BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF MIDWEST GENERATION, LLC,	)	AS 21-1
FOR AN ADJUSTED STANDARD FROM	)	
35 ILL. ADM. CODE 854.740(a) AND	)	
FINDING OF INAPPLICABILITY OF	)	
35 ILL. ADM. CODE,		

REPORT OF THE PROCEEDINGS held in the above-entitled cause before Hearing Officer BRADLEY P. HALLORAN, called by the Illinois Pollution Control Board, taken by Raelene Stamm, CSR, for the State of Illinois, Will County Office Building, 302 North Chicago, Street, 2nd Floor, Joliet, Illinois, on the 28th day of June, 2022, commencing at the hour of 9:00 a.m.

Reported By: Raelene Stamm, CSR

License No.: 084-004445

APPEARANCES:

MR. BRADLEY P. HALLORAN, Hearing Officer
MR. ANAND RAO, Board Member
MS. ESSENCE BROWN, Board Member
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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
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On behalf of the IEPA.

I N D E X

I N D E X

E X H I B I T S

HEARING OFFICER HALLORAN: We're on the record.

Good morning. My name is Bradley Halloran. I'm a hearing officer with the Illinois Pollution Control Board. Today is June 28, 2022. I'm also assigned to this matter. It's entitled, In the Matter of Midwest Gen, LLC, Petition For Adjusted Standard For the Joliet 29 Station, and it's Docket AS 2021-1. There are -- I'm not sure if there's any members of the public here, but I think this is all the attorneys and representatives of the parties.

Before I move on, I notice on the docket sheet on February 15, 2022, the Agency filed a motion to supplement the recommendation. I'm not sure if I addressed that. I see no objection. None, okay. Miss Gale says no objection, so that is admitted.

This hearing today is being held pursuant to Section 104.400, Subpart D, of the Board's procedural rules regarding adjusted standards. It's also governed in accordance with the, excuse me, Illinois Environmental Protection Act, Board's procedural rules, specifically Section 101, Subpart F, and has been noticed up appropriately.

We do have members of our board here. We have two members of the technical unit. We have Anand Rao, Essence Brown. We also have staff attorney Vanessa Horton. Appreciate you being here.

All right. Miss Gale, you want to introduce yourself and your co-counsel?

MS. GALE: Yeah. I also have an opening statement. Is this a good opportunity to do that or --

HEARING OFFICER HALLORAN: I'm sorry?

MS. GALE: I have an opening as well.

HEARING OFFICER HALLORAN: After you introduce yourself.

MS. GALE: Good morning, Mr. Hearing Officer and Members of the Board. I am Kristin Gale, and with me is Susan Franzetti. We're the attorneys with Nijman Franzetti on behalf of the petitioner, Midwest Generation, LLC.

HEARING OFFICER HALLORAN: Thank you. IEPA?

MS. DIERS: Stefanie Diers, S-t-e-f-a-n-i-e, Diers is D-i-e-r-s, and co-counsel is Sara Terranova, S-a-r-a, T-e-r-r-a-n-o-v-a. We're counsel for Illinois EPA.

HEARING OFFICER HALLORAN: Thank you both.

Okay. Miss Gale, you want to give a short opening or a long one.

MS. GALE: I think it will be short, but we shall see. We are here on Midwest Generation's petition for an adjusted standard from the requirement to remove the liner and ancillary equipment in Pond 2 at the Joliet 29 Station as part of Midwest Generation's closure of the pond. Midwest Generation's petition also requests that the Board find Ponds 1 and 3 not to be CCR surface impoundments and thus not subject to Part 845. The Illinois EPA does not object to that request, and the parties have agreed that today's hearing will focus only on Pond 2.

Joliet 29 is a power generating station that now burns natural gas. Mr. Bill Naglosky, the station manager, is here to tell us a little history of the pond at the station. He will tell us that when the station burned coal, a vast majority of the coal ash was sluiced in a pipe across the river to the Lincoln Stone Quarry.

However, on the rare occasion when the pipe was unavailable, the coal ash was sluiced to

the impoundment at the station, including Pond 2, for temporary storage. He will also tell us that Midwest Generation relined Pond 2 with a high-density polyethylene liner, commonly called HDPE in 2008. Midwest Generation emptied Pond 2 of the coal ash in 2019 and will close it pursuant to the Illinois CCR rule.

When Pond 2 was first built in 1978, it had a Poz-O-Pac liner. We're gonna hear from Dr. Matt Radlinski, an expert in concrete and pozzolanic reactions about Poz-O-Pac. And I have a sample here, it's kind of dirty, but we can pass it around later and during his testimony. And he's gonna describe how the pozzolanic reaction between fly ash, lime and water chemically changes those three ingredients and how as part of the process the aggregate, in this case boiler slag, is physically bound in the matrix that's formed.

He's going to explain that the chemical and physical process changes the fly ash and bottom ash such that the Poz-O-Pac does not fall within the definition of coal combustion residual.

When Midwest Generation purchased the station, it took an active interest in its CCR

surface impoundments to ensure that they were operating properly long before any government regulation. In the mid 2000s, Midwest Gen began a company-wide evaluation and maintenance program for all of its impoundments. One of its first projects was a geotechnical investigation of the soils in the pond embankment. Mr. Patrick Allenstein who logged the soil borings taken during that investigation is here to describe his findings, including that he did not log any coal ash in the borings at Joliet 29 around Pond 2 other than a few inches at the top.

In further -- excuse me. In furtherance of its interest in the operation and maintenance of the pond, when Illinois EPA asked Midwest Generation to analyze the groundwater around its impoundment in 2010, Midwest Gen agreed. It engaged Patrick Engineering to install the groundwater monitoring wells. As part of the well installation, additional soil borings around Pond 2 were taken. And we will hear today from Mr. Steve Kroll of Patrick Engineering on how those borings also did not find CCR in the embankment.

We also have one more set of borings

collected by Geosyntec in 2016. Mr. Dehlin will discuss each of those borings in his testimony about what the embankments were composed with and how they -- the absence of CCR.

Since the installation of the wells in 2010, Midwest Generation has analyzed the groundwater on a quarterly basis. At first the groundwater was analyzed for dissolved solid metals, excuse me, dissolved metals, but following passage of the of federal CCR rule in 2015, Midwest Generation analyzed the groundwater for both dissolved metals and total metals. The groundwater sampling was conducted by KPRG and Associates, and we will hear from Mr. Mark Wilson and Mr. Rich Gnat about how both the dissolved and total metal samples are collected.

We will end with two experts, Mr. Michael Maxwell, a professional geologist, and Mr. Thomas Dehlin, a professional engineer. Mr. Maxwell evaluated the 12 years of groundwater data at Pond 2 and also the groundwater data and leachate data from the Lincoln Stone Quarry, and concludes that the groundwater in Pond 2 is not impacted by CCR. Instead, Mr. Maxwell concluded that the one

metal seen in the groundwater at Pond 2 above a groundwater protection standard, which is cobalt, is due to a national phenomena caused by the road salt applied on Channahon Road.

Following him will be Mr. Dehlin who will describe to us not only how Pond 2 was originally built, but also how it was relined in 2008. He will describe how he reviewed and compared the original drawings with the final as-built drawings to determine the final design of the pond and also invoices and change orders that detailed changes made in the field during the construction. He reviewed also all of the boring logs to conclude that CCR was nod used as part of the original construction of the pond, nor the relining in Pond 2.

Mr. Dehlin also has significant experience designing impoundments with HDPE liners and will tell us about the uses and properties of HDPE liners and that an HDPE liner may be reused. Both Mr. Maxwell and Mr. Dehlin will also respond to the Agency's presumptions in their response, excuse me, recommendations about the construction of Pond 2. And we will insert answers of the -- excuse me. We

will insert answers of the Board's questions into their testimony.

We have for you witness binders for the Midwest Generation witnesses you'll hear from today. The first binder you have has the exhibits of the first six witnesses. Because the record for this petition is rather large, each witness has a cover page that identifies the exhibit and its location in the record.

I'll end with the summation of why we're here. We want to avoid waste. The Joliet 29 Station will continue to operate as a power station and wants to use Pond 2 as a low volume waste pond which includes storm water. The HDPE liner in Pond 2 is in good condition and would be a waste of time, energy and landfill space to destroy a competent liner when there's no evidence that the HDPE is contaminated with CCR, no evidence of contamination in the groundwater from CCR, and no evidence of CCR used to build the pond. Thank you.

HEARING OFFICER HALLORAN: Thank you, Miss Gale.

Miss Diers?

MS. DIERS: We do not have an opening

statement.

HEARING OFFICER HALLORAN: Perfect. We can start. Miss Gale, you can call your first witness, and I believe I guess the witness will sit up here next to the court reporter.

MS. GALE: Great. Yes. We call Mr. Bill Naglosky.

HEARING OFFICER HALLORAN: Thank you. The court reporter will swear you in.

(WHEREUPON, the witness was duly sworn.)

HEARING OFFICER HALLORAN: You may proceed.

WILLIAM NAGLOSKY,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. GALE:

Q. Mr. Naglosky, can you say and spell your name for the court reporter, please?

A. William, W-i-l-l-i-a-m, Naglosky, N-a-g-l-o-s-k-y.

Q. Thank you.

Mr. Naglosky, who do you work for?

A. I work for Midwest Generation.

Q. What do you do for them?

A. I'm the station manager for Joliet Station.

Q. And how long have you managed Joliet station?

A. I think 11 years.

Q. And, generally speaking, what do you do? What are your responsibilities as a station manager?

A. I manage the operations, the maintenance, the engineering and the compliance, both safety and environmental, of the station.

Q. And how long have you worked for Midwest Generation?

A. Since Midwest Gen acquired the sites in 1999.

Q. So before you were a station manager, generally what did you do?

A. Before?

Q. Before you were a station manager at Joliet 29, what were your -- what else did you do for Midwest Gen?

A. I'm a degreed electrical engineer, and I've been the station manager at other plants, Fisk

and Crawford. I've been the director of engineering for the corporation.

Q. Okay. Great.

Mr. Naglosky, can you first turn to the first tab in front of you in your witness binder? This is the affidavit you signed in this matter, correct?

A. Yes.

Q. Okay. I just wanted to confirm that.

Mr. Naglosky, what does Joliet 29 Power Generating Station do? What does it make?

A. Well, it makes just under 1400 megawatts of electricity. It serves the Northern Illinois load, and it's part of the PJM transmission distribution management system.

Q. And today how does it make that electricity? What does it use?

A. Natural gas.

Q. But it used to burn coal, right?

A. Yes.

Q. When did that conversion happen?

A. 2016.

Q. And when coal was used to -- excuse me.

When coal was used to generate

electricity, it also generated coal ash, right?

A. Correct.

Q. Including bottom ash?

A. Correct.

Q. And when it generated bottom ash, where did that bottom ash go?

A. Well, the majority of it, all of it, went to Lincoln Stone Quarry. Unless there was a problem with the transport system, which was rare, and then it would go to pond -- it would go to one of the ponds.

Q. And Lincoln Stone Quarry is across the river, correct?

A. Yes.

Q. Okay. So when one of the ponds were full of ash, where did the ash go?

A. The ash was physically removed and transported to Lincoln Stone Quarry.

Q. Okay. So we're here discussing Pond 2. What happened with Pond 1?

A. Pond 1 before the regulations in 2015 had already been cleaned and turned into a natural purpose pond, a rainwater pond. So it had already been cleaned before the regulation.

Q. Okay. Great.

So this is a good opportunity to pull out Board Question Number 5. There's a copy of it in front of you?

A. Okay.

Q. I'll read it into the record, and then you can give the answer, if that's all right.

So Board Question Number 5, please clarify whether the approximate permitting costs of $65,000 estimated for Ponds One and 3, citing petition at 18, is for each pond or combined for both ponds.

Mr. Naglosky, can you clarify that, please?

A. Yes. It's -- it was for -- it is for both ponds. However, it was -- it was made over a year ago, and I'm sure prices have escalated somewhat, but it also only included one set of public hearings.

Q. And we'll move on to Board Question Number 20, and again I'll read it into the record, and then you can answer it.

Okay. Board Question Number 20, on Page 6, you note that Pond 1 at Joliet 29 was repurposed with existing liner for the existing

non-CCR impoundment. Question A, please clarify whether Pond 1 was repurposed for non-CCR use under the federal CCR regulations or under the Board's regulations?

A. I believe the answer to that is neither. It was before the regulations occurred.

Q. Okay. Question 20B, prior to repurposing Pond 1 did Midwest Generation decontaminate the liner using a methodology like the one being discussed in this proceeding?

A. We remove material to the warning layer it's called, to the warning layer, so we did not remove material down to the liner.

Q. And what else did you do?

A. Wash the sides down with fire hose. The traditional way we clean the pond there, we wash the sides down with fire hose, and then we use heavy machinery to remove any ash that's in the bottom down to the warning layer.

Q. And Question 20C, did the repurposing of Pond 1 require the Agency's approval?

A. No, it did not.

MS. GALE: Question 20D will be asked by Mr. Thomas Dehlin during his testimony.

BY MS. GALE:

Q. All right. I don't know if you can see it from here, but Mr. Naglosky, we have up there an easel, may be we'll --

A. I see it.

Q. What is that? What is depicted in that picture?

A. That is Pond 2, aerial view.

Q. I'm sorry. I missed what you said.

A. That is Pond 2.

Q. Thank you, sir.

And to your recollection, generally when was Pond 2 originally constructed?

A. 1978.

Q. Thank you.

And again to your recollection, approximately how large is it?

A. Well, 3.9 acres, 25 million gallons.

Q. Okay. And when it was constructed in 1978, what was it constructed with?

A. Poz-O-Pac liner.

Q. And then it was relined, right?

A. It was relined in 2008. 2008 it was relined.

Q. And to your recollection what was it lined with?

A. Well, it was a multilayer liner, and it included a rubber liner. It included a rubber liner.

Q. And then once it was relined, it was placed back into service right?

A. Correct.

Q. And collecting bottom ash?

A. Yes. Until 2015.

Q. Do you mean -- right, until 2015.

A. When we started the construction outage for gas conversion.

Q. Right. And then it held bottom ash until when?

A. Well, we cleaned it out in 2019, 2019.

Q. And what does Midwest Generation plan to do with Pond 2? What would it like to do?

A. Well, repurpose for rainwater or process water.

Q. Okay. And generally process water, what does that mean?

A. Well, we have an RO system, a reverse osmosis system, and we backwash that every week,

maybe a thousand gallons a week. Yeah.

