked at including the construction and
13 the operations and all those kinds of things,
14 I would conclude that it would not be the
15 source.

16 **Q. How did --**

17 A. The pond would not be the source.

18 **Q. Right. How would groundwater data**
19 **form that opinion?**

20 A. As I said, you know, we've had a
21 chance to look at all the data and that
22 upgradient is higher and you would not expect
23 upgradient of the pond to get higher. You
24 would expect downgradient to be higher.

1 **Q. If the ponds were leaking --**

2 A. If they were leaking --

3 **Q. -- the downgradient would be higher?**

4 A. You would think so, but we don't --

5 and again, when we look at that, again, in

6 reverse relationship from what you need to

7 prove it was a leaking pond plus all the

8 other data.

9 **Q. Right. Okay. Thank you.**

10 MR. RUSS: That's actually

11 all I have on that particular point.

12 Do you want to take a

13 break for lunch?

14 HEARING OFFICER HALLORAN: Yes.

15 Let's take a break for lunch. See you

16 back here at, geez, 1:50. Thank you.

17 (Whereupon, after a short

18 break was had, the following

19 proceedings were held

20 accordingly.)

21 HEARING OFFICER HALLORAN: All

22 right. Good afternoon. We are back on

23 the record. We just took a lunch. It's

24 approximately 1:55.

1 Before we continue with
2 Mr. Russ's cross of Mr. Seymour, we have
3 two members of the public who would like
4 to give a five-minute public comment each.

5 You can just step up to
6 the podium, if you will. State your name
7 for the record and you may proceed.

8 MS. SHANLEY-ROBERTS: My name is
9 Eileen Shanley-Roberts.

10 I am a resident of Waukegan,
11 Illinois. I have lived there since 2007 and
12 I would like to thank you for taking the time
13 to hear my comments.

14 I'm the rector of Christ
15 Episcopal Church. I'm the mother of Emily
16 and Abigail and the aunt of Casey. I live,
17 work and am raising a family in downtown
18 Waukegan about a mile from Waukegan Harbor.

19 Our beautiful lake is one
20 of my favorite parts of our community. As a
21 resident and parent, I'm deeply concerned
22 about the effects of pollution on our community.

23 I am a boater. I have a
24 sailboat in the harbor. My parents, who are

1 in their 80s, kept their boat in the harbor
2 for a number of years. All three of my
3 girls, who range in age from 21 to 13, began
4 sailing through Waukegan Junior Sail Program.

5 Being on the water and the
6 independence and confidence that comes from
7 learning to drive a dingy offers some tremendous
8 advantages for young women.

9 Emily began sailing when she
10 was 12. The other two started when they each
11 turned six. Part of Waukegan sailing involves
12 taking boats out on that big lake and going to
13 the beach. Kids love to explore the shoreline.
14 One of their favorite areas is near the power
15 plant where the warm water discharges into the
16 lake, which apparently has altered the ecology
17 there and drawing more fish and birds to the
18 site.

19 Knowing that the corporation
20 has dumped significant amounts of ash on its
21 sites in insufficiently protected areas,
22 including the shores of Waukegan where my
23 family enjoys Lake Michigan, is so troubling.

24 Coal ash contains a myriad

1 of dangerous pollutants and I'm concerned
2 that a corporation is allowed to dump its
3 ash even temporarily on a site along Lake
4 Michigan and then flush its wastewater from
5 the wash ponds directly into the water where
6 our community swims, sails and fishes.

7 The coal ash is located in
8 an area that naturally attracts human and
9 other animals. Most people are not aware
10 of the existence of the ash let alone what
11 toxins coal ash contains. Fish and birds
12 are certainly unaware of the risks.

13 Although the ponds are lined,
14 there continues to be evidence of pollutants
15 that are commonly found in coal ash leaching
16 into the groundwater across the Waukegan site.
17 The health effects of exposure to these
18 chemicals often do not appear until decades
19 after the exposure.

20 The Waukegan Municipal Swimming
21 Beach is just south of the coal plant where
22 families swim, paddle board and many fish as
23 an important part of their diet. What are
24 they ingesting? Are the present benefits of

1 gaining skill and confidence in a lifelong
2 sport, enjoying the magic of one of our great
3 lakes, and putting food on the tables worth
4 the long term health risks?

5 I still keep my boat in
6 Waukegan Harbor. I still enjoy our beautiful
7 lake that I can see from my windows and I
8 visit the beach in the summer.

9 My younger kids no longer
10 sail through Waukegan Junior Sail. They sail
11 in Lake Forest where I can see the smoke from
12 the plant from safer distance and know that
13 girls are not being exposed to toxins leaching
14 into the lake.

15 I live in Waukegan. My kids
16 could ride their bikes to the harbor. I choose
17 not to have them participate in a program
18 minutes away from home and instead drive
19 them to another community. The residents of
20 Waukegan who are aware of the ash located in
21 Waukegan choose to avoid our local lakefront
22 because of its toxic legacy and go to other
23 communities for outdoor recreation. We
24 shouldn't need to do this.

1 Also, as a city, Waukegan
2 has been saddled with the cost of cleanup
3 from heavy industry. We've been stymied in
4 our economic redevelopment efforts in part
5 because of the fear of exposure to industrial
6 toxins. Energy's failure to address the
7 current coal ash scattered around the
8 site and begin remediation of the abandoned
9 coal ash disposal areas continues the
10 pattern of industrial exploiting of
11 impoverished communities endangering the
12 health of its residents and walking away
13 from the problem.

14 The economic future of our
15 hometown depends on our ability to transform
16 our lakefront from the legacy of industrial
17 pollution to a shoreline that attracts
18 sustainable businesses, recreation and
19 tourism.

20 Creating sacrifice with
21 high levels of coal ash pollution along our
22 shoreline would make it hard for our community
23 to eventually transition towards the future we
24 need. The federal government is showing no

1 willing to protect the people of my
2 community from corporate greed.

3 It is up to the state of
4 Illinois to hold NRG and other polluters
5 accountable for their actions and require
6 that they change the way they handle toxic
7 waste. Negative impact on the economic and
8 physical health of communities and people
9 is far more important than the profitability
10 of a major corporation.

11 Please increase your
12 oversight of these plants. Require the
13 safest handling of ash possible and make
14 sure cleanup costs do not fall on us as
15 taxpayers. Thank you.

16 HEARING OFFICER HALLORAN: Thank
17 you, Ms. Roberts. The Board will read
18 this. Thank you.

19 MS. ROBERTS: Thank you.

20 MS. FLORES: I'm Celeste Flores.

21 Good afternoon, your Honor.
22 Thank you for this opportunity to be speaking
23 today. I was born and raised in Lake County.
24 I care deeply about the protection of our

1 earth and the community from environmental harm.

2 I'm the Lake County outreach
3 director with Faith In Place. Our office is
4 just a mile from the Waukegan Harbor. I empower
5 people of all faiths across Lake County to be
6 leaders in taking care of the earth. I
7 do this by providing resources to educate,
8 connect and advocate for healthier
9 communities.

10 I fell in with love nature
11 at a young age. Growing up, I enjoyed biking
12 and walking in a Lake County forest preserve.
13 Many residents, I had no idea there was a
14 coal fire power plant or a coal ash storage
15 spawn on-site. I learned this after I learned
16 about the threats of coal pollution as I was
17 doing my undergrad in Kentucky.

18 When I returned home, I
19 learned about the coal impacts and how it
20 continues to impact my family's hometown
21 of Waukegan. Waukegan has been a devastated
22 legacy of pollution on what is now a working
23 class Latino community on the shorelines of
24 Lake Michigan with limited resources to

1 access to health and care.

2 As a community leader, I'm
3 fearful for the affects of the coal and ash
4 pollution in our communities and I know we
5 deserve better. There have been and continue
6 to be dedicated groups of community members
7 and faithful leaders that clean the Waukegan
8 beach and lakefront on a weekly basis.

9 As community members, we
10 are working to keep trash and other waste
11 from our lake. A corporation should do the
12 same. No corporation should be able to dump
13 ash on or near our shores of Lake Michigan
14 and walk away without cleaning up its mess.

15 Waukegan residents have a
16 right to swim, play and enjoy in Lake Michigan
17 without worrying about exposure to pollution
18 from NRG's coal ash dumping grounds next to
19 the shore. We know that even with liners,
20 coal ash contaminates, can leach into
21 groundwater and adequate protection is not
22 coming from the federal government.

23 Waukegan residents need to
24 be able to rely on the Pollution Control

1 Board to hold corporations accountable when
2 corporation pollution has been dumping
3 without adequate protection.

4 As a community, we are ready
5 to no longer be dumping grounds for energy. The
6 time has come to set a new precedent
7 for Waukegan where corporations are held
8 accountable to clean up their pollution
9 and leave sites and healthier options for
10 the future we use. We cannot move forward
11 when corporations like NRG are able to
12 continue polluting our groundwater and
13 walkway without cleanup.

14 I'm asking that you think
15 about the future of Waukegan. The future
16 of Waukegan is with our students, bright
17 individuals that are proud to be from Waukegan
18 and have become so involved and they've
19 educated, connected and advocated for the
20 environment and for their community. They
21 don't want the future to be burdened by
22 industrial pollution or coal ash.

23 Me, Dillon, who is here with
24 me, and all of the students in the community,

1 are going to inherit the legacy that NRG leaves
2 us. I ask the Board to help make sure that this
3 legacy is one of health and the tax dollars
4 don't pay for it.

5 Thank you for your time. Thank
6 you.

7 HEARING OFFICER HALLORAN: Thank
8 you and thank you both. I promise the
9 Board will read your comments.

10 MR. WANNIER: Your Honor, I
11 just personally want to thank you for
12 making the time for this.

13 As we discussed, because
14 the case is probably going to be
15 finishing sooner, there were a couple
16 of other potential commenters from
17 other sites that are at issue that
18 weren't going to be able to make
19 it here personally, I just wanted to
20 request that maybe we could submit
21 written comments into the record?

22 HEARING OFFICER HALLORAN: Oh,
23 yes, yes. As I stated earlier, I'll
24 set a briefing period for written

1 comments.

2 MR. WANNIER: Thank you very
3 much.

4 HEARING OFFICER HALLORAN: Thank
5 you.

6 All right. Let's go off
7 the record for a second.

8 (Whereupon, a discussion
9 was had off the record.)

10 HEARING OFFICER HALLORAN: We're
11 back on the record.

12 Mr. Russ, you can continue
13 with the cross of Mr. Seymour.

14 BY MR. RUSS:

15 **Q. I would like to hand you something**
16 **that you cited in your report, I believe.**

17 **Does this look familiar to**
18 **you?**

19 A. Yes, I think so.

20 MR. RUSS: Okay. I was hoping
21 we could project it on the screen,
22 Mr. Hearing Officer. Would that be okay?
23 So I could point to it with a laser
24 pointer?

1 HEARING OFFICER HALLORAN: Sure.

2 MS. NIJMAN: I -- it's not our
3 exhibit. I mean, I don't -- I don't know --

4 HEARING OFFICER HALLORAN: Yes.
5 If they don't agree -- I thought you had
6 your own, but it doesn't sound like
7 they're going to agree. So we'll
8 just have to do it the old fashion
9 way.

10 MR. RUSS: Okay.

11 BY MR. RUSS:

12 **Q. Okay. Before the break, I believe**
13 **you said -- I'll stand up so my voice carries**
14 **better -- what you want to see is higher**
15 **concentrations downgradient than upgradient**
16 **when we were talking about the ash pond.**

17 **Do you remember that?**

18 A. Well, I -- I characterized it amongst
19 other things, right.

20 **Q. And in order to determine whether**
21 **the ash ponds were a source of contamination?**

22 A. Yes.

23 **Q. Now, do you see the wells designated**
24 **MW-5 and MW-7?**

1 A. Yes.

2 Q. Those -- looking at their boring
3 concentrations, those two wells have the
4 highest boring concentrations on-site; is
5 that right?

6 A. Well, as of this time, they --
7 they -- on this display that you have,
8 they appear to be the highest.

9 Q. Right. And if you wouldn't mind
10 also opening up -- it's right in front of
11 you already -- Dr. Kunkel's demonstrative
12 Exhibit No. 411. I believe it's just a
13 couple of pages after those maps. That's
14 it right there on the left -- on the right.

15 A. This?

16 Q. He has a median concentration of
17 boring and sulfate.

18 Do you see that?

19 A. This is from his report, do you
20 say?

21 Q. It's the demonstrative exhibit that
22 we used in October.

23 A. I see it. I see it.

24 Q. We may have used them this month too.

1 **Is that consistent in**
2 **terms of MW-5 and MW-7 having the highest**
3 **concentrations of boron?**

4 A. Five and seven?

5 **Q. Yes.**

6 A. On this list, they are the highest
7 concentrations on this page.

8 **Q. Yeah. And those two wells are**
9 **immediately downgradient of the area we've**
10 **been talking about at the former fly ash**
11 **slag storage area; is that right?**

12 A. Yes.

13 **Q. What wells are immediately upgradient**
14 **of that area?**

15 A. There's several, Monitor Wells 6, 8
16 and 9, for example.

17 **Q. Six, 8 and 9, what are the boron**
18 **concentrations in 6, 8 and 9?**

19 A. Six is 2.9, 8 is 24 and 9 is 6.3.

20 **Q. Those concentrations are lower than**
21 **they are in MW-5 and MW-7; is that right?**

22 A. Correct.

23 **Q. So is it fair to say that something --**
24 **as the groundwater moved from those upgradient**

1 **wells to the downgradient wells was adding**
2 **boron to the groundwater?**

3 A. Well, we -- we spoke a little bit
4 about this less specifically before the lunch
5 and my -- my belief, yes, you can see that
6 they are higher and that there could be
7 some contributions except that, you know,
8 between Monitor Wells 6, 8 and 9, you don't
9 really know if you are actually measuring
10 the higher concentration.

11 In fact, at 8, it's 24.
12 The difference between 24 and 40, for example,
13 and a quarter can be substantial or it could
14 be not substantial. So if there's another
15 well -- or at the time, you may see higher
16 concentrations at that upgradient site.

17 **Q. There are a number of other**
18 **upgradient wells there, further upgradient.**

19 **Are there any wells of**
20 **higher concentrations than MW-5 and MW-7**
21 **on-site?**

22 A. Well, upgradient in this sense,
23 if I had the groundwater flow contour, I
24 think you'd find upgradient is kind of the

1 General Boiler property and there's -- the
2 ELUC wells are not on that property. They
3 are on the property boundary.

4 **Q. Would you turn to -- well, let me**
5 **just pause for a second.**

6 **Are they upgradient of the**
7 **fly ash slag storage area?**

8 A. Are what?

9 **Q. The ELUC wells.**

10 A. Not all of them.

11 **Q. Okay. Are there any -- are there**
12 **any wells on-site with higher concentrations**
13 **than MW-5 and MW-7?**

14 A. On this display, there are -- they --
15 those are the two highest.

16 **Q. So let's turn to sulfate in --**

17 A. Sorry.

18 **Q. What are -- MW-5 and MW-7 also has**
19 **the highest sulfate concentrations on-site.**

20 MS. NIJMAN: Object to time
21 period, vagueness.

22 MR. RUSS: On Page 45512, if
23 you're looking for it.

24

1 BY THE WITNESS:

2 A. This page?

3 BY MR. RUSS:

4 **Q. No. I'm sorry. I was asking about**
5 **the dating on Page 45512 and then I'll ask you**
6 **about Dr. Kunkel's report.**

7 A. I apologize. I couldn't even read the
8 Bates number.

9 **Q. Yeah. It says it on the bottom here.**

10 A. And the question is about sulfate?

11 **Q. Yeah.**

12 A. The sulfate at MW-7 and MW-5 are
13 the highest that I can see here and then we
14 have others that are similar. They are -- you
15 know, they are similar, but not quite as high.

16 **Q. When you say "similar," what's the**
17 **concentration of sulfate in MW-5?**

18 A. MW-5 is 640.

19 **Q. What's the concentration of sulfate**
20 **in MW-7?**

21 A. 690.

22 **Q. How about MW-8?**

23 A. 370. I think that's where I was
24 going with it. It's lower at 8, but at any

1 point in time you may see fluctuations.

2 **Q. At this point in time, the sulfate**
3 **concentrations in MW-7 were twice as high as**
4 **they were in MW-8, roughly; is that right?**

5 A. A little less than that.

6 **Q. And in Dr. Kunkel's report, the**
7 **median values being an average over long**
8 **periods of time, if you concede that median**
9 **is a kind of average?**

10 A. It's not.

11 **Q. Well, that's -- let's just say it's**
12 **a median.**

13 A. Okay. It is a median.

14 **Q. It's a median calculated from a**
15 **time series.**

16 **What's the sulfate**
17 **concentration?**

18 A. Mr. Russ, I'm not sure that this
19 is a median. It says median, but I guess
20 it's over the time period available when
21 this report was written, I presume.

22 **Q. Yeah. This is --**

23 A. Just reflect that a median is not
24 an average, but go ahead.

1 **Q. Well, okay. That's a magic point, but**
2 **okay.**

3 **A. No, it's a mathematical point.**

4 **Q. Let's take a look -- a median is**
5 **not a mean. I'll give you that much, but what**
6 **is the median concentration of sulfate in**
7 **MW-7?**

8 **A. In this map?**

9 **Q. Dr. Kunkel's report.**

10 **A. MW-7's sulfate is 690. It's the**
11 **same as this well.**

12 **Q. How about MW-8?**

13 **A. 370, which is the same as this well.**

14 **Q. So again, over a long period of time,**
15 **the median concentration at MW-7 is roughly**
16 **twice as high as it was in MW-8; is that right?**

17 **A. A little less than that, yes. But**
18 **I still take issue with this table because I**
19 **don't know how he -- if he really calculated**
20 **median or the mean.**

21 **Q. Well, if you'd like to turn the page --**
22 **he has individual data for Well MW-7. I'm**
23 **sorry. Well, if you don't mind me flipping**
24 **through, I can't remember whether he listed**

1 **this before or after his data charts. It might**
2 **be it's here.**

3 A. I don't need to look at this.

4 **Q. I think you might because what I want**
5 **to show you --**

6 A. Is it the time share --

7 HEARING OFFICER HALLORAN: You
8 really have a talk one at a time and back
9 not towards the court reporter nor myself.

10 MR. RUSS: I'm sorry.

11 BY THE WITNESS:

12 A. I've got to look at the time series
13 because I know there's some issues with these
14 data as for inaccuracies. And so I don't know
15 how much I can reply on these data.

16 BY MR. RUSS:

17 **Q. Well, let's assume for the record --**
18 **you know, these -- you don't have to treat**
19 **these as accurate, but according to the data**
20 **that Dr. Kunkel presented, you can see the**
21 **values he used to calculate the mean, the**
22 **median, the maximum and minimum in that table;**
23 **is that right?**

24 A. I can't see the values that he used

1 to make the calculation. I see the end point
2 of the calculation.

3 **Q. I believe the values that he used**
4 **are above on the page that you're looking at.**

5 A. These are -- this is the result.
6 This is not the background data he used to
7 calculate the result.

8 **Q. If you look --**

9 A. No.

10 **Q. -- the page I was just trying to**
11 **turn you to, if you -- if you turn past the**
12 **charts --**

13 A. But again --

14 THE COURT REPORTER: Wait, wait,
15 wait. You have to let him finish the
16 question.

17 MR. RUSS: Hearing Officer,
18 are you also looking at Exhibit 411?

19 HEARING OFFICER HALLORAN: No.
20 I'm looking at your map. I have yet to
21 go to 411.

22 Would you like me to
23 go to 411? I didn't know there was
24 a question yet.

1 MR. RUSS: Not necessarily.

2 I just was trying to figure what we're
3 looking at so we're all on the same
4 page.

5 BY MR. RUSS:

6 Q. If you turn to Exhibit 411 passed
7 his time series plots for Waukegan, you will
8 find tables of data.

9 A. I understand there are tables there.

10 Q. I would like for you to look at them.

11 A. I -- why would you want me to look
12 at them. Again, I've just said --

13 Q. Sir, please look at them.

14 A. The data are inaccurate.

15 Q. I understand.

16 Do you see a table of data
17 for MW-7?

18 A. I see Tables 7 and 8, yes.

19 Q. And you see a time series of data?

20 A. I do.

21 Q. And as far as the data that
22 Dr. Kunkel had, what was the mean value for
23 MW-7 he calculated?

24 A. He calculated for MW-7 a mean of --

1 which, boron or sulfate?

2 **Q. Sulfate.**

3 A. He calculated a median of -- for 7
4 of 690.

5 **Q. I'm asking about the mean on the**
6 **page you were just looking at.**

7 A. It doesn't say which is the mean.
8 I'm sorry.

9 **Q. You're right. I'm sorry. If you**
10 **flip to the first well in that series, you'll**
11 **see where he -- how he's organized the data.**
12 **There, you can see at that -- I believe the --**
13 **I don't have a copy of it in front of me, but**
14 **I believe the second value in his summary**
15 **statistics is a mean.**

16 A. He shows the mean, yes, as a second
17 value below the sulfate concentration for 8.
18 I see it. I see it, yes.

19 **Q. Okay. So what is the mean sulfate**
20 **value for MW-7?**

21 A. It's 280 milligrams per liter. Excuse
22 me. It's 380 milligrams per liter.

23 **Q. For MW-7?**

24 A. I'm sorry. That's MW-8. MW-7 is 666.

1 **Q. And MW-8?**

2 A. It is 380.

3 **Q. So the mean sulfate concentration for**
4 **MW-7 is higher than the mean concentration of**
5 **MW-8 over time?**

6 A. Over time, it is.

7 **Q. Are there any other wells upgradient**
8 **of the former fly ash slag storage area?**

9 A. Well, 8 is. Six and 8, as I mentioned,
10 are upgradient.

11 **Q. Upgradient of the fly ash slag storage**
12 **area have higher concentrations of sulfate than**
13 **MW-5 and MW-7?**

14 A. I don't -- I'd have to look at all the
15 data. I don't recall.

16 **Q. So the concentrations of both boron**
17 **and sulfate increased moving from upgradient**
18 **to downgradient across the former fly ash slag**
19 **storage area; is that accurate?**

20 A. It is for this data series that's
21 shown.

22 **Q. Does that not suggest that the land**
23 **between upgradient and downgradient wells is**
24 **contributing boron and sulfate to the**

1 **downgradient wells?**

2 A. As I mentioned, along the upgradient
3 side -- well, first of all, along the upgradient
4 side, you have the two wells. You don't know if
5 you've captured the center of the mass, if
6 you will, the higher concentration. So what
7 you're saying is accurate, but it doesn't
8 necessarily mean you're adding boron to that --
9 from that parcel.

10 **Q. Is it possible that that parcel**
11 **is contributing boron and sulfate to the**
12 **groundwater?**

13 A. Well, you said possible and that's
14 pretty -- is that more likely than not? I
15 don't know. I don't think -- I don't think
16 so. I mean, all I can say is I don't really
17 have enough to say more likely than not. I'd
18 say what I see is that it's higher at this point
19 in time and recognize that the Illinois standard
20 for sulfate is 400 and this is 690.

21 **Q. Did the Illinois standard for sulfate**
22 **have any bearing on whether the concentration**
23 **increase from upgradient to downgradient?**

24 A. No. I'm putting it into perspective

1 for the reader.

2 Q. So I want to move on to your matching
3 analysis.

4 I would like you to turn to --
5 I think we might have to flip back and forth
6 between your first report and your supplemental
7 report, which I think are both in your binder.

8 The supplemental report, if I
9 remember correctly, is exhibit -- I can't
10 remember the exact numbers right now. Exhibit
11 904, I think, is your supplemental report?

12 A. What are you asking me again? I'm
13 sorry. What? 904?

14 Q. Yes. I'm just going to be asking
15 you a couple questions about your supplemental
16 report and your original report.

17 Your supplemental report
18 is Exhibit 904; is that right?

19 A. Yes.

20 Q. And your original report is Exhibit
21 903; is that right?

22 A. It's within there, yes.

23 Q. Sorry. I just want to make sure I
24 have this right.

1 **Now, the supplemental report**
2 **replaced Tables 5-4 and 5-5 in your first**
3 **report; is that right?**

4 A. It looks like, yes, that's what we've
5 done.

6 **Q. Okay. And the updated tables that**
7 **you've been talking about this morning with**
8 **Ms. Nijman are an updated version of the same**
9 **table; is that right?**

10 A. Yes. With the new data with the
11 different time series, I believe.

12 **Q. Were the methods you used to generate**
13 **the new tables the same as --**

14 A. Excuse me. This is the -- the data
15 in the supplement is 2014. This is a corrected
16 data table.

17 **Q. Right.**

18 A. So it's not the data tables we had
19 been presented, the updated 2017.

20 **Q. Exactly. Thank you for clarifying.**

21 **So the data in your**
22 **supplemental report from 2014, the data in**
23 **the demonstrative exhibits are 2016 to 2017?**

24 A. Correct.

1 **Q. Were the methods you used to generate**
2 **what is shown here as Table 5-4 the same methods**
3 **that you used to generate the new Table 5-4?**

4 A. The method in the Exhibit 904 is the
5 same method that we used for the demonstratives.

6 **Q. Okay. Thank you.**

7 **Now, the Tables 5-4 and 5-5,**
8 **the reason why I was mentioning your original**
9 **report here, they refer back to Tables 5-1 and**
10 **5-2 for the leachate data; is that right?**

11 A. For the comparison data, yes.

12 **Q. Okay. In your original report?**

13 A. Yes.

14 **Q. Okay. So we might have to go back**
15 **and forth between the two.**

16 **Now, if you had a leachate**
17 **value and a groundwater value that were**
18 **identical, that would be a match in your match**
19 **analysis, correct?**

20 A. Well, even if it wasn't necessarily
21 identical, if they are the same constituent,
22 we -- we'd call that a match.

23 **Q. Yeah. But if -- if you had a boron**
24 **concentration of three in leachate milligrams**

1 per liter, a boron concentration of three
2 milligrams per liter in groundwater, that
3 would be a match, right?

4 A. Yeah. I think that would be unusual.
5 It doesn't happen quite that simply, but it
6 would be a match.

7 Q. Okay. Thank you.

8 Now, on these tables for
9 each well, you derived a percentage that
10 you described as a percentage of observed
11 constituents that are not consistent with
12 indicators with leachate from ash currently
13 stored in impoundment; is that right?

14 A. Yes.

15 Q. Did you intend for this matching
16 analysis to support conclusions about ash
17 outside of the impoundment?

18 A. Only to the sense that we can
19 understand what is in it, that could be.

20 Q. Okay.

21 A. It's a good baseline to start.

22 Q. Would it be fair to describe the
23 observations in the numerator of these
24 percentages as a mismatch?

1 A. For this, because it's inconsistent,
2 we're showing that -- I guess, as I said early
3 today, it goes in a numerator if it is
4 inconsistent, a mismatch.

5 **Q. So a mismatch is a fair**
6 **characterization?**

7 A. I think that's okay.

8 **Q. And to simplify a little, mismatches**
9 **in your approach count against the possibility**
10 **that groundwater has been contaminated by coal**
11 **ash; is that right?**

12 A. Yes, in the increase in the likelihood
13 that it's not from the ash in the pond.

14 **Q. Okay. In your deposition, you were**
15 **asked about benzene.**

16 **Do you remember this?**

17 A. I don't recall.

18 **Q. And we will turn to Page 79 of your**
19 **deposition to refresh your memory.**

20 A. Page 79, did you say?

21 **Q. Yes.**

22 A. I see it.

23 **Q. Without going through and reading**
24 **the transcript into the record, if you could**

1 just look at that to refresh your memory,
2 I'll just ask you a question about it.

3 Would the presence of benzene
4 in the groundwater effect --

5 A. Do you want me to read this?

6 Q. Just to refresh your memory.

7 A. I haven't finished yet.

8 Q. Oh, okay. I'm sorry. I'm sorry.

9 A. Okay I've read it.

10 Q. Okay. Is benzene a constituent of
11 coal ash?

12 A. No. I think the discussion here,
13 though, doesn't define it.

14 Q. That's okay. I'm just asking -- I'm
15 just giving you that to refresh your memory and
16 I'm just asking you now.

17 So benzene is not a
18 constituent of coal ash. Would finding benzene
19 in groundwater affect your conclusions about
20 the presence or absence of coal ash?