Q. And so it's emptied at the CCR. Where is Midwest Gen in the process of repurposing Pond 2?

A. I don't understand the question.

Q. What are we waiting on before we can move forward with repurposing of the pond?

A. Results of regulation and approval to do this.

Q. Great.

And then, generally speaking, how would it be cleaned and repurposed?

A. Since we propose to intend to use the liner, it'll be done -- it'll start -- the sides will be washed down. The material will be removed. However, we'll go past the warning layer and go all the way to the liner. And there's a lot of precautions when you do that. You have to have a rubber-lined heavy machinery, things of that nature, so the liner is preserved.

Q. Thank you.

Now I switch over to the groundwater monitoring that we've been doing. You're aware that Midwest Generation monitors the groundwater around Pond 2?

A. Yes, I am.

Q. And to your recollection when did the groundwater sampling begin?

A. 2010, 2010.

Q. And then in 2013, Midwest Generation entered into a compliance agreement --

A. Correct.

Q. -- with the Agency?

A. Yes, to continue.

Q. Right. It required the Agency to continue groundwater monitoring?

A. Yes.

Q. Thank you.

And then in 2015 because Pond 2 is a federal unit, what happened?

A. Well, the ground monitoring continued to occur. However, it was done in a different method. Instead of just filtering the water and testing the water, it was all SOP. It was the water and all solids.

Q. Let's end here, Mr. Naglosky.

To confirm, what are Midwest Generation's intentions as it relates to the Illinois CCR rule?

A. Our intention is always to comply.

MS. GALE: Great. I have nothing further.

HEARING OFFICER HALLORAN: Thank you. Before we move on, Mr. Rao and Miss Brown may interject questions, if they see fit. They'll just try to let me know, and Miss Horton, if you need to ask a question. Thank you.

Miss Diers?

MS. DIERS: Thank you.

CROSS-EXAMINATION

BY MS. DIERS:

Q. Has Midwest Gen used standard earth moving equipment inside of Pond 2 to remove CCR?

A. Yes.

Q. Do you know approximately how many times the existing synthetic liner may have had earth moving equipment driven on top of it?

A. No. It's done on a -- it's done occasionally, but, no, I don't know.

Q. So when you say occasionally, would that be like --

A. Once a decade.

Q. -- weekly? Monthly? Yearly?

A. A decade.

Q. A decade ago --

A. Maybe.

Q. -- it has?

A. You know, something in that range. Five or eight years certainly at least.

Q. Since the last time it's had equipment on it?

A. We know that 2019 it was cleaned.

MS. DIERS: Okay. No further questions.

HEARING OFFICER HALLORAN: Thank you.

Miss Gale, any redirect?

MS. GALE: Nothing for me, no.

HEARING OFFICER HALLORAN: Thank you.

Panel, any questions?

You may step down. Thank you so much.

(Witness excused.)

HEARING OFFICER HALLORAN: You may call your next witness when ready.

MS. GALE: We call Patrick Allenstein.

(WHEREUPON, the witness was duly sworn.)

HEARING OFFICER HALLORAN: You may proceed.

MS. GALE: Thank you.

PATRICK ALLENSTEIN,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. GALE:

Q. Mr. Allenstein, for the court reporter can you please say and spell your name?

A. Patrick Allenstein, P-a-t-r-i-c-k, A-l-l-e-n-s-t-e-i-n.

Q. Mr. Allenstein, who do you work for?

A. I work for KPRG and Associates.

Q. And what do you do for them?

A. I'm a geologist.

Q. And as a geologist what do you do?

A. Right now I'm more in the field more or more in the office than I have been in the field, so I'm report writing, proposal writing.

Q. When you were in the field what did you do?

A. Collected a whole lot of soil and groundwater samples.

Q. How long have you worked for KPRG?

A. 19 years.

Q. And what professional licenses do you

hold?

A. I hold PG in the state of Wisconsin and the state of Kentucky, professional geologist.

Q. Mr. Allenstein, can you tell me a little about your soil boring and soil logging experience?

A. I've had probably hundreds of feet of soil boring through several different methods of drilling, logged and sampled.

Q. And so how are soil borings collected for a geotechnical analysis?

A. A few different ways depending on what the analysis is. One way is a Geoprobe which uses a direct push method that is kind of like a jackhammer. In a jackhammer is a tube, and they bring that up and open up the tube, and you can look at it that way.

They can also do an undisturbed sample which is using a hollow stem auger and a split spoon method with a weight that has a predetermined weight and height that it's dropped from.

Q. And how is it determined which way you do? Is that --

A. The client.

Q. Mr. Allenstein, are you familiar with the

Munsell color chart?

A. I am.

Q. What is it?

A. It's a color chart that has every color in the rainbow that uses a numerical method to identify a specific color.

Q. So when is it used?

A. Again when a client wants, suggests.

Q. And would you describe it as a way to standardize color --

A. It is a standardizing color method, yes.

Q. Thank you.

Do you have to use the Munsell color chart --

A. No.

Q. -- when doing soil boring?

A. No.

Q. Mr. Allenstein, are you familiar with the term, coal combustion residual?

A. Yes.

Q. What is your understanding of it?

A. It's -- well, it's from the -- it's from the burning of coal, and it generally consists of slag and bottom ash.

Q. Okay. Fly ash, too?

A. Fly ash as well, yes.

Q. When you're looking at a soil for boring logs, for logging soil borings, are you able to identify CCR?

A. Yes.

Q. How do you do that? What do you look for?

A. Experience, but other than that it's how it's laid in the tube. For example, the borings that we generally use uses a Geoprobe boring, a Geoprobe to advance the boring. And it come up in a acetate tube, and they cut that open, and we're able to see that whole core, if you will, of soil. And then within that we're able to tell where CCR and slag is pretty readily available or pretty readily identifiable being black and glassy like shards of glass. And then bottom ash is easy to identify as a kind of a sandy layer, generally brown.

Q. And when you're logging a soil boring, what do you log if you see CCR such as bottom ash or slag?

A. I would log what it looks like as far as the USCS goes and then note whether it is CCR

material, generally bottom ash or slag or -- I haven't -- or fly ash.

Q. Yeah.

You mentioned the U-S --

A. C-S.

Q. What is that?

A. That is Unified Soil Classification System. It's pretty much the standard for classifying soil in our industry.

Q. And so that's the standard that you use when you log soil borings?

A. Yes.

Q. Okay. Mr. Allenstein, can you just turn to Tab 1 in your binder? What is that?

A. That is my affidavit.

Q. Great.

I want to go through a few things that you discuss in the affidavit, but let's pull out -- flip to Tab 2. And for the record it is Exhibit E of the Illinois EPA's recommendations?

What is this?

A. This is the geotech report we did on the stations.

Q. Okay. So you said geotech report you did

on the stations. What did you do at the stations?

A. I was the one out -- the field person for collecting soil samples and logging those.

Q. And collecting geotechnical data, right? Is that what you mean by soil samples?

A. Yes.

Q. And when did this occur?

A. 2005.

Q. And one of the stations was Joliet 29, correct?

A. Correct.

Q. So let's turn to the soil borings for Joliet 29, excuse me, with the Figure 4-1. It's Attachment 4.

A. Got it.

Q. Okay. What does this map show?

A. This map shows the location of the borings that we advanced at the station.

Q. And you can see Pond 2 in the middle, right?

A. Correct.

Q. What are the borings around Pond 2?

A. 2 and 3.

Q. Okay. So you earlier described how you

collected soil borings. Is that what you did here?

A. Yes.

Q. And it was with a Geoprobe, right?

A. Correct.

Q. When logging these boring logs in 2005, did you use the Munsell color chart?

A. No.

Q. All right. So let's look at the soil boring logs for G2, if you flip two pages, and looking at the top it states, logged by P. Allenstein. That's you?

A. That's correct.

Q. Okay. So the log of boring -- I'll just read the title of it. Log of boring GS29-GT-2.

What -- what does this show us? Tell us what this shows.

A. This is my description of the soils that were brought up as part of this boring.

Q. Okay. And looking at the top first layer, how did you describe the soil?

A. Sand and silt, fine to medium, dark brown, some slag, dry.

Q. Okay. Now, looking at the -- down further in the column, did you observe any CCR further down

in the column of GT-2?

A. I did not.

Q. Same thing looking at log -- top of the page, the next page, log of boring GS29-GT-3. Again, logged by P. Allenstein, that's you, correct?

A. Yes.

Q. And similarly again, what does this show?

A. This is the my description of the soils that were brought up as part as -- as part of this soil boring.

Q. Okay. And in the top foot what did you see?

A. Bottom ash, dark brown, clay, little gravel, dry.

Q. And further down in GT-3, did you observe any CCR in the soil column?

A. I did not.

Q. In either GT-2 or GT-3, if you had seen CCR depths below the surface, would you identify it in the log as bottom ash, fly ash or slag?

A. Yes.

Q. Okay. I just want for the sake of comparison to look at the Will County boring logs

which are, if you flip back forward in, Attachment 3. And I want you to look at log -- boring log WC-GT-3.

A. Okay.

Q. Okay. So for comparison, what did you log at 8 to 9 and a half feet?

A. Slag, black, fine to medium, sand with fine gravel, moist. And then at the bottom of that was a clay weather bedrock that was gray.

Q. And that was the end of your --

A. That was the end of the boring, yes.

MS. GALE: Okay. I have nothing further.

HEARING OFFICER HALLORAN: Thank you, Miss Gale.

Miss Terranova.

CROSS-EXAMINATION

BY MS. TERRANOVA:

Q. To your knowledge has the Poz-O-Pac or black silty gravel at Joliet 29 Pond 2 been analyzed for soil, total metals or leachable metals?

A. Not to my knowledge, no.

Q. Thank you.

Does the USCS soil classification have any

method to determine the presence of fly ash or fly ash through analytical methods?

A. The USCS doesn't use analytical methods. It's just a classification system for soils.

MS. TERRANOVA: Thank you.

HEARING OFFICER HALLORAN: Thank you.

Miss Gale, anything further?

MS. GALE: Nothing further. Thank you.

HEARING OFFICER HALLORAN: Okay. You may step down. Thank you, sir.

THE WITNESS: You're welcome.

(Witness excused.)

HEARING OFFICER HALLORAN: You may call your next witness.

MS. GALE: All right. We call Steve Kroll.

(WHEREUPON, the witness was duly sworn.)

STEVEN KROLL,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. GALE:

Q. Good morning. For the record can you please say and spell your name?

A. Steven Kroll, S-t-e-v-e-n, K-r-o-l-l.

Q. Mr. Kroll, who do you work for?

A. Patrick Engineering.

Q. What do you do for them?

A. I am a project manager in our geotechnical and environmental division.

Q. And, generally speaking, what do you do?

A. I shepherd projects from start to finish and ensure their completion, assign staff to various tasks, report writing, sometimes field collection of data, and all the fun accounting and billing things after that.

Q. Did you say also you train staff?

A. Yes, I do.

Q. And what do you train staff to do?

A. Generally I train them depending on their level of experience starting with fieldwork is generally the place most of them start out at. I train them on the USCS, how to identify soil, obviously safety, groundwater sampling, all the tasks that they need to be able to do.

Q. And how long have you been with Patrick Engineering?

A. 17 years.

Q. And what professional licenses do you have?

A. I'm a licensed professional geologist in Illinois, Wisconsin and Indiana.

Q. If you flip to your first tab in the binder in front of you, and this is the affidavit you signed in this matter?

A. Yes, it is.

Q. Okay. Patrick Engineering, what -- you know, you generally described what you did for Patrick -- or Midwest Gen in this affidavit. Tell us here what you did for Patrick -- Midwest Gen.

A. What we did -- we were -- for this part of the project we were retained to perform a hydrogeologic evaluation at a number of Midwest Gen sites, including Joliet 29, in order to determine if there was any impact to the groundwater in the area of the ash ponds.

Q. Let's turn to the second tab, and this is that hydrogeologic evaluation you were discussing?

A. Yes, it is.

Q. When did this occur?

A. This report was issued in February of 2011. The work began in 2010.

Q. And so what did -- generally speaking, what did Patrick Engineering do for this work?

A. For this work we installed monitoring wells around all the active ash ponds at Joliet 29. We developed the wells, collected groundwater samplings from the wells. We also surveyed the elevations of both the surface and the groundwater surface to determine direction of groundwater flow, and from taking all that data together we formed our assessment.

Q. And when you installed the monitoring wells, what did you do with the soil borings?

A. To install the monitoring wells we install soil borings, and we log the soil borings in a similar method to the previous witness.

Q. Okay. So looking at the map in front of you, Pond 2, what do we see here? What are those?

A. Those are the four monitoring wells that are around the perimeter of Pond Number 2.

Q. And when they installed the monitoring wells, who -- and you said they log the soil borings. Who logged the soil borings?

A. A person by the name of Andrew Gagnon.

Q. Can you spell his last name, please?

A. G-a-g-n-o-n.

Q. Thank you.

And he was an employee of Patrick Engineering?

A. Yes.

Q. Is he still an employee of Patrick Engineering?

A. No, he is not.

Q. When he was an employee, did you train him?

A. Yes, I did.

Q. And what did you train him to do?

A. I trained him to identify soil using the USCS, Unified Soil Classification System. I also trained him to identify anything that fell outside of the USCS, things that were not soil.

Q. Does that include ash?

A. Yes, it does.

Q. Okay. Are you familiar with the Munsell color ash -- excuse me.

Are you familiar with the Munsell color chart?

A. I am.

Q. And we just had Mr. Allenstein describe

it, but what is your understanding of the Munsell color chart?