21 A. As long as -- I mean, to me, it's
22 almost data that you would not consider in
23 your analysis.

24 Q. Okay. Thank you.

1 **So a non-indicator, something**
2 **that's not in coal ash, does not say anything**
3 **about the presence or absence of coal ash; is**
4 **that fair to say?**

5 A. Say that again, please.

6 **Q. A non-indicator, something that's**
7 **not -- a constituent that's not an indicator**
8 **of coal ash, the presence or absence of that**
9 **chemical in groundwater shouldn't have any**
10 **bearing on your conclusion about the presence**
11 **or absence of coal ash; is that right?**

12 A. That's kind of complicated. I'm
13 sorry, Mr. Russ. One more time. I'll try
14 to concentrate very carefully.

15 **Q. What you said about benzene, I**
16 **believe, is it shouldn't have any -- it**
17 **shouldn't be in the analysis?**

18 A. It would not be in the analysis.

19 **Q. And why is that?**

20 A. It's not an indicator of coal ash.

21 **Q. Okay. Right. And that's what I'm**
22 **asking.**

23 **So something that's not an**
24 **indicator of coal ash shouldn't have any**

1 **bearing on your determination of whether or**
2 **not there's coal ash in groundwater?**

3 A. I would think -- yes, I think that
4 would be correct.

5 Q. Okay. Can you turn to Table 5-4
6 in your supplement? You had it arranged by
7 site. So there's a Table 5-4 in Waukegan.
8 That site had the fewest wells so I think
9 it will be the easiest to look at.

10 A. I see it.

11 Q. Some of these are highlighted in
12 blue, right?

13 A. Yes.

14 Q. What does that signify?

15 A. It was not matching.

16 Q. And some of the cells are white
17 and some of the cells are green. Can you
18 just explain what the different colors mean?

19 A. The whites where they match and
20 the green where they don't match. The data
21 are inconsistent in the green.

22 Q. So what's the difference between
23 green and blue?

24 A. It was flagged, as you can see, in

1 the ash. It was not found in the EPRI data.

2 I believe that's why it's flagged.

3 **Q. Okay. Okay. And --**

4 A. It also may not have been analyzed in
5 the EPRI data. I'd have to look.

6 **Q. Okay. Let me -- I believe you have**
7 **a legend for this table someplace. Do you**
8 **remember where that was?**

9 A. I think it's at the end.

10 **Q. Yep. Can you -- can you read for me**
11 **what the -- what you wrote that the blue cells**
12 **mean?**

13 A. Blue shading indicates the constituents
14 had not -- that is not an indicator of leachate
15 from ash stored in the impoundments was detected
16 during at least one quarterly groundwater
17 monitoring event in 2014.

18 **Q. Right. Okay. Thank you.**

19 **And then turning back to the**
20 **Waukegan table, all of the blue cells are in a**
21 **row for iron; is that right?**

22 A. Yes.

23 **Q. And for purposes of this table,**
24 **iron is not a coal ash indicator, is it?**

1 A. It isn't.

2 **Q. Iron can be naturally occurring; is**
3 **that right?**

4 A. It can be. And actually although
5 it was not found in this analyses, it can
6 come also from coal ash.

7 HEARING OFFICER HALLORAN: You
8 have to speak up.

9 BY THE WITNESS:

10 A. Although iron was shaded blue here,
11 we do also note that -- and it was not found
12 in this EPRI data, we also find it in coal
13 ash. It is present.

14 BY MR. RUSS:

15 **Q. Okay. Now, for iron, you have an X**
16 **for MW-2. You have an X for iron.**

17 **Does that mean you coded as a**
18 **mismatch?**

19 A. Yes, I believe so.

20 **Q. Even though you just said it was in**
21 **coal ash?**

22 A. I -- I agree.

23 **Q. Is that an error in your report?**

24 A. I'd have to think about it.

1 **Q. Okay. For purposes of this table,**
2 **you counted the presence of non-indicator**
3 **as evidence against the possibility of**
4 **contamination; isn't that right?**

5 A. Yes.

6 **Q. And I believe you just said you**
7 **shouldn't do that?**

8 A. You're right.

9 **Q. Okay. Thank you.**

10 **Table 5-5 for Waukegan again,**
11 **there are a lot of blue cells; is that right?**

12 A. Yes, I did see.

13 **Q. Those are all instances in which**
14 **you coded the presence of non-indicator as**
15 **a mismatch and counted it against the**
16 **possibility of contamination, is that**
17 **right?**

18 A. Yes. To be honest, I'm a little
19 confused. This says that green and blue
20 shading demonstrate observed constituents
21 that are not consistent with indicators of
22 leachate from ash stored in impoundments
23 and that's what I'm relying on.

24 **Q. Rights. So these are non-indicators**

1 of ash for purposes of this table that you
2 found in groundwater?

3 A. It says not consistent with indicators
4 of leachate for ash stored in the impoundments.

5 Q. Right. If you look in the column
6 labeled "Constituent is an indicator of
7 leachate," there are only three where the
8 answer is yes on Table 5-5; isn't that right?

9 A. That's from the ash in the ponds.

10 Q. Everything that's not marked yes,
11 I assume the is answer is no and it's not
12 an indicator?

13 A. I'm sorry. Say that again, please.

14 Q. This column purports to show
15 indicators of coal ash -- leachate from coal
16 ash stored in the ponds; is that right?

17 A. Yes.

18 Q. And some are marked yes and some
19 that are blank?

20 A. Yes.

21 Q. Is it safe to call the blank row
22 as non-indicators?

23 A. It was not found in the ash.

24 Q. There's not --

1 A. It was not an indicator in this
2 situation. But in general, it could -- you
3 know, we find it in other places.

4 **Q. So all of these blue cells, though,**
5 **are non-indicators that were found in**
6 **groundwater and you counted that against**
7 **the possibility of contamination; isn't**
8 **that right?**

9 A. Well, because it wasn't found in
10 the leachate, but it was found in the
11 groundwater, so it did not match. It's not
12 consistent.

13 **Q. Right. But I believe you said**
14 **earlier if you find a non-indicator in**
15 **groundwater, you shouldn't contribute that**
16 **to your analysis; is that right?**

17 A. I understand, yes.

18 **Q. So there's a series of errors in**
19 **this table?**

20 A. Mr. Russ, I -- I -- I would agree
21 that it looks that way. I -- as I said, I
22 am a little bit confused. I have to kind
23 of go back to the whole discussion in the
24 report. It may take a while.

1 **Q. Okay. All right. Well, that's --**
2 **we'll move on for now.**

3 **Just one more question about**
4 **Table 5-5 actually. Are there any mismatches**
5 **in Table 5-5 other than those blue cells?**

6 **A. They're all -- I think they're**
7 **blue, yes. There's lots of blue that are**
8 **labeled as mismatched. Let me see. One,**
9 **two, three, yes.**

10 **Q. So if we were to take the**
11 **non-indicators out of this table, you would**
12 **have a 100 percent match; is that right?**

13 **A. Again, I would have to go back**
14 **and refresh my memory on how it was established.**

15 **Q. Okay. Let me just walk through**
16 **a few of these. You have three indicators**
17 **so it won't take too long.**

18 **You have barium, right? Barium**
19 **was found in leachate. How many of the wells**
20 **was barium found in?**

21 **A. All of them?**

22 **Q. All of them.**

23 **How many boron? Boron was**
24 **found in leachate. How many wells was boron**

1 **fond in?**

2 A. Let me -- I'm sorry. I might not
3 be on the right table. Waukegan. Okay.

4 **Q. How many of those wells was boron found**
5 **in?**

6 A. All of them.

7 **Q. How about sulfate?**

8 A. It was found on all of them.

9 HEARING OFFICER HALLORAN: Could
10 you keep your voice up, Mr. Seymour? Thank
11 you.

12 THE WITNESS: Sorry.

13 BY MR. RUSS:

14 **Q. So the three indicators that you**
15 **have in this table were found in all of the**
16 **wells at the Waukegan site?**

17 A. Yes.

18 **Q. So if we take the non-indicators**
19 **out, that would be a 100 percent match,**
20 **wouldn't it?**

21 A. Yes. In fact, they did -- in
22 the analysis, the new percent is correct.
23 But again, I have to go back and refresh
24 my memory.

1 Q. Okay. Thank you.

2 Now, is there arsenic in
3 coal ash?

4 A. It has been found in coal ash.

5 Q. Is arsenic in coal ash leachate?

6 A. I believe so. In general, it has
7 been found.

8 Q. How much arsenic was there in the
9 leachate that was used for Table 5-5? You
10 might have to refer back to Table 5-1 of your
11 original report.

12 A. For which site?

13 Q. For the -- the leachate.

14 A. Which --

15 Q. Well, I believe --

16 THE COURT REPORTER: Wait.
17 You've got to wait. One at a time.

18 BY THE WITNESS:

19 A. For --

20 BY MR. RUSS:

21 Q. The leachate data has --

22 A. -- Waukegan?

23 Q. The --

24 A. -- which table?

1 **Q. The?**

2 HEARING OFFICER HALLORAN: Come
3 on, gentlemen, please. You have to help
4 me and the court reporter. Speak one at
5 a time.

6 MR. RUSS: I'm just trying
7 to answer his question.

8 HEARING OFFICER HALLORAN: One
9 at a time.

10 BY MR. RUSS:

11 **Q. You -- you have one set of leachate**
12 **data that you used for all the sites in Table**
13 **5-5; is that right?**

14 A. Yes.

15 **Q. And that's found in -- the data are**
16 **found in Table 5-1 of your original report?**

17 A. 5-1 is one set of data, I believe,
18 and 5-2 is second set of data. I would have
19 to look.

20 **Q. And I'm -- I'm just reading off**
21 **Table 5-5 where you said Table 5-1.**

22 A. Okay. Yes.

23 **Q. Okay. So in Table 5-1, what is**
24 **the arsenic value for the leachate that you**

1 **used?**

2 MS. NIJMAN: Do you have a
3 page number?

4 MR. RUSS: The tables aren't --
5 I don't think the tables have page
6 numbers. Oh, they do. I'm sorry.
7 Table 5-1 is on Page -- well, it
8 says Page 1 of 1 at the bottom. So
9 I don't know how helpful that is.

10 THE WITNESS: There's no
11 Bates number but it's Table 5-1 in
12 my report.

13 BY MR. RUSS:

14 **Q. How much arsenic is in the leachate?**

15 A. There wasn't any site-related leachate.

16 **Q. Now, you say there wasn't any, but**
17 **what is the number that you show in Table 5-1?**

18 A. Less than .006 milligrams per liter.

19 **Q. I'm sorry. I'm asking about arsenic.**

20 A. I -- I apologize. Arsenic is less
21 than 0.050.

22 **Q. Okay. So that's what you call**
23 **non-detect, right?**

24 A. Yes.

1 **Q. And that might mean that there's**
2 **no arsenic. It might also mean that there's**
3 **0.049 milligrams per liter of arsenic, right?**

4 A. Yeah. The test is geared to run
5 at or below the drinking water standard in
6 Illinois. So if it's less than that number,
7 it could be present, but you would never
8 know.

9 **Q. Right. It could be present at up**
10 **to 49 micrograms per liter?**

11 A. You'd never know if it was, like,
12 one or zero.

13 **Q. Right. But is that true to say that**
14 **it could be as high as 49 micrograms per liter?**

15 A. Yes, it could be.

16 **Q. Can you tell me what concentrations**
17 **were observed in groundwater in 2014?**

18 To look at -- to do this, I
19 think you're going to have to look at Exhibit
20 268-P, which should be there in front of you.

21 At Waukegan, at MW-5, what
22 are arsenic concentrations in that well in
23 this period of time?

24 A. They are low right around .01 to

1 .009, .0013 milligrams per liter.

2 **Q. Okay. So is it safe to say that**
3 **the groundwater had concentrations of arsenic**
4 **between roughly two and ten micrograms per**
5 **liter?**

6 A. Micrograms per liter or milligrams
7 per liter?

8 **Q. Two and ten micrograms.**

9 A. Yes, micrograms per liter.

10 **Q. Thank you.**

11 **So the leachate had something**
12 **less than 50 micrograms per liter, the**
13 **groundwater had something between two and ten**
14 **micrograms per liter, the leachate could have**
15 **the same amount of arsenic as the groundwater;**
16 **isn't that right?**

17 A. The leachate from the test?

18 **Q. Yes.**

19 A. The leachate, as you indicated,
20 could have a concentration of less than the --
21 than the -- what was detected, which again
22 is a test from the leachate just to give
23 us some kind of an idea what's there, right.

24 HEARING OFFICER HALLORAN: We're

1 getting soft again, gentlemen. If you
2 could, raise your voices. Thank you.

3 MR. RUSS: Sorry. Maybe I
4 should stay standing.

5 BY MR. RUSS:

6 Q. So the leachate could have between
7 two and ten micrograms or arsenic per liter?

8 A. It could have concentrates that are
9 lower.

10 Q. Yes. And the leachate in the
11 groundwater, using these tests and these
12 data, could have the exact same concentration
13 of arsenic; isn't that correct?

14 A. It's possible.

15 Q. Uh-huh. And that would be a match?

16 A. If they were present and we were
17 confident that the leach data were accurate,
18 yes.

19 Q. And you don't really know whether
20 these data are a mismatch or not because of
21 the relative difference in the detection
22 limits, right?

23 A. Well, we are looking at this data
24 to see if it matches.

1 **Q. Uh-huh.**

2 A. And sometimes it will match and
3 won't match and then we fall back to
4 the analysis that it's not in the ash in
5 accordance with the test procedure, which
6 is at the groundwater protective standards
7 or slightly less.