A. It is either a book or a collection of chips of various color very similar to paint samples you'd find in a hardware store, pretty much does cover every color that you would generally see. And it's a way of quantitatively describing the color. So each color has a alphanumeric code to it that is the same across the chart.

Q. So before you came here did you review the soil borings that Mr. Gagnon took?

A. I did.

Q. Did he use the Munsell color chart?

A. No, he did not.

Q. Was he required to?

A. No.

Q. You said earlier that part of your evaluation of soil borings you look at soil, what may not be soil, such as coal ash. So you're familiar with the term, coal combustion residual?

A. Yes.

Q. And that is bottom ash, fly ash and slag?

A. Correct.

Q. Okay. When you look at the soil to record

boring logs -- oh, we already did that. Never mind.

When you look at soil borings and you see CCR, what does it look like?

A. It obviously depends on if it was fly ash or bottom ash. It's a dark color anywhere from black to brown. It has a glassy appearance, various grain sizes. It definitely doesn't look like soil.

Q. Okay. So let's take a look at those soil borings for 3, 4 and 5, and I'll read them into the record.

Soil borings are B-MW3, B-MW4, B-MW5 and then ultimately B-MW10. These are the soil borings that you reviewed?

A. Yes.

Q. And upon your review did each boring log appear to have been prepared in accordance with Patrick Engineering and your training and generally accepted practices?

A. Yes.

Q. Within these Joliet 29 soil borings, 3, 4, 5 and 10, was any CCR material identified within the soil?

A. No.

Q. Mr. Kroll, had Mr. Gagnon had seen CCR within the soil of these wells, would he have recorded it in the boring logs?

A. Yes.

MS. GALE: Thank you. I have nothing further.

HEARING OFFICER HALLORAN: Thank you, Miss Gale.

Agency?

CROSS-EXAMINATION

BY MS. DIERS:

Q. Hi, just one question, please. To your knowledge has the Poz-O-Pac or black silty gravel at Joliet 29 Pond 2 been analyzed for total, I'm sorry, for soil, total metals or leachable metals?

A. Not to my knowledge.

MS. DIERS: Thank you. Nothing further.

MS. GALE: Nothing further.

HEARING OFFICER HALLORAN: Thank you.

Yes, Mr. Rao?

MR. RAO: You identified the monitoring valves around Ash Pond 2. Can you identify which ones are downgradient and which ones are upgradient?

THE WITNESS: Not at this time. I know back

in -- when we did this report, I believe MW10 is the upgradient well. 3, 4 and 5 are the downgradient wells.

MR. RAO: Thank you.

MS. GALE: We can have somebody else answer that question as well.

MR. RAO: Thank you.

HEARING OFFICER HALLORAN: You may step down. Thank you, sir.

(Witness excused.)

HEARING OFFICER HALLORAN: You may call your next witness.

MS. GALE: Yes. We call Mr. Wilson.

Mr. Halloran, before we continue on, my -- well, introducing exhibits --

HEARING OFFICER HALLORAN: We can go off the record.

(WHEREUPON, a discussion was had off the record.)

HEARING OFFICER HALLORAN: We're back on the record.

(WHEREUPON, the witness was duly sworn.)

MARK WILSON,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. GALE:

Q. Mr. Wilson, for the court reporter can you please say and spell your name?

A. Mark, M-a-r-k, Wilson, W-i-l-s-o-n.

Q. Who do you work for?

A. KPRG and Associates.

Q. And what do you do for them?

A. A variety of things. I'm a project engineer. I do a lot of fieldwork, groundwater sampling, soil sampling. I do Phase 2 work, Phase 3 and environmental radiation.

HEARING OFFICER HALLORAN: Could you speak up a little, sir? I don't know if the mic is on.

THE WITNESS: Okay.

HEARING OFFICER HALLORAN: Just speak up. Thanks, sir.

THE WITNESS: Will do.

BY MS. GALE:

Q. How long have you worked for KPRG?

A. Ten years.

Q. Okay. And have you done work at the Midwest Generation stations?

A. Yes.

Q. What have you done at those stations?

A. I've done groundwater monitoring, installed some gauges in some of the ponds there.

Q. Okay. And in this case you sample the groundwater at Joliet 29, right?

A. Yes.

Q. Can you turn to Tab 1 of your report? What is this?

A. It's my affidavit.

Q. Okay. And here you're discussing collecting the groundwater sampling on August 30, 2021, correct?

A. Correct.

Q. Okay. And just look at the map in front of you, Pond 2, is that where you sampled the groundwater wells?

A. Yes.

Q. So what samples did you collect from each of these wells?

A. There was two sets of samples, one for the CCA program, one set for the CCR program. Each of

those has a variety of parameters.

Q. Okay. All right. So tell us how when you got to Pond 2 -- or got, excuse me, got to Joliet 29, tell us your process of collecting groundwater samples. What do you do?

A. Well, we set up the equipment, and we purge the well using a low flow technique, taking field parameters with a water quality instrument. We go until stabilization, and then the well is ready for sample collection. And I'll turn the equipment off there. I'll get the bottles and label them with the sample time, date and my initials.

So during this process, the labeling process, the bottles are separated into two groups, one being for filtered parameters, one being for nonfiltered parameters. So those are separated out during labeling and put into separate plastic bags. Then an inline 0.45 micron filter goes into the bag with the bottles that are to be filtered. Those are taken to the well. The samples that are nonfiltered are generally taken first, and then the inline filter will be connected to the sample discharge line. And then we'll collect the bottles

for dissolve parameters. Then they're taken and put on ice in the cooler and couriered to the lab or picked up by the lab after that.

Q. Okay. And I just want to ask about these bottles. So is there a bottle for each metal or is it one bottle for sampling of all the metals?

A. There's one bottle for total metals.

Q. Okay.

A. And if there's dissolved metals, there would be a separate bottle for that. But the one bottle generally has enough volume for the lab to get any metals they want out of that bottle.

Q. Great.

I want you to turn to Tab 2 in your binder, please. And for the record this is Exhibit O of the Illinois EPA's recommendation, and then attached to that is the analytical data. And I want you to flip to Page 17 and 18 of the first sample reports.

A. Okay.

Q. What are on Pages 17 and 18? What is that?

A. Chain of custody.

Q. What is a chain of custody?

A. That's the document that is filled out in order to accompany the samples to the laboratory. It shows the custody of who collected the samples and anybody that took custody between them and the laboratory, and it identifies the parameters that the laboratory's going to analyze them for.

Q. And where does this sheet typically come from?

A. From the laboratory with the bottles.

Q. So I want to look at this one on Page 17. That's your handwriting, correct?

A. That's correct.

Q. Page 18, that doesn't look like your handwriting, does it?

A. No.

Q. So what happened here? Tell us what happened.

A. On this one, those samples were collected on August 30. They stayed in my possession overnight in to August 31 when I came back to the office, our Westmont office. There were CCA in the CCR -- or actually the laboratory did not have -- did not send with the CCR samples a chain of custody for me to fill out. There was a CCA one I

did fill out.

So noticing this on the morning there, I requested a chain of custody from the laboratory for the CCR program. They sent that via email. Then I had all the samples in the office there packed on ice. I had to go off to another project that morning. I requested that our administrator be copied with that chain of custody from the laboratory and gave her instructions to fill that out. And she did sign my name and initial it, and that's what she did, Kelly Spadoni, our administrator.

So that's not my handwriting, but that's the correct information for the samples I collected as I directed Kelly to fill it out, sign my name and initialed on there.

Q. Great.

Okay. So let's look at this chain of custody, and we're on Page 18 of 21, the one that Kelly filled out at your direction?

A. Yeah.

Q. And you describe what it includes. I want to look at the column after where it says, water. Where it says, field-filtered samples, yes or no,

do you see that there?

A. Yeah.

Q. So this shows that you checked yes, right?

A. Yes.

Q. Why did you check yes here?

A. That yes would indicate that there was field-filtering performed in the field for the total dissolved solids bottle.

Q. Did you field-filter the total metals bottle?

A. No.

MS. GALE: Okay. I have nothing further.

HEARING OFFICER HALLORAN: Thank you.

Agency?

CROSS-EXAMINATION

BY MS. TERRANOVA:

Q. Just one, to your knowledge has the Poz-O-Pac or black silty gravel at Joliet 29 Pond 2 been analyzed for soil total metals or leachable metals?

A. Not to my knowledge.

MS. TERRANOVA: Thank you. No further questions.

HEARING OFFICER HALLORAN: Miss Gale, any

redirect? Okay.

You may step down, Mr. Wilson. Thank you so much.

(Witness excused.)

MS. GALE: Mr. Hearing Officer, can we go off the record for a second?

HEARING OFFICER HALLORAN: Yes we may.

(WHEREUPON, a discussion was had off the record.)

HEARING OFFICER HALLORAN: We're back on the record. Miss Gale, your next witness.

MS. GALE: We call Mr. Richard Gnat.

HEARING OFFICER HALLORAN: Thank you.

(WHEREUPON, the witness was duly sworn.)

RICHARD GNAT,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MS. GALE:

Q. Mr. Gnat, can you please say and spell your name for the court reporter?

A. Richard, R-i-c-h-a-r-d, Gnat, G-n-a-t.

Q. Mr. Gnat, you work for KPRG and

Associates, right?

A. Correct.

Q. What is your position?

A. I'm a hydrogeologist by trade, and I'm a part owner of the company.

Q. How long have you been part owner of the company?

A. 22 -- 21 years started in January of 2000. I'm sorry, 2002, 20 years.

Q. And what does KPRG do?

A. We're an environmental consulting firm, and we specialize primarily in soil and groundwater subsurface work, take everything from initial phases of assessment through site investigations and remedial design and construction.

Q. And what professional licenses do you have?

A. I have a PG, a professional geologist certificate, in Wisconsin and Illinois.

Q. Mr. Gnat, generally what type of work does KPRG do -- excuse me.

What type of work does KPRG do for Midwest Generation?

A. We do a variety of work, and probably in

the last several years most of our work's been focused on various CCR issues.

Q. Can you turn to the first tab of your binder, please? What is this?

A. This is my affidavit.

Q. Okay. Great.

And then looking at our handy dandy map, these are the monitoring wells around Pond 2, right?

A. Correct.

Q. And KPRG collects the groundwater samples from these monitoring wells?

A. Correct. We started groundwater sampling I want to say in 2013 time frame.

Q. And your understanding is that Illinois EPA approved this groundwater monitoring network when it was installed, right?

A. Correct.

Q. And when you were sampling in 2013, the sampling was conducted pursuant to a compliance commitment agreement?

A. Correct.

Q. And that's what the CCA sampling that Mr. Wilson was discussing before, right?

A. Yes, it is.

Q. And that continues today, correct?

A. Yes, it does.

Q. So for the CCA sampling, what is analyzed?

A. There's a list of various parameters, inorganic parameters, and they actually included some, I believe, BTECs and so on, benzyltoluene, ethylene, xylene parameters. But it's primarily relative to the metals. And it's dissolved metals samples, so they're field-filtered in the field prior to preservation.

Q. And then in about 2015, KPRG also started collecting samples pursuant to the federal CCR rule, right?

A. Correct.

Q. And what type of metal sampling is required under the federal rule?

A. Under the federal CCR rule, it's total metal requirement, so those samples are not field-filtered prior to preservation.

Q. And now we also have the Illinois CCR rule, right?

A. Correct.

Q. And are the metals sampling requirements

the same under the federal rule and the Illinois CCR rule?

A. Yes, they are.

Q. We just heard from your colleague, Mr. Wilson, and how the samples are collected at Joliet 29. Does that sound about accurate to you?

A. Yes.

Q. And did Mr. Wilson properly collect the groundwater samples pursuant to the CCA and the federal and Illinois CCR rules?

A. Yes, he did.

Q. Okay. Let's turn to Tab 2 of your binder. So this is the second quarter of the 2021 Illinois CCR sampling data, isn't it?

A. Yes, it is.

Q. And it includes the analysis package from the lab?

A. Yes, it does. For the state CCR sampling, yes.

Q. And who prepared this document?

A. Along with myself, I had a geologist doing the table and so on, but under my direction.

Q. And once KPRG finalizes the document, where does it go?

A. The document gets submitted to Midwest Generation which then also posts it onto their website, and now we're also submitting a hard copy to the Illinois EPA.

Q. And does this look like a true and accurate copy of the second quarter 2021 sampling data? CCR sample data, excuse me.

A. Yes, it does.

Q. And were -- let's turn to the next Tab 3 which is Exhibit O of the Illinois EPA recommendation. This is the third quarter 2021 CCR groundwater data, isn't it?

A. That is correct, yes.

Q. Okay. And I want to finally -- we'll get to the point, but I want to get -- we'll get to the preparing why. I want you to turn to Tab 4, and this is the third quarter 2021 CCA sampling?

A. Correct, the compliance commitment agreement sampling, CCA.

Q. For Joliet 29?

A. Yes, it is.

Q. Who prepared this document?

A. KPRG does that at my direction.

Q. And then once KPRG is finished with the

document, where does it go?

A. Well, it gets sent for signature by Mr. Naglosky. Then we run copies of it and distribute it to Midwest Generation, as well as four copies to Illinois EPA. I'm sorry, two copies.

Q. And does this look like a true and accurate copy of the third quarter 2021 CCA sampling for Joliet 29?

A. Yes, it does.

Q. So, generally speaking, what is the difference in results between field-filtered samples and total metal samples?

A. In the ideal world the filtered samples, those are samples where any type of suspended sediment is filtered out to a 4.5 micron size, and then that water is poured into a laboratory prepared container which has acid as a preservative.

For total metals you do not filter. You do not take that filter step. So if there is any suspended sediment in that sample, it also gets acidified once it's preserved in the sample. So if there's any additional metals that are perhaps

attached to the sediment samples, those become part of the liquid. Basically the acid extracts it off that sediment.

So what does that mean? If you have a more sediment latent sample, the total metals analysis tend to be higher, and the field-filtered samples should be lower. If it's relatively little sediment or no sediment at all, pretty much the same.