8 **Q. So the question I'm asking is since**
9 **the leachate in the groundwater could have**
10 **the same concentration of arsenic given these**
11 **numbers, you can't really say for sure it's**
12 **that it's a mismatch; is that right?**

13 A. Well, if you don't have the data,
14 you can't say it is a match either.

15 **Q. Right. You can't say that it's a**
16 **match and you can't say that it's a mismatch.**
17 **I would call it unknown; is that fair?**

18 A. Okay.

19 **Q. Yet you coded it as a mismatch, I**
20 **believe and --**

21 A. Yes, I understand that. And as
22 mentioned, I think I'm confused. I have to
23 go back and look at it.

24 **Q. So is that potentially an error in**

1 **your table?**

2 A. It's possible it's an error, yes.

3 I have to look at it. I am confused.

4 **Q. And to generalize, I'd like to**
5 **consider a hypothetical situation. You have**
6 **a sample of water with eight micrograms of**
7 **arsenic per liter and you subject it to the**
8 **leach test, you subject it to the groundwater**
9 **test, same sample of water, that would be a**
10 **match?**

11 A. If you analyzed it and found the
12 same constituents, you mean?

13 **Q. If you took the -- yeah. If you**
14 **took one sample of water that you knew had**
15 **eight micrograms per liter of arsenic and**
16 **subjected it to both tests, you would get**
17 **the same result and you would find the match,**
18 **theoretically, right?**

19 A. I'm sorry. Are you saying take
20 the same water and test it to -- I'm sorry.
21 Please repeat it.

22 **Q. Say you took a gallon of water --**

23 A. Yes.

24 **Q. -- with eight micrograms of arsenic**

1 per liter, you took some of it and you tested
2 it with a leach test that was used for Table
3 5-1 and you took some of it and you tested it
4 with a groundwater test that was used by
5 Midwest Generation in 2014, that should be a
6 match with the same sample of water, right?

7 A. Well, the leach test adds the ash
8 material to it and then shakes it. So if
9 there's arsenic, you'd be adding to it. But
10 there's absolutely no arsenic, then you would
11 have a similar concentration.

12 Q. Okay. And the leach test would not
13 be able to detect that amount of arsenic; is
14 that right?

15 A. Not necessarily, but I would have
16 to look at that detection levels that were
17 run at the time.

18 Q. I think we just looked at the leach
19 test in Table 5-1 and it looked like it was --

20 A. I think you said eight?

21 Q. I said eight micrograms.

22 A. Yes. Then it would be above what
23 the -- it would be detected in the groundwater
24 test and I would have to look --

1 **Q. And not --**

2 **A. Because you're converting from**
3 **milligrams to micrograms. It's slightly**
4 **confusing.**

5 **Q. Okay. I'm sorry.**

6 **So let's just -- I'll stick**
7 **with micrograms. So eight micrograms in the**
8 **sample you're testing, with the leach test**
9 **table, would you be able to detect that?**

10 **A. I would have to look at the detection**
11 **limits.**

12 **Q. Yep. Sure. Go ahead and look. The**
13 **leach test is in Table 5-1 of your report.**

14 **A. It's 50 micrograms -- net micrograms,**
15 **which is greater than eight.**

16 **Q. So that leach test would not be able**
17 **to detect the arsenic; is that right?**

18 **A. That's correct.**

19 **Q. The groundwater test would be able**
20 **to detect the arsenic; is that correct?**

21 **A. Yes.**

22 **Q. So the exact same sample of water,**
23 **you would end up coding that as a mismatch**
24 **using your method; is that right?**

1 A. Yes, and it wouldn't.

2 **Q. Is that an error in your method?**

3 MS. NIJMAN: Objection, same
4 error. You are giving the impression
5 that there was -- well, I'm speaking.
6 Objection, misstates the testimony.

7 HEARING OFFICER HALLORAN: Well,
8 overruled. He can answer if he is able.

9 BY THE WITNESS:

10 A. I said what I said. It may be.

11 BY MR. RUSS:

12 **Q. Okay. To generalize beyond arsenic,**
13 **this kind of -- this kind of phenomenon, when**
14 **you detect a constituent in groundwater, but**
15 **not a leach test, even if groundwater and the**
16 **leachate has the same concentration, it's**
17 **possible whatever the groundwater test is, it's**
18 **more sensitive than the leach test; isn't that**
19 **right?**

20 A. That's -- yes, it could be.

21 **Q. Do you know how many of the results**
22 **in your Table 5-5 might be affected by that**
23 **circumstance?**

24 A. I would have to add them, but you

1 know that there would be quite a few.

2 **Q. Okay. Thanks.**

3 A. Presuming, in fact, I'm -- I'm a
4 little confused. If it's correct, there would
5 be errors in the table.

6 **Q. Okay. Now, in your deposition, you**
7 **said that boron is a good indicator of coal**
8 **ash contamination; is that right?**

9 A. In the deposition, I have probably
10 said that it was, but it's one of many. And
11 again, to be able to prove it's from an ash,
12 you have to have more than one constituent
13 to make that case.

14 HEARING OFFICER HALLORAN: Keep
15 your voice up, please, Mr. Seymour. You are
16 trailing off again at the end. Thank you.

17 BY MR. RUSS:

18 **Q. And one of the reasons that boron,**
19 **in particular, is a good indicator of coal**
20 **ash, is -- that it's often found in areas**
21 **contaminated by coal ash; is that right?**

22 A. Studies show that it's in the
23 leachate and it's found in the groundwater
24 also in some sites.

1 **Q. And another reason that boron is**
2 **a good indicator is because it's mobile in**
3 **the environment; is that right?**

4 A. It moves with the water.

5 **Q. Okay. Would you call it a**
6 **conservative constituent in that way?**

7 A. If you think it's -- conservative
8 is a relative thing. I would say that if
9 it's mobile, then it's there and with others
10 that would support it. Then it would be --
11 it may be conservative.

12 **Q. Okay. Are there any other**
13 **indicators of coal ash with similar**
14 **characteristics?**

15 A. I know that sulfate is one. That
16 is generally accepted. It's fairly mobile.

17 **Q. Okay. So is it safe to say boron**
18 **and sulfate are better coal ash indicators**
19 **than other constituents of coal ash?**

20 A. Not necessarily. Because again,
21 it's all what you find. They may be there,
22 but there may be other things also.

23 **Q. Okay. I want to go back to the**
24 **matching analysis. I'm sorry. My outline**

1 is a little bit disjointed. These questions
2 are going to sound similar, but it's a
3 different set of tables and different issues
4 so bear with me.

5 If you look at Table 5-4
6 of your supplemental report, in the Waukegan --
7 we'll stick with Waukegan to keep it simple,
8 I want to talk about antimony.

9 Based on this table --

10 A. I'm sorry. Let me find Waukegan.

11 Q. Oh, sure. I'm sorry. It's the
12 smallest of the four.

13 A. I found it.

14 Q. For purposes of this table, were you
15 treating antimony as an indicator of coal ash
16 leachate?

17 A. Yes.

18 Q. How much antimony was there in the
19 leachate that EPRI tested? You might have
20 to look at Table 5-2 of your original report.

21 A. Antimony?

22 Q. Yes.

23 A. For an antimony, we found a range in
24 EPRI the data --

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Q. Uh-huh.

A. -- of .2 to .6 micrograms per liter.

Q. Okay. So for shorthand, we can say less than one microgram?

A. Okay.

Q. Is that fair?

Not nothing, but less than one microgram?

A. Yes.

Q. Was the groundwater test used by Midwest Generation in 2014 sensitive enough to detect that amount of antimony?

A. I don't recall. I would have to look.

Q. You can look at 268-P. That should show you.

HEARING OFFICER HALLORAN: 268-P,
as in Patrick?

MR. RUSS: P, as in Patrick.

BY THE WITNESS:

A. The results for antimony looks to be less than three micrograms per unit, I believe. I'd have to check the units. It's less than three micrograms per unit.

1 BY MR. RUSS:

2 Q. Okay. That's -- the detection limit
3 was three?

4 A. Yes.

5 Q. So was that test sensitive enough to
6 detect the concentrations you saw in every
7 leachate?

8 A. That doesn't look to be.

9 Q. Okay. Now, Table 5-4 shows empty
10 green cells for antimony across the board.

11 Does that mean no antimony
12 was detected in Waukegan in 2014?

13 A. Well, we are looking at -- I apologize.
14 It's hard to flip back and forth.

15 Q. No, I know. I'm sorry about that.

16 A. We are saying that there was no
17 antimony detected at those levels and that
18 it is an indicator in coal ash.

19 Q. Okay. So since it was reported to
20 be less than three micrograms per liter, it's
21 possible that it had one or two micrograms per
22 liter; is that right?

23 A. But what you're doing is you're --
24 you're taking the -- again the leachate and

1 comparing it to groundwater. The leachate
2 test is to see if it's there, not at what
3 connotation.

4 So if it's found in the
5 leachate, it's -- it's there. Whatever
6 concentration that the lab is using, if it's
7 not there, it would be inconsistent if it's
8 in the leachate and not in the ground?

9 **Q. The concentration that you saw in**
10 **the leachate, which was, I believe, between**
11 **0.2 and 0.6 micrograms per liter --**

12 A. Yes.

13 **Q. -- if that exact same concentration**
14 **was in the groundwater, that should be a match**
15 **according to your earlier definition of a**
16 **match?**

17 A. Well, it actually is. You can see
18 the level and the EPRI data has a lower
19 detection level.

20 **Q. Right.**

21 A. So it is finding a more conservative
22 characterization of the data than what we've
23 used in that it includes more things than what
24 we've found. And so if you look at the

1 groundwater data, the groundwater data is at a
2 detection level that's different. But again,
3 it's the standard detection level for the water
4 in these wells.

5 **Q. Right.**

6 A. It's an accepted test by the state
7 of Illinois.

8 **Q. I understand.**

9 **The question I'm asking is**
10 **it's possible that the groundwater had the**
11 **same concentration of antimony as leachate;**
12 **is that right?**

13 A. It's irrelevant.

14 **Q. I don't believe it --**

15 A. It's only relevant that it's there
16 in the leachate, not at what concentration.

17 **Q. Could you answer the question, please?**

18 A. Repeat the question.

19 **Q. Is it possible that the groundwater**
20 **had the same amount antimony as the leachate?**

21 A. Again, it could be, but it's really
22 irrelevant.

23 **Q. Okay. If it did have the same**
24 **concentration as the leachate, that should**

1 **be a match, right?**

2 A. If the -- say if the concentration
3 and where.

4 **Q. The groundwater in the leachate were**
5 **the same?**

6 A. Well, and the concentration in
7 the groundwater is at a different detection.

8 **Q. I'm not asking --**

9 A. You have to --

10 **Q. I'm simply asking if the two**
11 **concentrations were the same, that should**
12 **be a match, right?**

13 A. If you found antimony in groundwater
14 and you found antimony in leachate, it would
15 be a match.

16 **Q. I'm asking if the same concentration**
17 **of antimony exists in both the leachate and the**
18 **groundwater, that should be a match?**

19 A. If they are above the detection limit
20 and you detect them, that would be a match.

21 **Q. The exact same concentration would**
22 **be not a match only as a function of the**
23 **defection limit, is that what you're saying?**

24 A. No. I am a saying that if you find

1 it in the coal ash and you find it in the
2 groundwater, that would be a match.

3 **Q. I guess what I'm asking you is**
4 **isn't it possible that you wouldn't find**
5 **it in the groundwater because the groundwater**
6 **test was not as sensitive a test as the**
7 **leachate test?**

8 MS. NIJMAN: I'm just going
9 to object as to asked and answered.

10 HEARING OFFICER HALLORAN: I
11 don't think so. Overruled.

12 BY THE WITNESS:

13 A. So the -- please, again. Repeat the
14 question, Mr. Russ.

15 BY MR. RUSS:

16 **Q. Let me go about this a different way.**
17 **Let's do the same kind of scenario.**

18 **You have a gallon of water**
19 **with antimony. It has 0.6 micrograms per**
20 **liter. According to the EPRI leach test,**
21 **you would detect it.**

22 A. I would -- 0.6 micrograms per liter
23 and in the leach test used by EPRI, I think,
24 yes, the -- the level was less than one.

1 **Q. Yeah. It was a range of 0.2 to 0.6.**
2 **You can check, but that's -- so at 0.6, you**
3 **would find it in the leach test, right?**

4 A. Yes.

5 **Q. Would you find it in the groundwater**
6 **test?**

7 A. Six micrograms?

8 **Q. 0.6.**

9 A. The groundwater detection level is
10 established at, I believe, we said...

11 **Q. Three.**

12 A. Three?

13 **Q. Yes.**

14 A. And so that -- but again, the
15 groundwater detection level is a state method.

16 **Q. I understand that.**

17 A. And that you can't measure below
18 that.

19 **Q. I understand. I'm simply asking**
20 **whether that groundwater test would detect**
21 **that amount of antimony?**

22 A. The groundwater test is at a higher
23 detection level.

24 **Q. Would it detect that amount of**

1 **antimony?**

2 A. .6?

3 **Q. Yes.**

4 A. It would not.

5 **Q. So if the exact same sample of water**
6 **detected in the leachate, not in the**
7 **groundwater, should be a match, your result --**
8 **your method counts it as a mismatch; is that**
9 **right?**

10 A. Well, again, I think you're missing
11 what I'm trying to say as far as the groundwater
12 test is as low as the state standard test. You
13 won't know if it's there.

14 **Q. That's right.**

15 A. Okay.

16 **Q. Thank you.**

17 A. So you can see that -- you can find
18 it in the lower detection level in the leachate
19 tests. So if you feel comfortable -- more
20 comfortable it's there, but in the state test,
21 it's at a higher level. So yeah, again, it's
22 at the level the state accepts. So you don't
23 report or test it that low.

24 **Q. So you don't know whether the antimony**

1 **level in the groundwater is the same as it is**
2 **in the leachate, but it could be; is that right?**

3 A. Overall, in a laboratory analysis,
4 there's always something that could be there,
5 but you will never know.

6 **Q. Is it possible that the groundwater**
7 **in the leachate has the same concentration of**
8 **antimony?**

9 A. It's possible.

10 **Q. And it's, therefore, possible that**
11 **they match?**

12 A. If there -- again, I keep going
13 back to as you know, this is an interesting
14 discussion on detection levels. If it's
15 above the state detection level, and it's --
16 and obviously we found it in the EPRI leachate,
17 it would be a match.

18 **Q. So I just want to make it clear**
19 **for the record. What you're saying, I think,**
20 **is that it could have the exact same**
21 **concentration. Your approach would count**
22 **that as mismatch and count it against the**
23 **possibility of contamination; is that right?**

24 A. Again, it's a theoretical argument

1 because you won't know in the groundwater
2 sample if it's there.