Q. Okay. Great.

I want you to turn back to Tab 2 of your report, and I want you to turn to the chain of custody which is on Page 21 of 24?

A. Okay.

Q. We just heard Mr. Wilson describe what this chain of custody shows. Do you have any dispute with his description?

A. Yeah. This one in Tab 2, correct?

Q. Yes.

A. This first one is a chain of custody completed by Erin Bulson for her sampling when she was out doing sampling in May of 2000. In May, correct.

Q. And if you look in the column under

analysis requested, the first long column where it says field-filtered, that's blank, right?

A. Correct.

Q. What does that mean?

A. That she did not filter any samples in the field.

Q. Okay. All right. And let's turn to the next tab which is Exhibit O of the Agency's recommendation, and I want you to turn to Page 17 of 18 which is also the chain of custody that we just discussed with the Mr. Wilson.

A. Got it.

Q. If you look at the first column under analysis requested, it says, field-filtered sample, and it says Y. Can you explain the discrepancy between the second quarter 2021 groundwater results chain of custody and the third quarter 2021 results?

A. Sure. This particular round Mark Wilson was collecting the samples, and Mark does a lot of our groundwater sampling. In fact, he manages the waste management sampling. He was -- well, he field-filtered the total dissolved solids sample. When I saw that Y when I was reviewing these

things, I called him and asked him about that because we do not field-filter for total metals for CCR.

And he explained that the Y is in there to indicate that he did sample for the total dissolved solids, but that's a totally different jar and bottle than for the metals analysis. And these particular chains of custody, we determined, you know, it's pretty ambiguous. You put a Y, and somebody can assume everything's been filtered. That's just flagging to the lab that there's a sample in here that's got a dissolved parameter, total dissolved solids, and that he filtered it in the field.

In that we notice that there is data ambiguity and to not to have this issue again, we did have an internal meeting with all of our samplers, and we also talked with the lab. And now the lab is instructed that for all of our CCR sampling total dissolved solids, it's filtered in the lab, and they have it cued like that when they receive our CCR samples. And that precludes anybody being confused should a TDS sample be filtered in the field or not filtered in the field.

All of our metals samples were not filtered in the field.

Q. Great.

And so in looking at this chain of custody and looking at the results in Exhibit O of the recommendation, were the total metals field-filtered?

A. No, they were not.

Q. And didn't you also do another analysis to confirm that result?

A. That's correct. I took a look at the metals for the sampling in question, and I looked at the CCA data.

Q. Which is Tab 4?

A. Tab 4, and that's for dissolved metals. And I compared that against the total metals. And for all parameters except for cobalt, the total metals were either the same or slightly higher than the dissolved metals as one would expect. Cobalt, just the opposite, was at a very low level. However, the cobalt which was also from the same jar as the other metal samples was slightly higher in the totals, I'm sorry, in the dissolved analysis than in the totals.

You know, however, I guess, you know, when you look at this, you have to step back and look at the whole data set. If you look at all the other metals coming out of the same jar, they all follow that ideal trend. In fact, if you look at arsenic, which also comes from the same bottle, in the dissolved analysis for CCA arsenic was nondetect in all the samples, MW-4, MW-10, 3, 4 and 5. And yet it was detected in the total samples because the total samples were not filtered. So that arsenic was a good barometer for us that, you know, yep, these are not filtered samples.

Q. And just to confirm, the arsenic results are from the same sample container as the cobalt results, correct?

A. Correct.

Q. So how do you explain this slight disparity in the total versus result cobalt for well MW-4?

A. Right. We are at a fairly low levels. We are talking about low level parts per billion numbers. And, you know, it's -- the larger your environmental data sets become, the more likely you're gonna have an anomalous value here and

there. A little bit of a head scratcher, but you can't lose the forest for the trees. Sometimes you've got to step back and take a look at what that data is telling you.

And even though in this particular case for cobalt the total appears to be slightly lower than the dissolved, if you look at the range of detections for all of the total samples that we've done over time and then all the dissolved samples that we've done over time, both of them fell within the range. And, in general, you didn't have this issue, but in this particular sample you had that little statistical anomaly.

Q. And you reviewed the data. Are the cobalt concentrations, both dissolved and total, consistent with historical data, excuse me, historical data from that location?

A. Correct. Yes.

Q. I want to turn to Board question -- well, Board question to the Agency Number 5 because I think you'd actually be better suited to answer this question. So I'll read the question, and then we can answer it. The Agency states that the cobalt analytical results exceed the groundwater

protection standards of 0.006 mg/L under Section 845.600 at MW-4 as recently as October 22, 2020, citation to the recommendation at Page 24.

HEARING OFFICER HALLORAN: Miss Gale, can you slow down. The court reporter's trying to --

MS. GALE: I'm sorry. I apologize.

The Agency states the cobalt analytical results exceed the groundwater protection standards of 0.006 milligrams per liter under Section 845.600 at MW-04 as recently as October 22, 2020, citing to the Agency February 4, 2022, recommendation at Page 24. However, in Table 2 of Exhibit 11 and Table 1 of Exhibit O, the cobalt measurement for October 22, 2022 -- October 22, 2020, excuse me, does not appear to be in agreement. Table 2 of Exhibit 11 has cobalt measured as 0.0041 milligrams per liter, and Table 1 has the measurement for cobalt as 0.0082 milligrams per liter.

And, Mr. Gnat, I'll represent to you that Exhibit 11 is the annual CCA report for Joliet 29, and you can find the data in this October 15 under Tab 4 for that as it is a CCA report. So to answer the Board's question, please elaborate on the discrepancy in the data between the two tables.

A. So --

Q. If you look to MW-4?

A. MW-4 on the --

Q. October 22, 2020.

A. October 22, 2020, cobalt, the dissolved value for cobalt was -- at MW-4 was 0.0041.

Q. And if you go to O which is your Tab 3 --

A. Right. The dates on this table are cut off.

Q. Oh, are they? If you need a better -- it's in Mark Wilson's as well under Tab 2, Exhibit O of the recommendation.

A. For the October -- October 20? I'm sorry, October 20?

Q. October 20, 2020 -- October 22, 2020, excuse me.

A. Was 0.0037.

Q. 0.0082?

A. I'm sorry, but that's not on this table unless I'm looking at MW-4.

Q. You're looking at fluoride.

A. Oh, one over.

Q. You know what, we'll have somebody else answer that question.

Mr. Gnat, I want to move on to talk about another project you conducted for Midwest Generation, and I want you to turn to the fifth tab in front of you, turn to Figure 1.

A. Okay.

Q. What does Figure 1 depict?

A. Figure 1 in this report is a copy of a Poz-O-Pac core, 3-inch core that we collected from the Will County Generating Station for Midwest Generation.

Q. And you said we. Who collected it?

A. KPRG did.

Q. And how did you collect it from the Will County Station?

A. There was a concrete coring machine, was lowered into the ash and so on, was moved aside in this particular area so that the Poz-O-Pac liner was exposed. And then the backhoe was used to lower a concrete coring machine, and a core was obtained that way.

Q. And this was -- there was no HDPE liner in there, correct?

A. Correct.

Q. When did this occur about?

A. Circa 2011.

Q. Did you handle the core?

A. After it was collected, yes.

Q. What did it feel like?

A. Core of concrete.

Q. I have it here just to use it as an example. Is that similar to what you collected?

A. Yes, it is.

MS. GALE: Okay. Thank you. I have nothing further.

HEARING OFFICER HALLORAN: Thank you, Miss Gale.

MS. DIERS: Just one question, please.

HEARING OFFICER HALLORAN: Thank you.

CROSS-EXAMINATION

BY MS. DIERS:

Q. To your knowledge has the Poz-O-Pac or black silty gravel at Joliet 29 Pond 2 been analyzed for soil, total metals or leachable metals?

A. Not to my knowledge.

MS. DIERS: Nothing further. Thank you.

HEARING OFFICER HALLORAN: Miss Gale, any redirect?

MS. GALE: Mr. Hearing Officer, we'd like to label this as Exhibit 29. Is there any objection from the Agency?

MS. DIERS: No objection.

HEARING OFFICER HALLORAN: Thank you. It will be so admitted, Exhibit 29.

(WHEREUPON, Exhibit No. 29 was admitted into evidence.)

MS. GALE: Nothing further, thank you.

HEARING OFFICER HALLORAN: Panel?

You may step down.

(Witness excused.)

HEARING OFFICER HALLORAN: Let's go off the record.

(WHEREUPON, a discussion was had off the record.)

HEARING OFFICER HALLORAN: We're back on the record.

(WHEREUPON, the witness was duly sworn.)

HEARING OFFICER HALLORAN: I noticed up this Webex with this witness approximately between 1:00 and 3:00 today, but we're calling him -- Midwest is calling him a tad early, but he will be

available at 1:00 to see if anybody wants to ask him any questions or just look at his face. So, anyway, I'm done.

Miss Gale, it's all yours.

MATEUSZ RADLINSKI,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. GALE:

Q. Just to explain to you, Dr. Radlinski, the idea is that at 1:00 p.m. we will log on and you will log on for about 10 to 15 minutes to see if anybody logs on, and then we are done.

A. And just to be clear, 1:00 p.m. Central, right?

Q. Yes, sorry, 1:00 p.m. Central time. Thank you.

A. Okay. Thank you.

Q. Dr. Radlinski, can you please say and spell your name?

A. Sure. My first name is Mateusz, M-a-t-e-u-s-z, last name Radlinski, R-a-d-l-i-n-s-k-i.

Q. And, Dr. Radlinski, where are you

employed?

A. I'm employed by Exponent, Incorporated.

Q. And what do you do for Exponent?

A. I primarily specialize in evaluating, broadly speaking, concrete cementitious materials, cementitious materials, mainly conducting forensic investigations, sometimes condition assessments, just variety of things related to -- I'll say anything cement related in a variety of applications.

Q. Okay. Dr. Radlinski, what educational degrees do you have?

A. So my education is in civil engineering. I hold both Master's of Science and Ph.D. in civil engineering. My Master's of Science Degree was from University in Poland, and the focus of that program in my case was structural engineering. For my Ph.D. and onward as you just heard, I switched areas from structural engineering to concrete technology and concrete materials. And my Ph.D. is from Purdue University.

Q. So you said you had a Ph.D., and your focus was on concrete materials. Can you expand upon that? Explain that, please.

A. Sure. So as part of my Ph.D. graduate program at Purdue, I worked -- I had the opportunity to work on a number of concrete, broadly speaking, concrete and cementitious projects. There were a number of projects going on at the time I was involved in.

The primary -- well, the primary topic of my Ph.D. dissertation related to development optimization and application of so-called high performance concrete mixes in bridge applications in Indiana. It was an in-depth Indiana DOT sponsored project. And in my case, just to explain a little bit what high performance concrete is, the goat of that is to increase durability of the concrete mixtures to extend the surface life of bridge decks.

In my case I studied concrete mixes called, it's maybe a little bit confusing term, but it's a term called ternary, t-e-r-n-a-r-y, and what that meant or what it means is concrete mixes containing three different cementitious materials. In my case it could be anything, but in my case it was portland cement, fly ash and silica fume. I'm sure we'll talk about fly ash, but just to explain

a little bit, silica fume is another byproduct of silicone -- elemental silicone.

Q. And you're also a licensed professional engineer, correct?

A. Yes, I am.

Q. Where are you licensed?

A. I'm licensed in California which is where I practice primarily.

Q. And in looking at your CV, it says you are a senior managing engineer, but is that still the case?

A. No. I think that the version of my CV you're likely looking at was attached to my report in this case. It was I think dated sometime early March. Oh, actually late March. But, in any case, I actually got promoted to principal engineer probably within a week after I issued the report, so I'm currently principal engineer. That's about the only real change in my -- in terms of my CV.

Q. Congratulations.

A. Thank you.

Q. How long have you been with Exponent?

A. Since January of 2009. Basically as soon as I finished my Ph.D. in December of 2008, I got

employed by Exponent.

Q. All right. Dr. Radlinski, I'd like you to turn to your expert report which is Exhibit 25 of Midwest Generation's response. Let me know when you have it available.

A. I have it in front of me.

Q. Dr. Radlinski, what was the scope of your engagement here for this report?

A. I was engaged to primarily evaluate and address the Illinois EPA's statement contained within their recommendation dated February 4, 2022, that Poz-O-Pac is CCR or Poz-O-Pac CCR material.

Q. What were your conclusions?

A. My -- broadly speaking my conclusion is -- this statement is technically incorrect for the to simple reason that -- being that Poz-O-Pac doesn't meet the Agency's own definition of CCR.

Q. And what is that definition?

A. Let me refer to my report again. The Agency defines CCR, coal combustion residual, as fly ash, bottom ash, boiler slag, and flue gas, desulfurization materials generated from burning coal for the purpose of generating electricity.

Q. And I think you said earlier that in your

studies for your Ph.D., you used fly ash.

Have you handled fly ash before?

A. Oh, yes. Spent, you know, about four and a half years in total working on my Ph.D. I would say probably about three and a half years out of those four and a half years total period I spent in a lab day in and out making concrete mixes, making paste mixes, evaluating the materials and mixes on a much more fundamental level from a chemical composition and chemical reaction standpoint, and then eventually of course into actual concrete mixes and their properties and looking at a variety of properties, a lot of which related to their abilities.

So in short to answer your question, probably hundreds I handled and used personally hundreds of thousands of fly ash usage.

Q. Can you tell us a little bit what it looks like, generally speaking, high level, color, texture?

A. Yeah. It's a -- fly ash is a very, very fine powder. I don't know if you've -- anybody can besides me relate to cement. Cement is extremely fine. Fly ash is even finer. The particle size is

medium particle size probably I think in order less of that than cement. The particles are spherical, so if you -- you can stir it in your hands. It's very easy. It's kind of a rewarding feeling in a way because the spherical nature of the particles that -- there's a bit of ball bearing effect in that.

Colorwise, it really depends on the type, whether it's Class A or Class C, and of course which plant it was generated by. It can range from, in my experience, from tan, brownish to more gray shades more like cement.

Q. Okay. And boiler slag, have you ever handled boiler slag?

A. Not for as part of my research, but the one exposure I recall having to boiler slag, growing up in Europe, in Poland specifically, it was used, you know, being a byproduct of or another byproduct of burning coal in power plants, it was used pretty commonly as a road surfacing material much like you'd see here, you know, gravel roads or crushed rock roads; so I've seen it, handled it, played with it I guess as a kid.

Q. Dr. Radlinski, are you familiar with the

term, Poz-O-Pac?

A. Yes, I am.

Q. What is Poz-O-Pac?

A. Well, the term Poz-O-Pac refers to a trade name for a patented product that was developed I believe in the 1950s. It was a construction material primarily developed for road based applications, and it consisted of a mixture of a black or blend of hydrated lime, fly ash and some sort of hydrated -- of course water.

Q. All right. And in this case when we're talking, where was the Poz-O-Pac installed?

A. Broadly speaking, it was used extensively throughout the United States in, well, I guess a wide range of applications and primarily in early roadway -- road based applications and later on in things even like pavements, highway shoulders.

Q. But here -- here it was used to install in Pond 2?

A. Yes. Here in this case it was at Joliet 29. It was installed as a liner at Pond 2, correct.

Q. And what were the ingredients of the Poz-O-Pac in Pond 2?

A. According -- based on my review of the original construction drawings, the Poz-O-Pac in this case consisted of, nominally speaking, consisted of 3 percent hydrated lime, 20 percent fly ash, and the remainder of solvents being about 77 percent boiler slag and of course water again.

Q. So earlier you said you disagreed with the Agency's conclusions that the Poz-O-Pac falls within the definition of CCR. Can you explain why?

A. Yes, certainly. In simple terms calling Poz-O-Pac a CCR, a coal combustion residual, would be like calling Poz-O-Pac fly ash. That's what CCR is, right. So it's like Poz-O-Pac, but calling Poz-O-Pac slag, of course either one of those statements would be true or technically correct because, as I explained, fly ash is a really fine powder. Slag is aggregate size particles, and Poz-O-Pac is a composite construction material consisting of a cementitious paste that glues in this case boiler slag with other particles. We're talking about completely different things.

So maybe make a little different analogy, it would be like calling concrete cement only because cement is used to make concrete or make

another analogy be like calling cake flour because flour is used to make cake. Obviously, again, those statements would not be true because you can't really move cement out of concrete once it's there much like I don't think you can remove flour from the baking out of a cake. So for same reasons you cannot remove fly ash out of Poz-O-Pac.

Q. So, Dr. Radlinski, what is the reaction that occurs when you mix fly ash with lime and water?

A. Yes. It's -- I think -- I believe you are asking about the term pozzolanic reaction.

Q. I am.

A. And that refers to a chemical reaction. It's a rather unique feature of so-called pozzolanic materials like fly ash, like silicate, numerous other materials. Could be volcanic ash in the case of 2000 how years ago. That's how they made concrete. And it's, fundamentally, first a chemical reaction between a silicious or voluminous pozzolanic material. In this case we're talking about fly ash and lime and water, and the result of which is a brand new totally different chemical compound called calcium silicate hydrate.

In this case calcium or calcium oxide specifically comes from the lime, the silicate or silica outside comes from fly ash, and of course water comes from water. So we -- the hydrate part comes from water. So that acts as the new compound. The brand new compound is calcium silicate hydrate.

Q. Okay. And, Dr. Radlinski, in your report on Page 3 you talk about how fly ash is commonly used in ordinary Portland cement.

Can you please explain that, please?

A. Yes. Fly ash has been used in concrete as a supplementary -- the formal term is supplementary cementitious materials or SCM. Some refer to it as mineral mixture. And fly ash is used in concrete and has been used for decades as either a supplement or a replacement of cement. It was originally I believe in the 1950s, maybe even slightly earlier, used as a essentially cheap replacement for cement which at the time it was much more expensive.

So now people over the decades, years of decades and research and studying these materials and studying different mixes and proportions and

components of fly ash, including myself, have discovered huge benefits of using fly ash in concrete applications, primarily increasing durability of the concrete as a result of reduction in permeability, broadly speaking, and also increasing the variety of properties related to resistance to chemical attack.

Q. So you say that fly ash is used as part of making concrete, and you said used in roadways. I mean, where is fly ash used as part of making concrete in the United States, generally speaking?

A. In a really broad range of applications. I mean, I work on numerous projects related to concrete evaluations, and I would say my experience -- I don't have the exact count, but over the years I would say roughly half of the country mixes I look at contain fly ash. It's just extremely common to use fly ash these days and has been for a long time. It could be anything from pavements to concrete chimneys and power plants in fact, could be industrial floor slabs, could be building components, just really -- there's really no limit to the extent fly ash is used in concrete.

Q. So we talk about fly ash and how it is

converted into calcium -- I forgot the word. Calcium --

A. Silicate.

Q. -- hydrate, which you've described as a hardened paste.

And there's a third ingredient or I guess a fourth ingredient on top of the water which is an aggregate. What happens to the aggregate when you're mixing the fly ash?

A. In the case of Poz-O-Pac, and we're talking at Joliet 29, the aggregate is the boiler slag, boiler slag particles. In fly ash -- so unlike fly ash which is chemically reacted as I explained a minute ago through the pozzolanic reaction with lime and water and forms cementitious -- hardened cementitious paste, it's a little bit different in the case of boiler slag. We're talking about half-inch, quarter-inch size particles, and those are not -- technically not reactive.

What happens to those is, again, analogous to the regular concrete where you have obviously a mixture of aggregate -- various size aggregate particles, the boiler slag simply gets physically

encapsulated by the hardened cementitious paste, in this case fly ash and lime and water, that glues those particles and surrounds it.

Q. Great. Thank you.

I want to turn to Board Question Number 8, which I'll read into the record, and then you can answer.

A. Okay.

Q. On Page 19 of Midwest Generation's response to the Agency's recommendation, Dr. Radlinski states, "Poz-O-Pac is formed by a chemical reaction (i.e., the pozzolanic reaction) between the lime and fly ash which forms a hardened cementitious paste. The pozzolanic reaction of lime and fly ash fundamentally alters the chemical composition of the mixture to form cementitious, excuse me, to form a cementitious matrix that binds and holds the aggregate particles together.

Question 8A, does the pozzolanic reaction render the CCR used inert or just binds it?

A. And my answer -- I think I'll break down my answer into two parts because the answer will vary a little bit between depending which CCR we are talking about. So let me start with the boiler

slag. The answer there as I explained just literally a minute ago, boiler slag is chemically nonreactive or inert essentially. So from the get-go and before it's used, it acts as inert material. You can think of it as a filler much like concrete. So what happens to the slag aggregate, it gets -- it remains inert and a hardened material and, you know, still not reactive.

Fly ash, I think the way I would characterize fly ash or answer this question relative to fly ash is fly ash is, again, as I explained, reacts chemically with lime through the pozzolanic reaction of lime and water to form a new chemical compound. So once fly ash is reacted, there's really no fly ash anymore in the mixture. It forms a different chemical compound. You will not find fly ash in the mix, in the hardened Poz-O-Pac material.

So the answer I guess is it's really neither inert. It's -- I guess it's bound through the new -- chemically bound through the new or within the new chemical compound I guess is the way I will answer.

MS. GALE: So we have a follow-up question from one of the Board members.

MR. RAO: Dr. Radlinski, can you hear me?

THE WITNESS: I can't see, but I can hear you.

MR. RAO: This is Anand Rao from the Pollution Control Board. You just mentioned how with fly ash with the pozzolanic reaction, the chemical itself is changed. How would you compare the chemical composition of fly ash and Poz-O-Pac, you know, once its undergone the reaction? What are the elemental composition?

THE WITNESS: Okay. So you're asking about the elemental composition. I would say elemental composition would be, you know, be comparable because, you know, there's no -- there's no addition or reduction to the elements.

I'm not sure if that answers your question, but if you're talking about the elements, well, the elements as I explained, the primary elements that come to -- come into play here is the lime in the Poz-O-Pac and the silicate outside from fly ash and then of course water. So the primary chemical compound still is going to contain calcium, silica and, you know, hydrogen and oxygen

and whatever else fly ash contains. If it contains other elements, well, they will be chemically bound within the cementitious matrix. I'm not sure if that answers your question.

MR. RAO: It kind of answers my question, but my follow-up would be elementally they may be same, but how is the Poz-O-Pac different in terms of once it's undergone the reaction and becomes Poz-O-Pac, is it a substance or a compound that's nonleachable or what's the difference?

THE WITNESS: Excellent question, yes, a very important point. The calcium silicate hydrate which is the product of the pozzolanic reaction is a non -- is a water insoluble material. And, in fact, it's the exact same chemical compound that forms from the hydration or reaction of Portland cement and regular concrete. If you mix, you know, if you get a bucket and put it -- buy the cement, Portland cement from Home Depot, dump it in the bucket, put some water and rock and sand, mix it up and give it a few hours. And, you know, next day if you were to look at -- try to determine the chemical composition of the -- of course not the aggregate, but the grade, the paste, the hard

cement paste, it will be primarily calcium silicate hydrate as well, which obviously is insoluble, and, you know, as demonstrated by the fact that we have, you know, concrete structures going back centuries that work well and when exposed to water and even when immersed in water.

MR. RAO: Are you aware of any studies over the last maybe 15, 20 years, where they've done leachate studies to show that once, you know, fly ash is used in the pozzolanic reaction and becomes Poz-O-Pac, that it won't leach the chemical that it used to have?

THE WITNESS: Specific -- not as it relates to Poz-O-Pac, in fact not even as it relates to fly ash concrete or concrete containing fly ash. You know, it's not something that I've ever heard of anybody being concerned about. In fact, the USEPA, there's an article or report on their website where they recognize the beneficial incapsulated use of CCR, specifically fly ash, in concrete materials or products. And based on my understanding of that article, there in the encapsulated form, as would be the case in Poz-O-Pac, there's really no minimum requirement for any monitoring or testing of

release, environmental release into water, groundwater soil or air from those materials containing fly ash.

Quite frankly, you know, there are literally thousands of miles of concrete pavements in the United States and worldwide, concrete with -- you know, pavements with -- made with concrete fly ash, and it's just not a -- they get a lot of rain and otherwise precipitation, a lot of exposure and potential for leaching, and to my knowledge it's just not a concern.

MR. RAO: Thank you.

BY MS. GALE:

Q. I might -- just for the record I might have Matt answer the other two questions that were under there. There was a second question, 8B, which I'll read.

If the Poz-O-Pac liner is cracked or damaged, is it possible for that material to leach into the groundwater?

A. Yes. And I guess it's -- my answer was a good segue into this question, but I'll -- I guess I will explain, elaborate a little more. The short answer is that in my expert opinion it's highly

unlikely. In the case of the Pond 2 Poz-O-Pac, first of all, a lot of things would have needed to happen first. In this case, we had the multicomponent waterproofing system incorporating essentially impermeable high density polyethylene, HDPE, liner. So for any water to reach Poz-O-Pac, some water would need to get through that system. That's number one.

Number two, it sounds like the inherent assumption in this hypothetical question is that there could be cracks in the Poz-O-Pac. I haven't seen any evidence of that.

So, number three, of course for water if it was to somehow make its way through the HDPE liner and down into the Poz-O-Pac and the crack in it, I think the tubes have to be fairly close to each other. So the chances of that happening would be fairly small to any sort of hypothetical breach in the membrane.

And couple more things to add to it, as I explained, from a chemical standpoint we're talking about a compound in the Poz-O-Pac that is insoluble in the -- under normal environmental conditions, meaning temperature and pressure. So the calcium

silicate hydrate is just not a soluble material. And, as I said, the concern for this particular question wouldn't be any -- or concerns with this question wouldn't be any different if this liner, this Pond 2 liner, was made out of concrete and fly ash. There's still CCR incorporated in the material in the liner mix, but because it's bound chemically to form calcium silicate hydrate, you know, the concern would be the same. And simply in my mind it isn't a concern.

Q. Okay. Great.

Question -- Board Question Number 8C, does the Poz-O-Pac liner contain heavy metals?

A. Yes. I think one of the very first question that was asked a few minutes ago, I think we just talked about more or less the same thing. My answer would be if there are materials contained heavy metals, then the answer would be yes. They are still within the Poz-O-Pac. They are chemically bound and physically encapsulated by the hardening --

Q. Could you repeat the end of your sentence of what you said?

A. So I was saying that if the heavy metals

were present in the -- in the raw ingredients of the Poz-O-Pac, then they be still present in the Poz-O-Pac liner, but they would be chemically bound and physically encapsulated in the hardened cementitious matrix of the Poz-O-Pac material.

Q. We're done with the Board questions. Thank you.

A. Thank you.

Q. Dr. Radlinski, is the Poz-O-Pac a cementitious product?

A. Yes, it is.

Q. Dr. Radlinski, I'd like you to turn and everyone here to turn to Figure 1 of your report. And I have -- I don't know if you can see it in the thing, I have it here. What am I holding and what do you show in Figure 1?

A. Well, I can't see precisely from here, but I suspect what you're holding is what's contained within Figure 1 which is a core sample extracted from an ash pond liner at a Will County power plant which is I believe 10 miles from Joliet 29 Plant. As a matter of fact, I think it was -- as a matter of fact, it was constructed around the same time, 1978, '79. And much like in the case of Pond 2

liner, the liner of that particular ash pond is also made out of Poz-O-Pac. So short answer is this is a Poz-O-Pac sample.

Q. And I have it here, but did you handle this?

A. Yes, I did. You or someone from your office sent it to me, and I just sent it back to you.

Q. Can you -- when you handled it, can you generally describe what you handled?

A. Yes. I handled a material that looks and feels very much like concrete. In fact, in my opinion as a concrete expert, it's virtually visually indistinguishable from concrete. If you look at a cross section of that little disk you're holding there, you'd see essentially the same composition, same gray color cementitious matrix as you would see in concrete -- in the case of concrete, and it surrounds or glues together aggregate particles.