3 **Q. Is it --**

4 A. If it's -- if it is there and we
5 could measure it, then it would be there
6 and it would be a match, but again, you can't
7 test it below the detection level.

8 **Q. I'm simply asking if it's possible**
9 **it could be a match.**

10 MS. NIJMAN: Asked and answered
11 now.

12 HEARING OFFICER HALLORAN: Yes.
13 You know, I think Mr. Seymour has answered
14 it or at least qualified his answer. So
15 you can move on now.

16 BY MR. RUSS:

17 **Q. Okay. So let me just ask a slightly**
18 **different question now. Well, let me think**
19 **about this for a second.**

20 **Let me ask it this way. The**
21 **leachate has less than one microgram per liter**
22 **of antimony, correct?**

23 A. The leachate detection level, we're
24 saying, for now is one.

1 **Q. I don't --**

2 A. It's less than that actually.

3 **Q. The leachate has less that is one**
4 **microgram per liter, right?**

5 MR. HALLORAN: You have to keep
6 your voice up, Mr. Russ.

7 MR. RUSS: Okay.

8 HEARING OFFICER HALLORAN: Thank
9 you.

10 BY THE WITNESS:

11 A. Again, I think so. I would have to
12 look.

13 BY MR. RUSS:

14 **Q. Yes. And in order for that to be**
15 **detected in the groundwater, it would have**
16 **to be at least three times higher than the**
17 **leachate sample; is that right?**

18 A. Again, I'm -- it's -- it's -- the
19 leachate is like a separate test in a way.
20 It's -- so it's hard to equate. If you're
21 talking about laboratory analysis, if it's
22 three times less, it would have to be three
23 times.

24 Say that again. It would have

1 to be three times less?

2 **Q. The leachate has less than one**
3 **microgram per liter of antimony. In order**
4 **for the groundwater test to detect that**
5 **amount of antimony -- I'm sorry -- in order**
6 **for -- you'd have to have three times the**
7 **amount of antimony you have in leachate for**
8 **the groundwater test to defect it; is that**
9 **right?**

10 A. Correct, but you can't assume that
11 the leachate test is the groundwater. It's
12 not the same. It's again indicating that
13 it's there or not.

14 **Q. So the only --**

15 A. You really can't -- I don't think,
16 Mr. Russ, you can use that as a comparison.

17 **Q. Why is that?**

18 A. Well, you're saying that in the
19 leachate, which is .2 or .6, you're saying
20 .1 -- 1, and the groundwater is 3, so you --
21 if you're saying the an- -- the concentration
22 of leachate in the lab sample would have to
23 be three times larger to detect in groundwater,
24 it's like making a non- -- it's a non-comparison

1 to me.

2 **Q. I'm sorry. I might have misspoken.**

3 **The groundwater would have**
4 **to have three times more antimony than the**
5 **leachate in order for it to be detected by**
6 **the groundwater test; is that right?**

7 A. The groundwater -- I'm very sorry.
8 It's difficult to track.

9 The groundwater concentration
10 would have to be three times larger than --

11 **Q. Than what we saw in leachate for it**
12 **to be detected by the groundwater test that**
13 **Midwest Generation was using in 2014?**

14 A. Again, I think they are independent.
15 The leachate test is to see if it's there.
16 It's to see if it's there. Once we say it's
17 there, then the concentration is irrelevant in
18 the laboratory leachate. It's just that it is
19 there.

20 **Q. I don't think you're answering the**
21 **question.**

22 A. Yeah. Maybe I'm not understanding.
23 I'll try harder.

24 **Q. The leachate concentration is less**

1 than one microgram per liter, correct?

2 A. Yes.

3 Q. The groundwater would have to have
4 at least three times that before it was detected
5 by the groundwater test that Midwest Generation
6 was using in 2014 --

7 A. Yes.

8 Q. -- is that right?

9 A. Yes.

10 Q. Okay. Thank you.

11 For the groundwater to have
12 three times more antimony than the leachate,
13 given what we've seen earlier that there's
14 some attenuation and it's unlikely to increase
15 from the source to a downgradient receptor
16 well, it's impossible for that leachate to
17 ever be detected in a downgradient groundwater
18 well using those tests; is that right?

19 MS. NIJMAN: Object to overbreadth
20 and ever.

21 HEARING OFFICER HALLORAN: I'm
22 sorry, Ms. Nijman?

23 MS. NIJMAN: Object to overbreadth
24 and the word ever.

1 HEARING OFFICER HALLORAN: Can
2 you rephrase, please?

3 BY MR. RUSS:

4 Q. If a source of coal ash like the
5 one you sampled or the one that was sampled
6 for the purposes of Table 5-2 in your report
7 has less than one microgram per liter of
8 antimony, would a downgradient well ever
9 have enough antimony to be detected by the
10 groundwater test that Midwest Generation
11 was using in 2014 from that source?

12 A. You know, it -- it boils down to
13 fundamentals. Okay. I -- I think there's
14 maybe a misunderstanding of the fundamentals
15 detect -- how we used the data.

16 In my view, when we take
17 the data from the groundwater, which state
18 the method of detection level, right? It's
19 low. It's less than the groundwater standard.
20 I'm talking about the method of detection
21 level in the laboratory. And even though the
22 laboratory test that was used by the EPRI
23 data to test the leachate, the detection
24 levels aren't an important part.

1 It's just whether it is there.
2 And so it doesn't matter from Point A to B in
3 the groundwater. It's just whether or not it
4 is present. It's not -- concentration is not
5 the point. If you don't -- and if you have
6 groundwater less than the EPRI -- less than
7 the method test, you're not going to -- you
8 shouldn't -- you shouldn't detect it anywhere
9 else. I mean, you know, downgradient if, in
10 fact, it increases downgradient, as we talked
11 about theoretically.

12 **Q. Thank you. And that's exactly what**
13 **I was trying to elicit.**

14 **So you shouldn't see it at**
15 **a concentration that's greater than it is in**
16 **the leachate in a downgradient well?**

17 A. Again, it has nothing to do with
18 the concentration of leachate. If it migrates
19 and it is diluted as it moves, then it would
20 be less than the detection level that we use
21 in groundwater. It's still higher than this
22 theoretical concentration that you're talking
23 about.

24 **Q. So you wouldn't expect to see it in**

1 a downgradient well and yet when you found it
2 in leachate and not in a downgradient well,
3 which is what you're saying you would expect,
4 you counted that as a mismatch; is that right?

5 A. It doesn't matter upgradient or
6 downgradient, if it's there, it's not the
7 concentration if it's detected if the detection
8 level is the same in both of these wells.

9 Q. But the detection level is not the
10 same, I think you've testified to?

11 A. The concentration in the groundwater --
12 excuse me.

13 The detection levels in the
14 groundwater, I thought, are the same in the
15 laboratory. I mean, we looked at one in the
16 lab, right? I believe it was one result --
17 one detection level we looked at for the
18 groundwater.

19 Q. You can look at the summary tables
20 for the groundwater data in that report and
21 you will see that it's consistently reported
22 at less than 0.003 milligrams per liter?

23 A. Just three, right, three micrograms.

24 Q. And you wouldn't detect the leachate

1 **with that groundwater test is what we've**
2 **established.**

3 A. But it -- you cannot equate what's
4 in the leachate as being put in the groundwater.
5 Okay? It's just what is detected in the
6 leachate that's important, not the absolute
7 concentration.

8 **Q. So are you suggesting then that**
9 **the groundwater might have much more of a**
10 **constituent than the leachate?**

11 MS. NIJMAN: Objection,
12 mischaracterizes his testimony.

13 HEARING OFFICER HALLORAN: I'm
14 sorry?

15 MS. NIJMAN: Objection,
16 mischaracterizes his testimony.

17 HEARING OFFICER HALLORAN: He
18 can answer if he is able.

19 BY THE WITNESS:

20 A. Whether -- if it -- if it's three
21 times higher than what's -- what we detect
22 in the lab, it's irrelevant. It's either
23 detected in the groundwater at those detection
24 levels or not. If it's less than that, it's

1 considered as a non-detect. So even though
2 it could be three times, it's irrelevant.

3 BY MR. RUSS:

4 **Q. Okay. I'm going to move on for now.**

5 **This matching analysis in**
6 **Tables 5-4 and 5-5, have you ever used this**
7 **before.**

8 A. I do groundwater comparisons that
9 match before and it's a common tool and we
10 use it in these comparisons at all my sites.

11 **Q. Have you ever used this particular**
12 **quantitative method?**

13 A. Again, this is a method that looks
14 at the numbers and accumulates a percentage
15 and presents a percentage. I have not used
16 that presentation before.

17 **Q. Okay. Can you name anyone else who**
18 **has done it this way before?**

19 MS. NIJMAN: I'm sorry. Vague.

20 HEARING OFFICER HALLORAN: Can
21 you rephrase, please?

22 MR. RUSS: Okay. Sure. Yeah.

23 BY MR. RUSS:

24 **Q. Are you aware of anyone else using**

1 **this particular quantitative method before?**

2 MS. NIJMAN: Vague.

3 HEARING OFFICER HALLORAN: He
4 can answer if he is able.

5 BY THE WITNESS:

6 A. I mean, it implies a very broad
7 understanding of what all the industry does.
8 So I think it's a little bit -- I would
9 answer no, but I think it's -- there's a
10 lot of ideas out there and I don't know if
11 I could know.

12 BY MR. RUSS:

13 **Q. And are you aware of this particular**
14 **quantitative method where you compare a source**
15 **characteristic to groundwater data, calculate**
16 **a percentage of matching that has ever been**
17 **published in a journal or academic publication?**

18 A. I don't know.

19 MS. NIJMAN: I'm going to
20 object to the form of the question
21 as mischaracterizing. He said a
22 percentage only.

23 HEARING OFFICER HALLORAN: Okay.

24 Mr. Russ?

1 MR. RUSS: I can reask the
2 question.

3 BY MR. RUSS:

4 Q. Are you aware of anyone -- are you --
5 has this particular quantitative method ever
6 been published in any journal or academic
7 publication?

8 A. It's a similar question that you
9 asked before, if I knew of anybody who had
10 done it. There's lots of publications.
11 I've not read all the publications. So I
12 don't know if I -- even if I say I don't
13 know, that doesn't mean it hasn't been used.

14 Q. Are you aware of any?

15 A. As I said, I don't know. But it's
16 a little unfair because there's lots of
17 journals and I've not read all the journals.

18 Q. I'm just asking if you're aware
19 of any publications --

20 HEARING OFFICER HALLORAN: I
21 think he said no.

22 MR. RUSS: I'll move on.

23 BY MR. RUSS:

24 Q. Okay. Let's talk about your temporal

1 **trend testing results, which I believe is**
2 **Exhibit 906.**

3 A. Yes.

4 **Q. Are these the same methods that you**
5 **used to derive to your trend results that**
6 **were in the demonstrative exhibits we were**
7 **looking at earlier today?**

8 A. The method is the same, but the
9 database is different.

10 **Q. All right. Without getting --**
11 **well, actually how did you calculate the**
12 **significance of trend line?**

13 A. The significance in the trend line
14 is in the slope and internally there is a
15 calculation of whether it is statistically
16 valid, if you will. And that's why if it's
17 above a certain slope, and I can't remember
18 the percentage, but if it's above a certain
19 slope, then you can say it's increasing or
20 decreasing. But if it's less than that, you
21 can't tell. I don't recall the sensitivity,
22 if you will.

23 **Q. Where did you discover that method**
24 **of testing the significance of the trend line?**

1 A. Well, it's the -- the calculation
2 is done within Excel and really, you know, I
3 had -- I had input into Excel and ran the
4 calculation. I don't recall how the
5 significance was tested.

6 **Q. Did Excel calculate the significance**
7 **for you?**

8 A. I don't recall.

9 **Q. Did you derive this method of**
10 **determining the statistical significance**
11 **of a trend test yourself?**

12 A. It's a test that I had one of my
13 engineers input for me and he reviewed it,
14 but I don't -- that's why I don't recall
15 sensitivity of the test.

16 **Q. Okay.**

17 A. I do know -- as I said, we concluded
18 that if it's above certain slope, it was --
19 you know, again we concluded it was more
20 statistically valid as either increasing or
21 decreasing if it's less than a certain slope.
22 If it was within a certain sensitivity and
23 you couldn't tell, you couldn't tell.

24 **Q. Okay. If you -- I'm sorry to do**

1 this. I'm not sure exactly how to find what
2 I'm looking for now, but the trend test
3 results you had for Powerton in your
4 demonstrative this morning was hard for me
5 to read the page numbers. So I don't really
6 know where they are. I could try to make out
7 the page number to get there. It looks like
8 it might be 42 or 43. I'm sorry.

9 A. The summary, I think, is on Page 43.

10 Q. Yeah. That's the one I'm interested
11 in.

12 So on the summary table for
13 boron, how many wells showed a decrease in
14 trend?

15 A. For boron, six wells showed decrease.

16 Q. Out of how many total wells?

17 A. I believe there's 16.

18 Q. So most wells do not show a decline
19 in boron over time; is that fair?

20 A. Well, you're looking at increasing,
21 decreasing and no conclusion.

22 Q. Right.

23 A. And so the question is how many are...

24 Q. Most of the wells are not decreasing;

1 **is that right?**

2 A. For boron --

3 MS. NIJMAN: Objection as to
4 vague. The chart says what it says.

5 BY THE WITNESS:

6 A. There are six wells out of 16 and --

7 THE COURT REPORTER: Wait, sir.
8 You have to let the hearing officer make
9 his determination.

10 HEARING OFFICER HALLORAN: Could
11 you rephrase, Mr. Russ, to make it a little
12 clearer? Thanks.

13 MR. RUSS: Sure.

14 BY MR RUSS:

15 **Q. For boron, you have increasing,**
16 **decreasing and no conclusion, right?**

17 A. Yes.

18 **Q. There are six wells that are**
19 **decreasing, right?**

20 A. Yes.

21 **Q. There are 16 wells total?**

22 A. Yes.

23 **Q. So there are ten wells that are not**
24 **decreasing; is that right?**

1 A. They are not decreasing or there is
2 no conclusion.

3 **Q. They're not --**

4 A. You are correct. Six wells are not --
5 ten wells are not decreasing.

6 **Q. So most of the wells are not**
7 **decreasing; is that right?**

8 A. More than half.

9 **Q. And for sulfate, how many wells are**
10 **decreasing?**

11 A. It says no wells, so no wells.

12 **Q. Okay. None of the wells at Powerton**
13 **show decreasing in sulfate trend; is that right?**

14 A. I'm sorry?

15 **Q. None of the wells at Powerton show a**
16 **decreasing sulfate concentration?**

17 A. Or there is no conclusion, yes.

18 **Q. In general, for Powerton, Waukegan**
19 **and Will County, most wells do not show a**
20 **decrease; is that right?**

21 A. That's very broad. Show a decrease
22 in what?

23 **Q. So let's -- I'll do it one-by-one.**

24 **So for Powerton, you have a**

1 **bullet below the table we're looking at here.**

2 **It says that overall, it appears the groundwater**
3 **concentrations are neither increasing nor**
4 **decreasing; is that right?**

5 A. Yes.

6 **Q. A similar statement appears for**
7 **Waukegan and Will County, to the best of your**
8 **recollection?**

9 A. Yes.

10 **Q. You were asked whether you could**
11 **describe these trends as "not getting worse."**

12 **Do you remember that?**

13 A. Yes.

14 **Q. Would it also be fair to say that**
15 **the data are not getting better?**

16 A. Well, when you look at all of the
17 data, there's a lot of nonconclusion data.
18 And so that over time, it may prove one way
19 or the other whether it's increasing or
20 decreasing.

21 I'm sorry. Using this data
22 set in its total, not -- again, getting lines
23 that you have, you could say there are wells
24 here that are not decreasing and there are

1 some that are not -- there's no conclusion --
2 conclusions and there's some that are
3 increasing.

4 So in the overall data, I
5 mean, you can't take one line item independently
6 to say, oh, look, all those wells are not --

7 **Q. Right.**

8 A. -- down. You have to look at all
9 of the data.

10 **Q. I understand. So I'm just wondering**
11 **because it -- you just said for Powerton,**
12 **Waukegan and Will County, your conclusion was**
13 **that groundwater concentrations were neither**
14 **increasing nor decreasing.**

15 **Earlier today, you were**
16 **asked to generalize whether it was fair**
17 **to say that the data are not getting worse**
18 **and you said yes.**

19 A. That's an interesting observation.
20 Thank you. It's also not getting -- it's not
21 getting either -- it's not increasing or
22 decreasing or worse or better.

23 **Q. Okay. Thank you.**

24 **Now, in Exhibit 902, which**

1 I think we're in -- oh, I'm sorry. 902 is
2 the ASTM test. Let's look at Exhibit 902,
3 Section 5.

4 A. 902.

5 Q. It's Bates Page 5026 -- sorry -- 50260.

6 A. 50260?

7 Q. Yes. This section -- did you say that
8 you helped to write this?

9 A. It was written before I helped to
10 revise it.

11 Q. Okay. Thanks.

12 This section recommends
13 using certain screening procedures or analysis
14 techniques when using ash for beneficial use;
15 is that right?

16 A. Allow me to look at it for a
17 little bit. I haven't read it in a while.

18 Q. Sure. Feel free.

19 HEARING OFFICER HALLORAN: Let's
20 take a break. We'll be back in 15. Thank
21 you.

22 (Whereupon, after a short
23 break was had, the following
24 proceedings were held

1 accordingly.)

2 HEARING OFFICER HALLORAN: We
3 are back on the record at approximately
4 3:30. We have Mr. Seymour still on the
5 stand. We have Mr. Abel Russ crossing him.

6 I might add our chairperson
7 was in the room earlier, I think she's
8 coming back, Katie Papadimitriu, and she
9 asked if everybody could speak up because
10 they are really having a hard time hearing.

11 MR. RUSS: Okay.

12 HEARING OFFICER HALLORAN: I
13 apologized about the acoustics. Anyway
14 just keep that in mind. Thank you.

15 BY MR. RUSS:

16 **Q. Mr. Seymour, we were looking at**
17 **Exhibit 903 -- 902 -- I'm sorry -- and Bates**
18 **50260.**

19 **Section 5 here recommends**
20 **screening procedures or analysis techniques**
21 **for using CCP as beneficial fill; is that**
22 **right?**

23 A. Yeah. It's got -- I'll call it
24 process, a step-wide process to evaluate

1 materials, yes.

2 **Q. Is the environmental flow chart on**
3 **the next page part of that process?**

4 A. Yes, it is.

5 **Q. Okay. Regarding the ash found**
6 **outside of the ash ponds at Joliet, have**
7 **you seen any evidence that the ash was**
8 **placed using these screening procedures?**

9 A. This procedure became much after
10 these were replaced. They may have had
11 some idea, but I don't really know.

12 **Q. Okay. And I guess that goes for**
13 **all the sites. These procedures are more**
14 **recent than the placement of ash at the**
15 **sites?**

16 A. Yes. This was originally approved
17 previously. I don't recall the original date.
18 It was more than ten years ago. So I don't
19 recall the original date. So it's been around,
20 but probably not as long as this ash fill was
21 placed.

22 **Q. So it's clear for the record,**
23 **have you seen any documentation of the**
24 **decision-making process replacing the ash**

1 **at the four sites -- this -- this historic**
2 **ash areas we're talking about?**

3 MS. NIJMAN: Objection, to
4 the vague as to --

5 HEARING OFFICER HALLORAN: Yes.
6 Can we rephrase. I'm sorry.

7 BY MR. RUSS:

8 **Q. I'll go site-by-site.**

9 **At Joliet, have you seen**
10 **any documentation documenting the**
11 **decision-making process for placing the ash**
12 **in any of the historic ash areas of Joliet?**

13 A. I have not seen --

14 MS. NIJMAN: Objection, vague,
15 historic ash areas. Which? Which ones
16 are we talking about?

17 MR. RUSS: I could ask about
18 any of them. I could say have you seen
19 documentation for any? I'll do it that
20 way.

21 MS. NIJMAN: Yes, but -- I'm
22 sorry. May I ask?

23 HEARING OFFICER HALLORAN: Go
24 ahead.

1 MS. NIJMAN: My concern is that
2 Mr. Seymour has also testified as to --
3 and Dr. Kunkel has testified as to wells
4 with data, wells with ash, area berms with
5 ash. Are you talking about those or
6 are you talking about the northeast
7 area or what are you talking about?

8 MR. RUSS: I could just say
9 outside of the ponds for the whole
10 site. That might make it easier.

11 MS. NIJMAN: That would be
12 a very broad question.

13 HEARING OFFICER HALLORAN: That
14 still will be a broad question. Can you
15 kind of zero it in? I understand what
16 Ms. Nijman is getting at.

17 MR. RUSS: Okay. Well, I'll go
18 location-by-location.

19 HEARING OFFICER HALLORAN: Okay.

20 BY MR. RUSS:

21 **Q. At Joliet, have you seen any**
22 **documentation documenting the decision-making**
23 **process for placing ash in northeast ash**
24 **landfill?**

1 A. In that alleged former ash landfill,
2 I have not seen documentation.

3 **Q. How about the southwest ash landfill?**

4 A. Well, that's the fill area that was
5 sampled by KPRG. I don't recall how that was --
6 how they decided to place it there.

7 **Q. And are you not aware of any other**
8 **discreet fill areas at Joliet, are you?**

9 A. It's not been identified.

10 **Q. Right. At Powerton, have you seen**
11 **any documentation related to the decision-making**
12 **process behind placing fill in the area of the**
13 **ponds outside of the ponds, if you know what I**
14 **mean?**

15 A. I have not seen any documentation.

16 **Q. In Waukegan, have you seen any**
17 **documentation at all relating to that former**
18 **slag fly ash disposal area?**

19 A. Well, they called it a former, as
20 you may recall, but other than the ENSR document
21 that says it was a former slag fill area or
22 something like that, I don't recall seeing any
23 documentation.

24 **Q. Just for the record, I was asking**

1 **about the southwest area, Joliet 29, and**
2 **you mentioned that area had been sampled by**
3 **KPRG.**

4 **Just so we're all clear on**
5 **the record, do you remember where the area**
6 **that KPRG sampled at Joliet was?**

7 A. Yes.

8 **Q. Where was that?**

9 A. I could find the map maybe. It's
10 southwest of the pond area, if I remember
11 that right.

12 **Q. Okay. And --**

13 MS. NIJMAN: You can look at
14 your --

15 BY MR. RUSS:

16 **Q. You might want to look at the map.**

17 MS. NIJMAN: In your Exhibit
18 901, the map is there, Page 23.

19 BY THE WITNESS:

20 A. I've got it. It's the area, yes,
21 southwest of the pond area for Joliet. It
22 says former ash placement area sampled in
23 2005.

24

1 BY MR. RUSS:

2 Q. Okay. And are you aware of any
3 other ash placement areas further southwest
4 of that Joliet site?

5 A. On this map, it says we're in the
6 very southwest corner of the site. It says
7 alleged former ash placement area.

8 Q. Have you seen any documentation at all
9 related to that area?

10 A. I have not.

11 Q. And at Will County, have you seen
12 any documentation related to the decision-making
13 process for placing ash outside of the ponds at
14 Will County?

15 MS. NIJMAN: Could you maybe
16 reference the maps or point to what you
17 are talking about?

18 BY MR. RUSS:

19 Q. Are you aware of ash in the boring
20 logs at Will County?

21 A. Yes, I've seen the boring logs and
22 there's ash in some of the borings.

23 Q. Have you seen any documentation of
24 the decision-making process behind placing ash

1 **there?**

2 A. I don't recall seeing it.

3 **Q. Okay. Thank you. That's it for that**
4 **line of questioning.**

5 **So you said that the risk of**
6 **contamination from inactive landfills is**
7 **less than from active impoundments because**
8 **the inactive landfills don't have a driving**
9 **head of surface water; is that right?**

10 A. That's one of the elements that
11 has been looked at.

12 **Q. I think you also said that groundwater**
13 **can create a head?**

14 A. Excuse me. Groundwater -- it's a
15 different direction, if you will. It flows
16 horizontally from a higher head or higher
17 elevation to a lower elevation. So that
18 head moves the water laterally. That's the
19 head and if that doesn't exist, it wouldn't --
20 if there's no ash, it wouldn't put any head
21 on it.

22 **Q. Right. So if you have any**
23 **substance -- it could be ash or any substance --**
24 **beneath the water table, is it subjected to**

1 **a hydraulic head?**

2 A. It would be a horizontal difference
3 of pressure, yes.

4 **Q. Okay. Thank you.**

5 **Exhibit 510, I believe, this**
6 **was in Maria Race's exhibit or is that Rebecca**
7 **Maddox? Not Race? Maddox or Gnat?**

8 MS. NIJMAN: Maddox.

9 BY MR. RUSS:

10 **Q. Go to Exhibit 510.**

11 A. I have it.

12 **Q. Okay. Looking at Page 34311 --**

13 MS. NIJMAN: Just one second.

14 BY MR. RUSS:

15 **Q. I know this is just a title page,**
16 **but 34311, begins with Attachment B-1; is**
17 **that right?**

18 A. Yes. It says borrow source samples.

19 **Q. Do you know where these borrow**
20 **source samples -- what the borrow source was?**

21 A. I don't recall. Let me look to see
22 if there is anything in here. This is the
23 construction documentation transmittal for
24 south ash pond two liner replacement from NRT

1 to Midwest Generation, July 18, 2014.

2 **Q. Uh-huh.**

3 A. And I don't recall. It may be in
4 here, Mr. Russ, but I -- I don't recall where
5 they might have got these borrow source samples
6 from.

7 **Q. I don't either. Sorry. We're on the**
8 **same page.**

9 **Moving on, you said you've**
10 **installed HDPE liners for hazardous waste**
11 **landfills; is that right?**

12 A. Yes.

13 **Q. In those situations, do you install**
14 **the HDPE on bare soil?**

15 A. The regulations for hazardous and
16 solid waste are similar in that they -- they
17 have a 60 HDPE cited in the regulation as a
18 liner. The flexible membrane liner is common
19 in RCRA. We've just been calling it a
20 geomembrane. It's HDPE. It's the same thing.
21 They put that on a -- what's required as a
22 two-foot thick compacted clay soil barrier layer
23 liner with a maximum xxx of no more than one
24 times ten to the minus seven centimeters per

1 second.

2 HEARING OFFICER HALLORAN: Okay.

3 If we could speak up, like I suggested before,
4 we have a chairperson. She would like to
5 be able to hear. You keep sliding down.

6 Thank you.

7 MR. RUSS: I'll stand so I can
8 project a little bit better.

9 BY MR. RUSS:

10 **Q. So when you've installed an HDPE**
11 **liners for hazardous waste landfill, you've**
12 **installed them on that compacted soil two-foot**
13 **liner that you've just described?**

14 A. I've used that on hazardous and
15 solid and I've also put it as a cover for
16 solid waste at Superfund sites where the
17 bottom two-foot layer was not required.

18 **Q. You put the HDPE or the clay as the**
19 **cover?**

20 A. Thank you. It's the HDPE that was
21 placed without the two-foot clay.

22 **Q. Oh, I see. As a cover?**

23 A. As a cover.

24 **Q. Have you ever installed a hazardous**

1 **waste landfill below the water table?**

2 A. The one that I did -- two that I did
3 did not go below the water table.

4 **Q. Do you recall how high above the water**
5 **table they were?**

6 A. I don't recall. It was awhile ago.

7 **Q. We talked about you did a risk**
8 **analysis in your report, right?**

9 A. We did to assess the water surrounding
10 the site.

11 **Q. And you mentioned receptors?**

12 A. Yes.

13 **Q. Can you say what a receptor is?**

14 A. Well, the water quality criteria and
15 the water quality standards relate to the
16 animals and benthic organisms so on that live
17 in the water and also form an exposure to
18 people as in bathing, for example.

19 **Q. Okay.**

20 A. Recreational use.

21 **Q. Okay. Does the presence or absence**
22 **of receptors affect the degree to which a**
23 **potential source of contamination leaches**
24 **into the groundwater?**

1 A. The groundwater infiltration is
2 separate from the receptor. What we did,
3 as I mentioned, we looked at what was in
4 the groundwater as though it was in the surface
5 water.