Q. Dr. Radlinski, so in looking at the definition of CCR which we discussed earlier, in your expert opinion does the Poz-O-Pac at Joliet 29 fall when the definition of CCR?

A. It does not. It does not meet the definition, again, because Poz-O-Pac is a concrete like composite material. It's a hardened product, cementitious product. CCR is -- in this case it's a fly ash powder or it's boiler slag particles.

MS. GALE: Thank you, sir. Illinois EPA will now step up to ask you some questions.

THE WITNESS: Thank you.

CROSS-EXAMINATION

BY MS. TERRANOVA:

Q. Good morning. My name is Sara Terranova. I'm here on behalf of Illinois EPA. I have just a couple questions.

First, in Miss Gale's opening statements and your testimony you indicate that the Poz-O-Pac has been changed by chemical changes. Is it your opinion that the Poz-O-Pac at Pond 2 has been environmentally remediated or that the fly ash and the bottom ash it is comprised of is controlled in a manner consistent with environmental remediation?

A. I guess I would need to research the definition of environmental remediation more. Well, I would have to research it, period, to answer that question. Unless you're able to

provide the definition.

Q. No. Your answer is fine. Thank you.

Okay. Within the last five years have there been any or has there been any core sampling or chemical analysis of the Poz-O-Pac at Joliet 29 Pond 2?

A. No, not to my knowledge.

Q. Okay. Since the relining in 2008, has there been any core sampling or chemical analysis of the Poz-O-Pac at Joliet 29 Pond 2?

A. Same answer, not to my knowledge.

Q. Okay. Prior to the relining, was there any core sampling and chemical analysis of the Poz-O-Pac in Joliet 29 Pond 2?

A. Same answer, not to my knowledge.

Q. Okay. In your expert opinion, would you expect to see impacts to a liner that has been in place for over 44 years and has been exposed to various stressors such as burden and heavy machinery?

A. I guess are you ask -- I'm assuming you're asking, just want to confirm, specifically in relation to that Poz-O-Pac liner at Pond 2, right? You're not asking just -- are you asking a general

question?

Q. In general. Well, can you speak in general and then how about specifically to Pond 2?

A. Okay. Sure. And can you repeat the beginning of your question? Would I expect what?

Q. Sure. To see a liner that has been in place over 44 years and has been exposed to various stressors such as burden and machinery, what kind of impacts would you expect?

A. It depends -- well, I'm not sure I can give you a precise answer. It depends of course on what sort of as you call them stressors that you would see on the liner and, you know, frequency. I'm not -- yeah. I'm not even sure what -- your hypothetical question even includes in terms of these external forces as I understand.

But I think broadly speaking I would say the Poz-O-Pac is a concrete like material. It's a composite concrete like material. There's really no way to answer your question one way or the other because even if this was concrete, its performance would depend somewhat on what it was exposed to.

As I understand in this case, Pond 2, the Pond 2 liner was really, you know, was really used

to -- well, was -- the primary load I guess applied to the Poz-O-Pac prior to the lining and then I guess between 2008 which is when the liner was -- the HDPE liner was installed and 2019 would be storage of -- storage of fly ash or broadly speaking, you know, CCRs within the pond.

As I understand, the pond was exposed or parts of the ponds were potentially exposed to periodic loads from things like, you know, the trucks or something like that to remove the material. And that happened every several years only because that was the frequency based on the operation of the plant. So not very often, not very much. Yeah.

Q. Okay. I just have one more question. To your knowledge, has the Poz-O-Pac or black silty gravel at Joliet 29 Pond 2 been analyzed for soil total metals or leachable materials or no, excuse me, leachable metals?

A. I'm sorry. Your question included Poz-O-Pac and?

Q. Or the black silty gravel at Joliet 29 Pond 2, have they been analyzed for soil total metals or leachable metals?

A. I don't know, not to my knowledge at least. I haven't seen the results which doesn't mean it wasn't done, but I haven't seen it.

Q. So you just haven't seen them, but you don't know if they've been done?

A. Yeah. Correct.

MS. TERRANOVA: Okay. That's it. Thank you very much.

THE WITNESS: Thank you.

HEARING OFFICER HALLORAN: Thank you, Miss Terranova.

Miss Gale, redirect?

MS. GALE: I'm simply coming up to tell you very much, you're finished, just so you can see and hear me. Dr. Radlinski, I think what we'll do is at 1:00 p.m. Central time we'll log back in for about ten minutes, see if anybody comings in. I truly appreciate you being available earlier. That makes our day go quickly. Thank you so much for being so accommodating. I understand there was a scramble on your end, so thank you.

THE WITNESS: Thank you. I'll come back in.

HEARING OFFICER HALLORAN: Thank you, Miss Gale. It's about what? 11:40. Do you want

to take a lunch now?

MS. GALE: Yeah.

HEARING OFFICER HALLORAN: For 60 minutes?

MS. GALE: Perfect.

MS. DIERS: Yes. We're fine.

HEARING OFFICER HALLORAN: All right. Thank you. We're off the record. See you in an hour.

(WHEREUPON, a short recess was taken.)

HEARING OFFICER HALLORAN: We're back on the record. Miss Gale?

MS. GALE: Yes. We call Mr. Michael Maxwell.

(WHEREUPON, the witness was duly sworn.)

MICHAEL MAXWELL,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MS. GALE:

Q. Mr. Maxwell, can you please state and spell your name?

A. It's Michael, M-i-c-h-a-e-l, Maxwell, M-a-x-w-e-l-l.

Q. Thank you.

Mr. Maxwell, can you turn to the first tab of your binder?

A. Okay.

Q. What is this?

A. This is my resume.

Q. Okay. And first question, what is your educational background?

A. So I've got a Bachelor's Degree in geological sciences from State University of New York College at Geneseo, a Master's in geology from the University of Iowa.

Q. Okay. And what professional licenses do you have?

A. I'm licensed as a professional geologist in Illinois, Indiana, and also Wisconsin.

Q. Mr. Maxwell, can you tell me what it takes to become a professional geologist?

A. So there's a baseline educational requirement, and there's a baseline professional requirement. You've got to work for a certain number of years under another licensed professional geologist. Most importantly, though, you've got to pass a day-long test that's comprised of a fundamentals of geology exam and then a practicals

of geology exam. The fundamentals you learn in school, and the practical you're supposed to learn on the job.

Q. And then once you are a professional geologist, what are your duties or standards you must maintain?

A. Well, obviously there's technical standards one must live up to in terms of your technical work. You need to -- being licensed demonstrates that you've got a certain baseline competency in science, but along with that you're also obligated to follow certain ethical and honesty standards as well.

And anyone could make an allegation against me and my license, and of course if that were ultimately proven, I could be seriously reprimanded or worse. I could lose my license, and it obviously could have an adverse effect on my professional career.

Q. Mr. Maxwell, I see here you're also a certified hazardous materials manager. What is that?

A. So that's CHMM. That's another certification that I've attained through taking a

test. That one isn't quite as rigorous as the licensed professional geologist test, but that -- the subject matter of that test, there's a handbook that's a -- that covers the criteria for the CHMM. It's basically environmental rules and regulations, environment law is RCRA, DOT laws, Clean Air Act, Clean Water Act, and also basic science as well, so . . .

Q. And what is that certification for? What do you do with it? Excuse me.

What do you use it for?

A. The CHMM or the LPG?

Q. I'm sorry, the CHMM.

A. The CHMM, it's -- I mean, it's a credential. I honestly don't use the CHMM as much as I use the LPG.

Q. Very good.

And it says here you work for Weaver Consultants Group, correct?

A. Correct.

Q. How long have you worked for Weaver?

A. I've been with Weaver for 26 years.

Q. What is your current position?

A. I am the operations manager for our

environmental practice group that's based in Chicago.

Q. And, generally speaking, can you briefly describe to us what you do for Weaver?

A. So I manage a team of geologists, scientists and engineers, biologists. And we do environmental investigation, soil and groundwater, surface water investigations, assessments, remediation. We've also got a group that deals with air compliance and also an environmental audits as well.

Q. So in those investigations, you designed a water, excuse me, groundwater monitoring program?

A. We -- I myself have been involved in designing and ultimately implementing various groundwater monitoring programs at solid waste, hazardous waste landfills, CCR disposal facilities, CCR surface impoundments as well.

Q. And that includes logging soil borings, correct?

A. Yes. I have actually done it early in my career, got my hands dirty so to speak looking at the soils. In subsequent years I'm managing the process from the office.

Q. I think you said you've worked at CCR units and CCR landfills. What are those?

A. Coal combustion residuals. Surface impoundments are liquid engineered features designed to retain liquids, and landfills are designed for the disposal of solid CCR.

Q. Okay. What units have you worked at?

A. So the one that I've worked at the longest is a site in Northwest Indiana called the Yard 520. That's a landfill. It's actually comprised of two different units, and CCR was the primary waste material that was disposed at Yard 520.

Q. You said a long time. How long?

A. 26 years. I started working on Yard 520 the year I started working at Weaver.

Q. So -- and at this site -- well, I guess I'll ask this first.

Is Yard 520 the only CCR yard site you've worked at?

A. No, there are others.

Q. What others?

A. Of course Joliet 29, the subject matter. There's a couple that I've worked on CCR surface impoundments in Indiana, a couple in New Jersey as

well.

Q. So Yard 520, what's going on there? What are you evaluating and what are you doing?

A. So Yard 520, it's a closed landfill, and so we're implementing the postclosure program which involves maintaining the cap, performing inspections, and also conducting the postclosure groundwater monitoring. Actually at Yard 520, there's been documented instances of groundwater impact as a result of the materials that were disposed at the facility, so we're -- we conduct semiannual groundwater monitoring at that -- at both units at Yard 520 twice per year.

Q. So in your 25 years experience of working at CCR sites including Yard 520, what is the most common constituent found at those sites in groundwater?

A. In the groundwater at sites where documented CCR impacts have occurred by far and away it is boron.

Q. I mean, other than -- any others than boron that you commonly see?

A. There are others that are common, molybdenum is one that I've seen a fair amount.

Boron and molybdenum are probably the two most common that stand out.

Q. Okay. Great.

So you prepared two expert reports related to this petition, correct?

A. Correct.

Q. Okay. Let's turn to your first report which is Attachment 5 to Exhibit G to the second large tab in the folder that you have. And I'll say for the record, in comparison to the first binder, to avoid confusion we've labeled the major tabs as the exhibit number of that document. So instead of having Tab 1, Tab 2, Tab 3, because the record's rather complicated, it'll be the tab that says Attachment 5 to Exhibit G, and that's the location of this document in the record.

HEARING OFFICER HALLORAN: The transcript will bear that out. Thank you, Miss Gale.

BY MS. GALE:

Q. Mr. Maxwell, what were you asked to do in this report?

A. We were engaged by your firm, Nijman and Franzetti, in order to support the work that Tom Dehlin's folks performed relative to the materials

that were comprised of the embankments of the Pond 2 surface impoundment.

Q. And, Mr. Maxwell, what generally speaking what were your conclusions?

A. We looked at the groundwater data that goes back to the fourth quarter of 2010, and we looked at the trends and the concentrations in the groundwater. And what we ultimately concluded was the fact that -- that neither the -- the groundwater data was not indicative of any type of CCR release either from CCR that would have been contained in the Pond 2 surface impoundment or the embankment outside the surface impoundment.

Q. And that data I think you said is quarterly data, right?

A. Correct. Quarterly data, yeah.

Q. And as part of your analysis did you review the groundwater network in the array of wells where they were located?

A. Yes.

Q. And that's what we see here on this diagram?

A. Yes.

Q. What is your opinion of the array of

wells? What do you think of them?

A. Well, there's a total of four wells. MW-10 is on the north side, and there are three, MW-3, 4 and 5, on the south side. The historical groundwater elevation data indicates that MW-10 is on the upgradient side, and MW-4 -- 3, 4 and 5 are on the downgradient side. And just in terms of the adequacy of the network in my -- in my experience, the spacing of the wells, the location of the wells, it's consistent with the federal CCR rules, number one.

The Illinois CCR rules are still being implemented, so there's not necessarily a lot of agency action yet on the -- on reviewing the groundwater monitoring networks for CCR surface impoundments. But I can say that based on my experience with solid waste landfills in Illinois, that the spacing is generally consistent at least with solid waste landfills that I've been involved with over the last 25 years or so, you know, in my work.

Q. Okay. So you said groundwater samples in 2010 on a quarterly basis. In your review of data, has boron been detected in the groundwater above

the groundwater protection standards at Pond 2?

A. No, it has not.

Q. Chlorides are also detected at above the groundwater protection standards in the wells in Pond 2, right?

A. Chloride, yes. Chloride's present at both the upgradient location and various down locations as well -- downgradient locations.

Q. In your opinion what's the source of the chloride?

A. I think that the chloride is tied to the use of road salts on the highway that immediately borders the facility to the north of MW-10.

Q. And you in your report, December 6, 2021, report, you also conducted a trend analysis of the groundwater data, correct?

A. Correct, the Mann-Kendall trend analysis.

Q. Yes. How does the Mann-Kendall trend analysis support your opinion?

A. So the results of the trend analysis indicated that the majority of the trends were either level or downward which suggests a stable condition. So the trends support the idea that there's nothing unusual going on with the

groundwater in terms of an impact.

Q. Not on this map, but in your December 2021 report you also reviewed soil borings and groundwater monitoring data in an area adjacent to Monitoring Well 9, correct?

A. Yes. We also looked at the area around MW-9 which as you mentioned isn't necessarily part of the Pond 2 monitoring well network.

Q. Can you kind of generally describe to us where Monitoring Well 9 is in this?

A. It's a few hundred feet to the east of Pond 2.

Q. So it's off this picture, right?

A. It's not -- I don't believe -- I think it's just off of that picture, correct.

Q. Yeah.

Okay. And what did that data near Monitoring Well 9 tell you?

A. So actually there's TDS concentrations and sulfate concentrations that historically have been detected.

Q. And what does TDS stand for?

A. Total dissolved solids.

Q. Thank you. Go on.

A. That have been detected at that well at statistically significant concentrations.

Q. Okay. And in your boring logs, to your recollection -- excuse me.

So you found TDS and you found sulfate. I'll go back. Was that from CCR in your opinion?

A. We don't think that was due to CCR, no.

Q. Why not?

A. So the PH at that particular well is actually unusually low. It's -- the low PH indicates more acidic conditions. And so what we've attributed those acidic conditions to is a oxidation reaction of sulfide minerals that are in the soils as a result of the inclusions and the underlying dolomite bedrock that have become part of the soil.

And when those minerals are exposed to oxygen, they're gonna go through a process called oxidation which is gonna create this -- the sulfuric acid which is gonna lower the PH which has a tendency to also leach certain things from the soil including TDS and potentially sulfate as well.

Q. Great.

And you said there were also soil boring

logs near Monitoring Well 9, right?

A. Yeah. That was part of the investigation as well. I believe there were 10 or 12 boring logs that were advanced.

HEARING OFFICER HALLORAN: Miss Gale, I hate to interrupt you, but are we still on Webex?

UNIDENTIFIED SPEAKER: No, I ended it. You said 15 minutes.

HEARING OFFICER HALLORAN: Who ended it?

UNIDENTIFIED SPEAKER: I did. You said 15 minutes.

HEARING OFFICER HALLORAN: We started it at 1:04. Next time interrupt and ask me. As a host, did anybody sign on?

UNIDENTIFIED SPEAKER: Nobody signed on.

HEARING OFFICER HALLORAN: All right. You cut off a minute or two early, so next time please ask your counsel or me.

UNIDENTIFIED SPEAKER: I will. I apologize.

HEARING OFFICER HALLORAN: Thank you.

You may proceed, Miss Gale.

MS. GALE: Thank you, sir.

BY MS. GALE:

Q. So we were talking about the soil boring

logs, about 10 or 12 near Monitoring Well 9. Those boring logs, to your recollection was coal ash found?

A. Coal ash wasn't logged in the boring logs, no.

Q. Okay. I want to turn to the Board questions for a couple questions and turn to Board Question Number 13?

A. Okay.

Q. I'll read it into the record.

Please clarify whether Midwest Generation still intends to continue monitoring the groundwater surrounding Pond 2 after converting it into a process water basin.

A. Okay.

Q. Is that -- can you answer that question?

A. Yeah. The CCR rules, the 845 CCR rules indicate that after closure is complete, that three years of additional monitoring is required. It's either three years from completion of closure or three years from the last event where there's no concentrations above the groundwater protection standard.

Q. And so we heard earlier Mr. Naglosky say

that Midwest Generation intends to comply with the law. So how does that inform your answer here?

A. Well, that would be consistent with the 40 -- with the 845 regs, CCR -- the Illinois CCR rules.

Q. Great.

And I want to turn next to Board Question Number 15?

MR. RAO: May I ask a follow-up?

MS. GALE: Yes, of course.

MR. RAO: You mentioned not Mr. Maxwell, but one of your witnesses talked about groundwater being monitored under two programs, the CCA and the CCR regulations?

MS. GALE: Yeah.

MR. RAO: So will monitoring be also, you know, will it be continued under CCA? What are the requirements under the CCA?

MS. GALE: So you're asking if CCA monitoring will continue?

MR. RAO: Yeah, and if that affects Pond 2.

MS. GALE: So the CCA monitoring is pursuant to -- I guess I will answer that.

CCR monitoring is pursuant to the

compliance commitment agreement which we've been doing since 2013. We will continue to do it until the Illinois EPA basically tells us not to. If I were -- ideally, we would like to convert to just the CCR sampling and not do the duplicate of samplings. The CCR is total metals. So as we've heard from Mr. Gnat and Mr. Maxwell today, as well, total metals is a higher value.

MR. RAO: Okay. So Midwest Generation would like to -- when you say follow the CCR rules, that would be what Mr. Maxwell just mentioned, maybe at three years or if that complies with all the standards, then be terminated at that point.

MS. GALE: Yeah. According to the rules, federal rules -- excuse me. Illinois CCR rules, if it's closed by removal, then it's three years no matter what. And if there's nothing -- if there's no exceedances to groundwater protection standards, then you may cease. I don't know off the top of my head, sir, whether I have to get Illinois EPA approval for that.

MR. RAO: So the EPA -- the Illinois EPA has to approve any change in the monitoring of the groundwater in the CCA.

MS. GALE: We've been treating it that way is the answer to that question.

MR. RAO: Okay. Thank you.

MS. GALE: I was just reminded, it's an agreement, and so to change it we would have to get both parties to agree.

BY MS. GALE:

Q. Board Question Number 15 I want to turn to.

A. Okay.

Q. In Exhibit 18, Table 4, semiannual detection monitoring statistical comparison. There appears to be a potentially statistically significant increase in sulfate in Monitoring Well 3, and boron in Monitoring Well 4, on May 7, 2019, that did not occur in Monitoring Well 10 which is used to determine background.

And, Mr. Maxwell, in your binder I have Exhibit 18 which you can flip to.

A. Okay.

Q. And just for the record, this is the CCR Compliance Annual Groundwater Monitoring and Corrective Action Report for 2020, correct?

A. Yes.

Q. So maybe we should flip to Table 4 before we ask the question.

A. Okay.

Q. Okay. So Question A, please comment on whether these increases are attributable to Pond 2.

And again just to remind you, we're looking at Monitoring Well 3 and 4 on May 7, 2019, and it's sulfate in Monitoring Well 3.

A. Okay. So the sulfate concentration is 140 milligrams per liter.

Q. Yeah.

A. And that was again on May 7, 2019. And subsequent to that, on July 3, 2019, there was a resample that was collected, and that concentration was reported at 65 milligrams per liter which is below the prediction limit of 130 milligrams per liter.

Q. So there's an R next to the July 3, 2019, sample?

A. Yes. There's an R in the table indicating resample.

Q. So in your understanding of the rule, what is that resample?

A. You're allowed an opportunity under the

Illinois CCR rules and the federal CCR rules if you've got what we call a preliminary trigger, a concentration above the background prediction limit in this case, that you've got an opportunity to sample it again to make sure that it's real.

Q. Okay. And so before we go on, can you look at Monitoring Well 4, the boron, on the same date?

A. Yeah. Was it --

Q. May 7, 2019.

A. Okay.

Q. Monitoring Well 4, boron.

A. Okay. So, again, the concentration that was originally reported in May was resampled on July 3, and the subsequent concentration in the resample was less than the prediction limit of -- for boron which is 0.057 milligrams per liter.

Q. So I'll repeat the Question 15A based upon that description of what's going on.

Please comment on whether these increases are attributable to Pond 2.

A. So based on the inconsistent concentrations, those concentrations is what we would term a false positive. And if the Pond 2

were the source, you would expect a more consistent concentration to be more -- to show up during multiple sampling events. So for those reasons the concentration, the preliminary false positive, I do not believe is related to Pond 2.

Q. So I'll skip B cause it's not. So C, and I think you already answered this, but I'll repeat if for the record.

If not, comment on the reasons for the observed increases.

A. Yeah. I would attribute it to -- I suppose it's nature being nature. The concentrations in nature are gonna go up and down. And as long as it's temporary, that wouldn't indicate any type of a release from the pond because a release would exhibit a more consistent type of a situation.

Q. Okay. Thank you.

Mr. Maxwell, I want you to turn to the next tab which is Exhibit 22 in your report?

A. Okay.

Q. And this is your march 21, 2022, report, correct?

A. Yes.

Q. What was the purpose of this opinion?

A. This opinion was compiled in order to respond to the Agency's recommendation which I think was from February 4.

Q. Okay. And we are gonna -- in this report we're gonna start first talking about cobalt which is on Page 7 of your report.

A. Thank you.

Q. Mr. Maxwell, cobalt was detected in the groundwater above the groundwater protection standards around Pond 2, correct?

A. Yes.

Q. I just want to step back.

To your recollection, what is the class one drinking water standard for cobalt?

A. It is 1.0 milligram per liter.

Q. And what is the standard in Part 845 for cobalt?

A. The Groundwater Protection Standard Part 845 is 0.006 milligrams per liter, substantially less.

Q. Yeah.

And then at Joliet 29, where is the cobalt found above 0.006 milligrams per liter?

A. We've seen it at MW-4.

Q. Anywhere else?

A. I don't believe we've seen it anywhere else at concentrations exceeding the groundwater protection standard, no.

Q. In any of the groundwater monitoring wells at Pond 2, so talking about Wells 3, 4 and 5, has other common CCR parameters like boron been detected above the Part 845 standard?

A. Boron hasn't been detected to date, no. Molybdenum hasn't been detected at concentrations that exceed the 845 groundwater protection standard.

Q. In your expert opinion what does the absence of those constituents in the groundwater mean?

A. Because those are the most common indicators of a release, that the absence of the most common means that there's not likely a release.

Q. Okay. And didn't you also look at other less common constituents that indicate CCR?

A. We also looked at those as well.

Q. What are those?

A. Arsenic is a constituent that is historically associated with CCR, chromium, lead. Those are probably the three most common that come to mind.

Q. And to your recollection, have those constituents been detected above the groundwater protection standards around Pond 2?

A. No, no. Those have not been detected above the groundwater protection standards around Pond 2.

Q. I think you heard earlier. You were here for Mr. Naglosky's testimony where he testified that most of the CCR at Joliet 29 went to Lincoln Stone Quarry. Do you remember that?

A. Yes.

Q. So did you consider that in your opinion?

A. Yeah. We actually looked at the groundwater and the leachate from the Lincoln Stone Quarry as an indicator of -- if there were a release at Pond 2, what would that signature look like.

Q. How did you -- how did you get that data? Where did you go looking for it?

A. I obtained it. There was a couple

different reports that I utilized. One was a groundwater monitoring report, annual groundwater monitoring report. Another was a permit application. I got one from the Midwest Gen Illinois CCR site, and I got one from the Midwest Gen federal CCR site.

Q. By site you mean website?

A. Publicly available website.

Q. Thank you.

When you looked at the Lincoln Stone Quarry groundwater data, what did you find?

A. What we saw in the groundwater was -- in the groundwater monitoring wells, we actually saw boron present at statistically significant concentrations at nine of the ten monitoring wells in the originally groundwater monitoring network. And then an additional eight monitoring wells were subsequently added as a result of assessment monitoring that's occurring there. And seven of the eight monitoring wells in the expanded assessment network indicated that boron was present at statistically significant concentrations as well.

Q. So based upon that finding, what can you

conclude?

A. So based on that, the boron is a key indicator of whether or not CCR impacts are present in groundwater. And the lack of boron at ash Pond 2 is strong evidence that ash Pond 2 is not exhibiting an impact.

Q. Do you ever gather data from the Lincoln Stone Quarry?

A. Yes. We looked at leachate data as well.

Q. Where did -- leachate data, where did you get that leachate data from?

A. So there's a piezometer, P105, that -- that's located at the Lincoln Stone Quarry that was monitored on a quarterly basis in 2012. And what we found was that the analytical results from the leachate piezometer indicated boron concentrations present at concentrations ranging from 10 to 12 milligrams per liter. We also saw that molybdenum was present in the leachate also at similar concentrations of roughly 10 to 12 milligrams per liter. In addition, the leachate indicated that arsenic was detected at three of the four quarterly samples, and also barium was detected in four of the four samples.

Q. So this leachate data in a piezometer, for those of us who don't quite understand what -- where that is, can you describe where that piezometer is located and how that works?

A. Yeah. So piezometer in this instance, I interpret it to mean that it's a monitoring point, a groundwater monitoring point that's located inside the waste boundary as opposed to the ground monitoring wells that are generally located outside the landfill boundary itself.

Q. So when they're sampling the groundwater monitoring well inside the waste boundary, the water sampling is what?

A. Leachate would be the term that I would use. It's water that's directly filtered through the waste material.

Q. Got it.

And so you described what leachate for the Lincoln Stone Quarry shows. What does the presence of the boron, arsenic and barium in the Lincoln Stone Quarry leachate tell you when you consider the groundwater at Joliet 29 around Pond 2?

A. Yeah. It gives you an idea of what a CCR impact, what that signature would be. And it's

comprised of these constituents that we just mentioned, boron, molybdenum, arsenic, barium. These are the overall signature that if CCR is going to impact the groundwater, you're going to identify at least one of those at a statistically significant concentration and/or a concentration above the groundwater protection standard because it's the most common.

Q. So, Mr. Maxwell, we just said we have cobalt in the groundwater.

Can you just tell us, what is cobalt?

A. Cobalt is actually a naturally occurring, sorry, naturally occurring element in the earth's crust. It's found in various minerals, and it's actually also found in -- quite common in Illinois soils as well.

Q. Oh, so how do you know it's found in Illinois soils?

A. There was a couple of studies that we looked at as part of our expert report. There was a study by Richard Cahill that we refer to in my report as the Illinois soils composition, and then that was sort of a compendium of various different historical investigations of soil borings and

laboratory analysis throughout the state, specifically from locations that were deemed to be background away from sites that would have been industrial, you know, impacted by industry.

Q. Isn't cobalt also in TACO, the tiered approach to corrective --

A. Cobalt is a metal that is mentioned in tiered approach corrective action objectives.

Q. Thank you.

A. And it's present -- there's a table in the appendices of TACO that lists the background concentrations of soils in Illinois, and cobalt is of course listed in that table.

Q. I think I heard you say the Zhang and Frost study. Didn't you also look at the Illinois -- the United States geological survey?

A. Yes. That's -- Zhang and Frost was a survey that was referenced in the Illinois soils composition document. That one looked at 90 soil samples and actually detected cobalt in 90 of 90 soil samples throughout the state.

Q. And weren't samples also taken in Will County?

A. There were samples that were taken

specifically in Will County, yes.

Q. And what did those samples finds?

A. The concentrations of cobalt in Will County in the upper 6 inches to a depth of 1 foot ranged from 6.9 to 10.9 milligrams per kilogram, which is also PPM or parts per million.