6 **Q. Right. Thank you.**

7 **Now, on Slide 25 of your**
8 **demonstrative, so Exhibit 902, 901, right,**
9 **Slide 25?**

10 A. Yes.

11 **Q. The heading of this chart says,**
12 **"Updated Temporal Trend Testing Groundwater**
13 **Concentrations for Site-Specific Indicators**
14 **of Ash in Ponds," right?**

15 A. Yes.

16 **Q. One of the constituents you have in**
17 **this table is manganese, right?**

18 A. Yes, I believe it is.

19 **Q. All right. Do you believe the**
20 **manganese is an indicator of --**

21 A. Well, Mr. Russ, you pointed out
22 something helpful. I think it would have been
23 fairer to say what was found in groundwater,
24 but we didn't mean to imply that it was an

1 indicator. So that is -- that's not correct.

2 **Q. Okay. So the manganese trend test**
3 **results are not relevant to your conclusion;**
4 **is that right?**

5 A. No. It is relevant because, as we
6 talked about earlier, there is manganese
7 there. We haven't identified specifically
8 where it's from, but we're still assessing
9 it because it's still there and we want to
10 assess it.

11 **Q. Okay.**

12 A. And so this data looks at all the
13 groundwater data and not whether there's a
14 source or not.

15 **Q. Right. Your opinion is that the**
16 **manganese that you've seen from these sites**
17 **is not coming from the coal ash; is that**
18 **right?**

19 MS. NIJMAN: Objection,
20 misstates, mischaracterizes.

21 HEARING OFFICER HALLORAN: He
22 can answer if he is able.

23 BY THE WITNESS:

24 A. Manganese is one of the indicators

1 that we have found in the ash. So again,
2 it's like one of the -- we look at the other
3 indicators and then we also -- as we said, we
4 looked at the EPRI data to corroborate.

5 BY MR RUSS:

6 **Q. And you just said you didn't find it**
7 **in ash?**

8 A. It was not detected in the test that
9 we ran.

10 **Q. Right. So did the trends in manganese**
11 **then have any bearing on the degree to which**
12 **coal ash continues to leach into the groundwater**
13 **at these sites?**

14 A. As I said, there's presence of some
15 ash constituents in the groundwater and if
16 you're looking for -- if it's getting better
17 or worse, so to speak, that's valid to look
18 at. That's like any water, it's conservative
19 looking at those water quality criteria.

20 **Q. Okay.**

21 A. Or water quality trends. Excuse me.

22 **Q. Just so it's clear on the record,**
23 **for Powerton, the comparable table to what we**
24 **were just looking at in Joliet would be on**

1 **Page -- oh, boy.**

2 MS. NIJMAN: Page 43.

3 MR. RUSS: Forty-three. Thank
4 you very much.

5 BY MR. RUSS:

6 **Q. Okay. How many of the wells at**
7 **Powerton show a decreasing trend in manganese?**

8 A. Five wells show a decreasing trend
9 in manganese.

10 **Q. How many are either increasing or --**
11 **neither increasing or decreasing?**

12 A. For manganese?

13 **Q. Uh-huh.**

14 A. Eight.

15 **Q. How many are increasing?**

16 A. Three.

17 **Q. So of these total wells, 11 are not**
18 **decreasing, is that fair to say?**

19 A. Again, that's a mathematically fair
20 statement with the caveat that no conclusion
21 is no conclusion. Statistically, you can't
22 tell. So maybe.

23 **Q. Fair enough.**

24 **And Waukegan is Slide 55.**

1 A. Okay.

2 **Q. Three wells are decreasing in**
3 **manganese; is that right?**

4 A. Yes. Three wells are decreasing.

5 **Q. Five wells are neither increasing**
6 **nor decreasing?**

7 A. Yes, with the same comment I had
8 before, you don't know if it's decreasing
9 or increasing.

10 **Q. Right. One well is increasing?**

11 A. Yes.

12 **Q. So six of the wells are not decreasing,**
13 **according to your statistical methods; is that**
14 **right?**

15 A. Again, mathematically, that is correct,
16 but with five wells, there is no conclusion.

17 **Q. Okay.**

18 A. They all may be very close to
19 decreasing. You just don't know.

20 **Q. Right. Then I just want to do the**
21 **same for Will County just to get it complete.**

22 **That's Slide 71, I believe.**

23 A. Okay.

24 **Q. Here, at least seven of the ten**

1 **wells for manganese show either increased or**
2 **no conclusion; is that right?**

3 A. That's correct. Four wells are
4 increasing and three wells are decreasing
5 and three wells have no conclusion.

6 **Q. Okay. Thank you.**

7 **Slide 47 in your -- in the**
8 **same exhibit, it's very close to the end here.**
9 **Right. Okay. I believe you said on the record**
10 **that the average groundwater level was several**
11 **feet below the pond bottom; is that right?**

12 A. I believe so, yes.

13 **Q. And how many feet exactly is it**
14 **between the average groundwater elevation**
15 **and the pond bottom here?**

16 A. For the east pond, which is the one
17 closest to the lake, and the groundwater, which
18 is a little lower, it is three and a half feet
19 below.

20 **Q. Okay. And the other?**

21 A. For the west ash pond, the elevation
22 of the water -- groundwater is 583 feet and it
23 is two and a half feet below the bottom of the
24 pond.

1 **Q. Okay. And for the record, we are**
2 **looking at a picture that might not be clear**
3 **on the record, but the pond bottom elevation**
4 **that you're referring to is the top of the**
5 **liner, correct?**

6 **A. Yes.**

7 **Q. Can you estimate the elevation of**
8 **the HDPE layer at the bottom of the liner?**

9 **A. It would be elevated -- it's an**
10 **18-inch thick layer below 585.5. That would**
11 **make it 584.0 feet.**

12 **Q. So for -- that would be one or two**
13 **feet above the average groundwater elevation**
14 **depending on the pond?**

15 **A. Relative to the geomembrane of the**
16 **pond to the groundwater elevation.**

17 **Q. Okay. Thank you.**

18 **Regarding the General Boiler**
19 **site at Waukegan, you were looking at an**
20 **exhibit -- an attachment to an exhibit that**
21 **I think you described as a citizen website.**

22 **Do you remember that?**

23 **A. I believe so, yes. I remember that.**

24 **Q. That discussed potential ash fill**

1 **area at the General Boiler site?**

2 A. Yes.

3 **Q. And I think you said it's not the**
4 **same as having a consultants report?**

5 A. Yes.

6 **Q. Can you explain why?**

7 A. Well, it's the internet. It's a
8 website. So it has the -- often general
9 information, but to me, it looked as though
10 they quoted something from a report. As we
11 know, there were active studies in the '90s
12 looking at that area.

13 **Q. What would a consultant's report**
14 **have provided you that would have been an**
15 **improvement over what you were looking at?**

16 A. Probably some field information
17 that would classify it as flash.

18 **Q. The extent of it, I would assume?**

19 A. Often, yes, but not necessarily.
20 They might have just seen an outline, for
21 example, and made a characterization from an
22 observation.

23 **Q. Okay. So then I take it you have**
24 **not seen any consultant reports for the**

1 **General Boiler site?**

2 A. I have seen the reports done by
3 a combination of companies back in the '90s
4 and carrying forward, and with ongoing
5 monitoring of those areas.

6 **Q. Did any of those reports mention**
7 **the national landfill?**

8 A. They didn't call it out as a --
9 I'm not sure if that citizen report called
10 it an ash landfill or ash area.

11 **Q. Yes. I don't remember.**

12 A. We did see evidence of slab and
13 cinders and a lot of old fill and those old
14 borings and we know that they're an old
15 facility, over 100 years old, and burning
16 coal was very common. We also know, you
17 know General Boiler, same thing. If you
18 need heat, often coal was used. So we did
19 see evidence of, I'll call it, some fill
20 that was mixed with other fill.

21 **Q. Okay. Let's turn to Slide 61**
22 **in the demonstrative exhibit. This is a**
23 **Will County diagram.**

24 A. Yes.

1 **Q. What is the elevation of the**
2 **bottom of this liner if you can estimate**
3 **that?**

4 A. The --

5 **Q. I'm sorry. The bottom of the**
6 **Poz-o-Pac layer. The bottom of the Poz-o-Pac**
7 **layer would be three and a half feet below**
8 **the bottom of the pond, is that what you're**
9 **asking?**

10 A. I think so, yes. One, two, three
11 and a half, yes.

12 **Q. And so what elevation would that be?**

13 A. 579.0.

14 **Q. Okay. And that's at least a foot**
15 **lower than the average groundwater elevations**
16 **for these ponds; is that right?**

17 A. 579, yes, it is.

18 **Q. Okay. This diagram doesn't show it,**
19 **but I just want to make sure.**

20 **Is there a drainage layer in**
21 **these ponds?**

22 A. Not to my knowledge.

23 **Q. And this diagram says that it**
24 **represents south ponds two and three. This**

1 **is not a representation of ponds 1-North and**
2 **1-South, correct?**

3 A. We did put it at that way. I know
4 that they are Poz-o-Pac lined, but I didn't
5 put it on a diagram because they're inactive
6 ponds. We did focus on that.

7 **Q. Okay. Two more questions.**

8 **You mentioned some updated**
9 **calculations about hydrostatic uplift at Will**
10 **County.**

11 **Do you remember that?**

12 A. Yes.

13 **Q. Are those calculations in the record**
14 **anywhere?**

15 A. No.

16 **Q. Okay.**

17 A. I could review them for you if you
18 want me to state them for the record.

19 **Q. No. That's okay. I think what you**
20 **said earlier was good enough.**

21 MR. RUSS: May I have a moment
22 to confer with counsel?

23 HEARING OFFICER HALLORAN: Sure.

24 (Brief pause.)

1 MR. RUSS: That's all I have.

2 HEARING OFFICER HALLORAN: We are
3 back on the record.

4 Mr. Russ, that's all you
5 have?

6 MR. RUSS: That's all I have.

7 HEARING OFFICER HALLORAN: All
8 right. You lied. You said 30 minutes.
9 It's been 23 minutes.

10 Ms. Nijman, do you need
11 a minute?

12 MS. NIJMAN: I can get started.
13 I might take a minute at the end.

14 HEARING OFFICER HALLORAN: Okay.

15 R E D I R E C T E X A M I N A T I O N

16 by Ms. Nijman

17 **Q. Mr. Seymour, you suffered through**
18 **a long discussion about your comparison**
19 **tables and Mr. Russ had you comparing**
20 **detection levels with the groundwater with**
21 **the levels -- detection levels of the leachate**
22 **tests.**

23 **Do you recall that very long**
24 **testimony?**

1 A. Yes, I do.

2 **Q. What is a quantification limit?**

3 A. It's essentially the laboratory
4 equipment has a mechanical test level. It can
5 test down to a certain limit.

6 **Q. How is a detect limit different than**
7 **quantification limit?**

8 A. Method detection limit is higher
9 than the quantification limit and what
10 happens in the groundwater analysis is when
11 the laboratory runs it at a method, and if
12 they happen to see it at a concentration
13 less than a method detection limit, and
14 it's above the quantification limit, they
15 can find it, but they don't have as accurate
16 of an understanding of that chemical. So
17 they flag it. They mark it as an estimated
18 number.

19 Because above the method
20 detection limit, it's required to have certain
21 accuracy. Below, it's less accurate.

22 **Q. And how many lower is the**
23 **quantification limit than the detect limit?**

24 A. It can be around ten times lower.

1 So, for example, if you have a detection
2 limit of three, the quantification limit
3 would be .3 or lower. It depends on the
4 specific method.

5 **Q. And are we talking about micrograms**
6 **per liter?**

7 A. Excuse me. Yes. That's micrograms
8 per liter. Mr. Russ sort of switched units
9 on me. We're used to milligrams per liter,
10 but he was discussing it in micrograms per
11 liter.

12 **Q. So the quantification limit is**
13 **actually the capability of the equipment to**
14 **detect lower --**

15 A. Yes.

16 **Q. -- levels of constituents?**

17 A. Yes. Sorry for interrupting.

18 **Q. Oh, that's all right.**

19 **What is a J value or J flag?**

20 A. That's what I was mentioning as if
21 it's an estimated number, they will flag it
22 with a J. We heard Mr. Gnat talk about that
23 the other day. He would look at the data when
24 it comes in and he would look for qualifies and

1 J is one of the qualifiers that he would look
2 for.

3 Q. So the groundwater data that Mr. Russ
4 was asking you about could actually detect
5 at a level that was the quantification limit,
6 a much lower level, correct?

7 A. Yes.

8 Q. So if we were to see constituents
9 in the groundwater, we would still see them,
10 just with a J flag, correct?

11 A. Correct.

12 Q. And we didn't see them on any of the
13 groundwater tables, did we?

14 A. That's correct. The data reported
15 is less than basically the method of detection
16 levels. We just commonly call them the
17 detection limit.

18 Q. So if a value is below the detection
19 limit and there's no J flag, what does that
20 mean?

21 A. It means that it's present, but you
22 don't have a good understanding of the accuracy
23 of the number. It's an estimated number.

24 Q. And what if there's no J flag?

1 A. That means it's even less than the
2 quantification limit. So if there's no J flag,
3 it's less than the quantification limit.

4 **Q. All the data -- the groundwater**
5 **data Mr. Russ was asking you about below**
6 **the detection limit that has no J flag**
7 **would actually be the quantification limit?**

8 A. Yes, it would be. As we normally
9 do in the practice, you report it at the method
10 detect limit because that's the standard way
11 of reporting, but as you said, if it would have
12 been found in Mr. Gnat's data, it would have
13 been flagged as a J and you would see. It would
14 not say less than a number. It would just have
15 the number with a J after it.

16 **Q. Starting out earlier this afternoon**
17 **when Mr. Russ was talking about your curriculum**
18 **vitae, you have -- I think you said in your**
19 **resume, your CV, 40 plus years of experience?**

20 A. Yes.

21 **Q. And do you list every project you've**
22 **ever worked on in your CV?**

23 A. No.

24 **Q. That would be a long CV, wouldn't it?**

1 A. Yes. And even what I put in my CV was
2 very abbreviated. As you could see, one of the
3 projects I talked about was a very large project
4 and I just put a very short description in
5 the CV.

6 **Q. We had some discussion about Joliet.**
7 **Generally, what is your view of the groundwater**
8 **impacts at Joliet?**

9 A. Well --

10 MR. RUSS: Objection.

11 HEARING OFFICER HALLORAN: He may
12 answer if he is able.

13 BY THE WITNESS:

14 A. I would like to clarify it because
15 my earlier answer was a little bit -- maybe
16 too basic.

17 HEARING OFFICER HALLORAN: You
18 can answer it, sir.

19 THE WITNESS: Thank you.

20 BY THE WITNESS:

21 A. One of the wells does have some
22 levels over the Illinois groundwater standards,
23 but all the other wells pretty much -- they're
24 pretty much below the groundwater standards.

1 It's a pretty -- it's a less impacted site of
2 all the four.

3 BY MS. NIJMAN:

4 Q. Now, you also talked with Mr. Russ
5 about the Powerton site and you were talking
6 about correlating data -- the ash data. Let
7 me ask you about the Powerton old former ash
8 area. There is a landfill area that's been
9 identified in the record on Powerton called
10 the old former ash area.

11 Do you remember that?

12 A. Yes.

13 Q. And are you aware of groundwater
14 around that entire old landfill area?

15 A. Yes. There's a groundwater water
16 monitoring network around the whole area.
17 It starts one Monitor Well 1 on the east side
18 and I think as Rich Gnat characterized the
19 shape of that area, it's like an ice cream
20 cone. To the north is the large side of the
21 ice cream itself is the cone. So on the right
22 side of the cone is Monitor Well 1 progressing
23 counterclockwise with Monitor Wells 2, 3, 4 and
24 5.

1 **Q. And I think you stated all of the**
2 **results of those groundwater monitoring wells**
3 **are below the Class 1 standards?**

4 A. Yes, yes.

5 **Q. Do you know for certainty what ash**
6 **is in that area?**

7 A. It's just been characterized as
8 an old former ash area and I don't have any
9 knowledge of what kind of ash is there or
10 how old it is.

11 **Q. And yet we see nothing in the**
12 **groundwater above Class 1 standards?**

13 A. Correct.

14 **Q. How did that form your opinion as**
15 **to old ash areas generally?**

16 A. Well, it tells me that, you know,
17 we don't have a lot of information on the
18 chemistry of that area, but we know what's
19 getting away from that area is under the
20 groundwater quality standard.

21 That's just another data
22 point that I used when you look at the other
23 areas of the site that may have ash in the
24 fill as to what the potential is for that

1 ash in the field to impact groundwater.

2 **Q. And when you generally spoke about**
3 **historic -- the word historic, can you just**
4 **clarify?**

5 **Were you referring, as you**
6 **said, I believe, several times in your**
7 **deposition to the longstanding 50 to 70 to**
8 **80-year uses of these properties?**

9 A. Yes. As I mentioned earlier, the
10 historic areas are the ones that we've
11 identified in borings and in observations
12 that are very old and then can be very old
13 and then there's a set of classification
14 that I use as historic uses that have not
15 been specifically identified.

16 That is because of the age
17 of all the facilities. There are things that
18 we -- that we're unaware that could have
19 happened, but obviously, as I said, there are
20 impacts to groundwater.

21 **Q. I would like to refer you back to**
22 **the document that Mr. Russ was showing you**
23 **in Kunkel Exhibit 411 and it was the Waukegan**
24 **chart for MW-7 and MW-8, the data used for**

1 **hearing charts and tables.**

2 A. I'm sorry.

3 **Q. I'm halfway through, I guess.**

4 A. This is for Waukegan. This was for
5 Monitor Wells 7 and 8.

6 **Q. Yes. For Monitor Well 8, I noticed**
7 **that the data ends at year 2015.**

8 **Do you see that?**

9 A. Yes.

10 **Q. Do you have any idea why Dr. Kunkel**
11 **left out two years data from his tabulation of**
12 **median?**

13 A. I really don't know. And as I
14 mentioned when I was pointed to this data,
15 I said I cannot speak to the accuracy of
16 this dated because it was pointed out to
17 Mr. Kunkel that there are errors in these
18 data.

19 MR. RUSS: Objection. That's
20 not what the record shows. Dr. Kunkel
21 was shown errors in a separate part of
22 the --

23 HEARING OFFICER HALLORAN: I
24 don't know. The Board will take note.

1 Overruled at this point.

2 BY THE WITNESS:

3 A. To answer the question, I don't know
4 why the data are missing.

5 BY MS. NIJMAN:

6 Q. You talked about with Mr. Russ the
7 comparison data that you did comparing
8 groundwater constituents, constituents that
9 you find in the groundwater, and comparing
10 them with constituents you find in the leachate
11 from the ash test.

12 Do you remember that
13 discussion?

14 A. Yes, I certainly do.

15 Q. And is comparing constituents
16 of groundwater to a potential source area,
17 is that axiomatic in your world?

18 Is that what everybody does?

19 A. Yes. We do comparisons of the data.

20 Q. In fact, Dr. Kunkel compared the data?

21 A. In effect, he compared the EPRI data
22 to groundwater data.

23 Q. And when you said you weren't aware
24 of journals that published it, were you talking

1 **about how you presented it as a matrix**
2 **percentages?**

3 A. The way I -- yes. I -- I just
4 presented it in percentages and my knowledge,
5 of course, would be that there are plenty of
6 ways to present data. I have not seen a
7 percentage as I have shown in my report.

8 **Q. Just a few minutes ago, Mr. Russ**
9 **went through each of the facilities and the --**
10 **whether you had seen documentation about the**
11 **CCP ASTM standard.**

12 **Just to confirm, all the areas**
13 **that he identified, Joliet northeast ash area,**
14 **the southwest area, the former slag area at**
15 **Waukegan, to your knowledge, when was that ash**
16 **placed?**

17 A. Well, it was certainly before 1998,
18 when ENSR documented it in those reports. I
19 don't know how much farther back than that,
20 but it was definitely way before at that.

21 **Q. Mr. Russ also asked you about HDPE**
22 **liners for hazardous waste landfills. Coal**
23 **ash is not hazardous waste, is it?**

24 A. It is not.

1 **Q. In fact, as you testified, it's often**
2 **beneficially reused?**

3 A. Yes, it is.

4 **Q. There was also some discussion about**
5 **the fact that you included manganese in some**
6 **of your charts for risk analysis.**

7 **Now, Dr. Kunkel viewed**
8 **manganese as an indicator in his report,**
9 **correct?**

10 A. Yes, he did.

11 **Q. Was that one of the bases for you**
12 **looking at it?**

13 A. Well, it's there. Again, it is
14 there. So we looked at it for our trends
15 and we looked at it for the potential for
16 surface water indicators because, as I said,
17 there are other historic uses that it could
18 be coming from. So we considered it in our
19 analyses.

20 **Q. Now, at Will County, you looked at**
21 **the bottom of the Poz-o-Pac elevation with**
22 **Mr. Russ. To your knowledge -- based on your**
23 **review of the information in this case, what**
24 **was the reason for installing 36 inches of**

1 **Poz-o-Pac at the Will County ponds -- all four**
2 **of the Will County ponds back when the ponds**
3 **were installed?**

4 A. I don't recall the purpose of 36
5 inches.

6 **Q. Would it be to help protect against**
7 **that groundwater elevation?**

8 A. Well, you know, when they built the
9 ponds, they knew the groundwater was fairly
10 close. So you could make an engineering
11 assumption that they had some idea that they
12 had to deal with it and they put the extra
13 weight to help counterbalance the force of
14 water -- force of groundwater.

15 **Q. Would that be part of the design of**
16 **the pond that you and I were speaking about**
17 **earlier?**

18 MR. RUSS: Can I object to
19 the leading nature of the questions?

20 HEARING OFFICER HALLORAN: Yes.
21 You're* starting to lead again, Ms. Nijman.
22 Thank you.

23 BY MS. NIJMAN:

24 **Q. How does that relate to the discussion**

1 **we were having about designing a pond for the**
2 **circumstances the pond is in?**

3 A. It's directly applicable in that,
4 as I mentioned, as engineers, you know, there
5 are things that aren't in the regulations
6 that you have to consider anyway. Hydrostatic
7 uplift is one of them. And so if you have
8 bedrock very near the ground surface, as
9 they did, and a very limited ability to excavate
10 down, they wanted to get the maximum excavation
11 so I can very well see a thicker Poz-o-Pac to
12 resist those groundwater forces.

13 MS. NIJMAN: Thank you. That's
14 all I have.

15 HEARING OFFICER HALLORAN: Thank
16 you, Ms. Nijman.

17 Mr. Russ?

18 MR. RUSS: Just one or two
19 questions.

20 R E C R O S S - E X A M I N A T I O N

21 by Mr. Russ

22 **Q. If you look at Exhibit 268-P, please,**
23 **Mr. Seymour? It's right there on top of the**
24 **stack.**

1 A. Okay.

2 Q. Ms. Nijman was asking you about J
3 values, I believe.

4 A. Yes.

5 Q. Could you find an example of a J
6 value in this report?

7 A. There is a fair amount of data. I
8 went through the first result and I didn't see
9 any. I did not find any.

10 Q. There's no J values in the report at
11 all?

12 And for the record, this is
13 the Waukegan fourth quarter 2014 groundwater
14 monitoring report, is that right?

15 A. Yes, January 22, 2015, yes.

16 Q. There are no J values here.

17 Can you look for the method
18 detection level for antimony?

19 A. I don't see antimony on this chart.

20 Q. Let me help you. Look at Page 10
21 of the original source document. There's not
22 a Bates page, but --

23 A. Oh, I see it, yes.

24 Q. What is the method detection limit

1 **for antimony?**

2 A. It would be .003.

3 **Q. And the reporting limit is also**
4 **0.003 here?**

5 A. Yes.

6 **Q. Can you explain again what a J**
7 **value is?**

8 A. It's an estimated number between
9 the method detection limit and the ability
10 of the machine for detecting it.

11 **Q. The method detection limit and the**
12 **reporting limit are the same here, right?**

13 A. I see that.

14 **Q. So what would -- how would you**
15 **find the J value in this case?**

16 A. I would assume if they found it,
17 they would have shown it on this table, but
18 it's not obviously.

19 **Q. Okay. No J values for antimony in**
20 **2014 in Waukegan?**

21 A. Correct.

22 **Q. How about in 2017, if you look at**
23 **269-P, I don't think you have that there,**
24 **but I can find you a copy.**

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Exhibit 269-P, are there any J values or antimony in this report?

A. I don't see any.

Q. Are there any J values for anything in this report?

A. There aren't.

Q. And what would the -- what would the -- the J value represents the difference between the method detection limit and what?

A. The quantitation limit.

Q. Can you -- the quantitation limit shown in this report?

A. I don't see it in the chart and just the few pages we looked at.

Q. Right. So it doesn't appear that these reports actually provide quantitation limits or J values; is that right?

A. They don't provide --

MS. NIJMAN: Objection to the overbreadth. We're looking at one document of how many reports do we have?

HEARING OFFICER HALLORAN: Rephrase, Mr. Russ.

1 BY MR. RUSS:

2 Q. Well. I'm just asking about this
3 one document. It didn't have any quantitation
4 limits or J values; is that right?

5 A. I didn't see any.

6 Q. And so is that because they don't
7 exist or is that something this report just
8 doesn't produce?

9 A. I don't know. I can't tell.

10 MR. RUSS: Okay. One moment,
11 please.

12 HEARING OFFICER HALLORAN: Go
13 off the record.

14 (Whereupon, a discussion
15 was had off the record.)

16 MR. RUSS: Nothing further.

17 HEARING OFFICER HALLORAN: Okay.

18 Thank you, Mr. Russ.

19 Ms. Nijman, any re-redirect?

20 R E - R E D I R E C T E X A M I N A T I O N

21 by Ms. Nijman

22 Q. There's a quantification level and
23 detection level for equipment; is that correct?

24 A. Yes.

1 **Q. Just because it's not in this report**
2 **doesn't mean it didn't exist?**

3 A. That's correct.

4 MS. NIJMAN: That's all I have.

5 HEARING OFFICER HALLORAN: Thank
6 you.

7 Thank you, Mr. Seymour. You
8 may step down. I appreciate it.

9 Ms. Nijman, anything
10 further? Do you rest your case-in-chief?

11 MS. NIJMAN: We rest our
12 case-in-chief. Thank you.

13 HEARING OFFICER HALLORAN: Ms. Bugel,
14 any rebuttal?

15 MS. BUGEL: We do not have any
16 rebuttal?

17 HEARING OFFICER HALLORAN: All
18 right. Thank you. I think at this point
19 we will go off go the record for a moment.

20 (Whereupon, a discussion
21 was had off the record.)

22 HEARING OFFICER HALLORAN: We're
23 back on the record.

24 We were just talking about

1 dates and I have asked the parties and they
2 have agreed, they are going to file their
3 respective master list of exhibits and how
4 they were taken by February 13th. The
5 complainants are to file their written objection
6 to respondent's Exhibit 662 by February 5th.
7 Midwest response is due by February 9th. We
8 are going to discuss the briefing schedule
9 during a conference call on February 7th at
10 2:00 p.m. I have already -- I put down public
11 comment is due on February 28, 2018.

12 All right. I think that's
13 it. I thank you for abiding by all my
14 admonishments and it's been a great week.
15 Thank you so much everyone.

16 (Whereupon, no further
17 proceedings were had in
18 the above-entitled cause.)
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1 STATE OF ILLINOIS)
2) SS.
3 COUNTY OF C O O K)
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5

6 I, LORI ANN ASAUSKAS, CSR, RPR,
7 do hereby state that I am a court reporter doing
8 business in the City of Chicago, County of Cook,
9 and State of Illinois; that I reported by means
10 of machine shorthand the proceedings held in the
11 foregoing cause, and that the foregoing is a
12 true and correct transcript of my shorthand
13 notes so taken as aforesaid.

14
15 
16



17 Lori Ann Asauskas, CSR, RPR.

18 Notary Public, Cook County, Illinois
19
20
21
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23
24

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