Q. Thank you.

And the highest concentration of cobalt found in the groundwater, do you recall, is 0.0106 milligrams per liter, right?

A. Correct.

Q. So tell me, Mr. Maxwell, how do those two numbers correlate?

A. Well, one is significantly smaller than the other. The 0.016 is actually a couple orders of magnitude smaller than the 6.9 to 10.9 number. So there's a much higher concentration in the soil than as -- than the maximum concentration that's ever been detected in the groundwater.

Q. Okay. So where do you think the cobalt in the groundwater is coming from?

A. So looking at all of the data that we had at our disposal, knowing what was there in terms of CCR signatures and the lack of CCR signatures,

looking at the proximity to the highway and knowing that the chlorides had previously been attributed to road salts being utilized along the highway, it didn't make sense that it was coming from the Pond 2, either the CCR in Pond 2 or the embankments of Pond 2. So the natural place to look was given the Illinois -- the concentrations of background in Illinois soils, the natural place to look was to the soils that are part of background.

Q. Okay. And what did you conclude?

A. We concluded that the road salts -- the application of the road salt is actually creating a situation where through -- the primary mechanism is through what's called ion exchange. The higher concentrations of sodium chloride, calcium, magnesium, once that's added to the soil, the binding affinities of those cations are different than cobalt or arsenic or the heavier metals that are part of background concentrations in soils.

And through the process of ion exchange these positive cations get attached to the negatively charged soil particles and actually release the trace metals, cobalt in this case. And once the cobalt is released, it's free in the

environment, and it's able to become mobilized and ultimately end up in the groundwater where it can be detected.

Q. And this study is what you cite to in your report, right?

A. Correct. There's -- we refer to it as the Schuller study.

Q. Since you've written this report, have you found any additional information to support that conclusion?

A. Actually, a colleague of mine, another geologist from --

Q. So we have here a copy of it.

A. Yeah. That would be helpful. Thank you.

MS. GALE: We can just call this Exhibit 30.

(WHEREUPON, Exhibit No. 30 was marked for identification.)

BY MS. GALE:

Q. I'm ready.

A. Okay. A colleague of mine attended a postrecession at St. Louis University just on Thursday and came across this poster that is titled, Road Salt Retention and Transport in Soils and Subsequent Release of Toxic Trace Elements to

Pore Waters. That's the title of the poster, and he shared it with me because I had shared with him what I was going to be testifying to here today. And so he sent this to me, and I found it particularly useful.

There's various plates here that indicate the process of cation exchange, and it sort of simplifies it there in the upper left-hand corner. So they looked at arsenic here, rubidium, and I can't read what that other heavy metal is. But they looked at a few different heavy metals and concluded similar to the Schuller study that the application of road salt at this particular site primarily through cation exchange processes is resulting in concentrations of these trace metals ending up in the soil pore water.

Q. So, Mr. Maxwell, in your expert opinion based upon review of the groundwater data, is what you're seeing here in this sheet, Exhibit 30 and in Exhibit 22, occurring around Pond 2?

A. I believe that the mechanisms described in those two technical resources, those two technical studies, are the reason why we've got cobalt at MW-4, Pond 2, yes.

Q. Thank you.

I want to turn to our discussion about black silty gravel, so if you could turn to Page 3 of your report?

A. Okay.

Q. Okay. First, we've heard a few people talk about the Munsell color system. And, you know, Mr. Maxwell just tell me what you think the Munsell color system is.

A. It's a standardized system for essentially taking the objectivity out of identification of soils. It's a standard system that allows you to be more sure that your color characterization is accurate. One person's dark brown might be another person's black, so it helps to standardize the identification of color.

Q. And generally when you're logging soil borings do you use the Munsell color system?

A. We use it as a tool. It depends on the regulations. It depends on the state that we're working in. It depends on the client that we're working for. So it's certainly a tool that we use depending on the project.

Q. And you reviewed the soil borings we've

discussed here, right?

A. I have.

Q. And did they use the Munsell color system?

A. It wasn't indicated on the borings, no, the boring logs.

Q. Okay. I want you to pull out from your binder Exhibit A which is Exhibit A to the Illinois EPA's recommendation and Lauren Hunt's affidavit. I want you to turn to Paragraph 17.

A. Okay.

Q. So I'm just gonna read the first four lines.

The engineering properties summarized -- this is what Miss Hunt says at Paragraph 17 of Exhibit A. The engineering properties summarized in Joliet 29's History of Construction show Pond 2's foundation is comprised of sand slash gravel with a unit weight of 125 pounds per cubic foot. And she cites to Exhibit D, Attachment 3, Tables 2 and 3, 2, Table 2. The embankment properties are brown clay with a unit weight of 115 PCF and black silty gravel with a unit of weight of 125 PCF, Exhibit D, Attachment 3.

And then she states, according to the

FHWA, dark gray to black soils represent organic material. Do you see that there?

A. Yes.

Q. What is the -- to your recollection, what is the FHWA?

A. That is the Federal Highway Administration, I believe.

Q. Okay. Can you turn to the next tab which is an excerpt of Agency Exhibit F?

A. Okay.

Q. Can you turn to Page 10 which is the page she cites in her Paragraph 17?

A. Okay.

Q. And can you tell us what FHWA states of highly organic soils?

A. This says, colloidal and amorphous organic materials finer than Number 200 sieve 0.075 millimeters are identified and classified in accordance with their drop in plasticity, ASTM D2487. Further identification markers are dark gray and black and sometimes dark brown colors. Although, not all dark chloride soils are organic.

Q. Okay. What is your interpretation of what

the FHWA meant for its conclusion about black or dark gray soils?

A. So based on this, they're indicating that not all dark chloride soils are necessarily organic. You could have dark chloride soils that wouldn't fall into that category.

Q. Okay. And don't you have experience with that?

A. Yeah. I've seen -- I've seen dark chloride soils that are -- that aren't organic, yes.

Q. Not organic, correct?

A. That are not organic, correct.

Q. Okay. And have you seen it near Joliet?

A. We worked on a Phase 2 ESA in Joliet, if I may just turn to my report. So, yeah, we looked at a Phase 2 ESA, an environmental site investigation, at a site about a mile and a half from the Joliet 29 site where we encountered some darker colored fill soils that we ultimately logged as a mixture of dark silts and clays that also included sand and gravel.

Q. Did you log them as CCR?

A. No, we didn't log those materials at CCR.

Q. If they were CCR, would you have logged them as CCR?

A. Yeah, we would have. We would have noted that, yes.

Q. Actually, I want you to actually pull out her affidavit because we're going to be flipping to it a lot.

A. Pull it out of the binder?

Q. Yeah, pull it out of the binder. So turning back to her affidavit, Paragraph 17, but on the next page, Page 5, where she states, therefore, the black silty gravel is likely fly ash mixed with some crushed Poz-O-Pac or locally sourced limestone or dolomite gravel or some combination of the two.

Do you see that there?

A. Yes.

Q. Do you agree with that conclusion?

A. No. I don't think that the -- that material would be fly ash, no.

Q. Why not?

A. Well, it's certainly possible based on the Phase 2 ESA that we had done in the area that those concentrate -- or the darker soils would be present and would not necessarily be logged as fly ash.

Q. Okay. Great.

So why weren't they logged as fly ash?

A. In our boring logs?

Q. Yes.

A. Because, well, multiple reasons. We looked at the visual boring logs to log what we had, and then the visual boring logs and descriptions in the boring logs were actually backed up in this particular instance by the soil and groundwater data that we collected as part of the Phase 2 ESA. The soil and groundwater data ended up being compliant with TACO, and so that was indicative of materials that were not CCR. So everything sort of fit together in this particular Phase 2.

Q. Can you turn to Paragraph 20 of Miss Hunt's affidavit on Page 5?

A. Okay.

Q. So in Paragraph 20, Exhibit A, upon information and belief, Poz-O-Pac and black silty gravel material are CCR or CCR combined with other materials and are therefore a potential source of contamination in the groundwater.

Do you see that there?

A. Yes.

Q. So I'm gonna break that down.

Mr. Maxwell, to your recollection, when was Pond 2 built?

A. It was originally built, I believe, in the early '70s, but then the Poz-O-Pac was added in 1978, the liner.

Q. Yeah.

And that was -- the Poz-O-Pac in the embankments of the pond were built in '78?

A. Yes.

Q. Then it was relined in 2008?

A. Yes.

Q. And that included to your recollection exposing and modifying the embankment?

A. There was some grading work that needed to be done in order to prep the embankments for placing the of HDPE liner, yes.

Q. Right. And then groundwater monitoring began in 2010?

A. The first groundwater monitoring was in 2010, yes.

Q. So when groundwater monitoring began in 2010, the Poz-O-Pac had been in the ground for how

long?

A. Since 1978.

Q. 32 years?

A. Yeah.

Q. And the embankments had been in place for the same amount of time, correct?

A. Correct.

Q. And then in '08, Midwest Generation relined the pond, modifying the embankments and leaving the Poz-O-Pac in place, right?

A. That's my understanding, yes.

Q. And so now -- and then from 2010, Midwest Generation has quarterly monitored the groundwater, groundwater monitoring, excuse me, has quarterly monitored the groundwater from 2010 to present, right?

A. Correct.

Q. And so now we've had -- the Poz-O-Pac has been in the ground for 44 years?

A. Yes, since 1978 to present.

Q. And the embankments the same amount of time?

A. Yes. And the groundwater has not exhibited concentrations that would be indicative

of a CCR impact over those 44 years.

Q. So, Mr. Maxwell, in your expert opinion would you reasonably expect after 44 years of the Poz-O-Pac in the ground, the embankments in the ground, and 12 years of groundwater sampling, evidence of leaching to the Poz-O-Pac or the embankments?

A. Yeah. 44 years of exposure to the elements and subject to rainwater and percolation and groundwater flow, all of the natural mechanisms that occur in the vicinity of the pond underground, that's more than adequate amount of time if any type of an impact was going to occur, that it would have been identified in the downgradient wells, yes.

Q. So what does the absence of those CCR constituents in groundwater tell you?

A. It tells me the same thing, that -- those mechanisms are occurring. Percolation is occurring. Groundwater transport is occurring. There's nothing that's percolating out and is ending up in the groundwater that can then be sampled in the wells and reported by the laboratory.

Q. Okay. Great.

So, therefore, do you -- in your expert opinion is the Poz-O-Pac in the ground and the gravel material in the embankments a potential source of contamination to the groundwater?

A. If it were a potential source, we would have seen an impact by now, so I don't think it's a potential source.

Q. Thank you.

I actually want to turn now to Board Question Number 10. I'll read it into the record. On Page 3 of Midwest Generation's response to the Agency's recommendation states, because the groundwater monitoring results around Pond 2 does not detect any of the CCR primary constituents (boron, barium and arsenic) that CCR is not present in Pond 2. Please comment on whether the absence of detections are sufficient to show the absence of CCR in Pond 2.

Mr. Maxwell, can you please answer that question?

A. So I think the absence of detections are part of the story. The absence of detections for the most common constituents is a big part of the

story; but you combine that with the lack of detections of the other secondary constituents that are associated with fly ash, and the whole picture together demonstrate -- is useful. All the information is useful whether you've got something detected or whether you've got something not detected. You put it all together. The total picture suggests that neither the pond itself, nor the embankments are leaching CCR related constituents.

Q. Great. Thank you.

I want you to turn bark to Miss Hunt's affidavit. I want you to read to yourself her Paragraph 26. Tell me when you're finished.

A. Okay.

Q. In the opinion you just discussed about the potential contamination, does that equally apply in response to Paragraph 26?

A. The word potential source of contamination is repeated there in that paragraph, so, yeah, the same rationale would apply.

Q. Can you also turn to her Paragraph 33 which is on Page 8?

A. Okay.

Q. Read it to yourself and then . . .

A. Okay.

Q. Same question, is your analysis earlier of the groundwater and the embankments, did that apply to your analysis and written response apply to her written Paragraph 33?

A. Yes, I think it does. The first part of that, stormwater infiltrates Pond 2 embankments, that's true. Stormwater does infiltrate, but the second part of that -- again, the data that we've collected from the monitoring wells since 2010 isn't indicative of a release of CCR materials.

Q. Great. One last paragraph, can you turn to Paragraph 38, please, on Page 9?

A. Okay.

Q. So based upon earlier analysis of groundwater and your review of the boring logs, do you agree with her conclusions in Paragraph 38?

A. No. I don't believe that the pond embankment material, nor the material formerly in the pond itself is ultimately ending up in the grown as evidenced by the data.

Q. And -- yeah.

All right. Mr. Maxwell, I want to turn to

your discussion about chlorides which is on Page 4 of your report. At the same time can you turn to Paragraph 34 of Miss Hunt's affidavit?

A. Okay.

Q. So you see Miss Hunt states five lines down, Illinois EPA and Midwest Gen agreed in 2012 that the exceedances of Section 620.410 Groundwater Quality Standards were likely due to road salts.

Do you see that there?

A. Yes.

Q. And you already testified that the chloride is from the road, correct?

A. Yes.

Q. Okay. But let's look at her last sentence. However, these exceedances signify the stormwater infiltration and recharge is occurring through the immediate vicinity of Pond 2 through the embankments. Is that accurate?

A. Well, if you take that very last sentence there --

Q. Right.

A. Okay. There is recharge occurring through those embankments. There's another part of the opinion, though, where the source of the stormwater

is what I disagree with.

Q. Great.

A. Okay.

Q. You're talking about the exceedances signify. That's what you disagree with?

A. I guess I'm not sure what the reference is there to exceedances. Oh, we're talking about chloride there, right?

Q. Yeah.

A. Yeah. So, yeah, I don't think that the chloride exceedances are necessarily part of the story.

Q. Great.

A. Okay.

Q. Let's talk about that. So, well, we're gonna get into that. I'm gonna switch over a board here.

So, Mr. Maxwell, what are we looking at here?

A. So that is a profile of the ground surface -- can I get up?

Q. Please do, but make sure you project so the court reporter can hear you.

A. So this is -- the heavier dark line is a

profile of the ground surface that we generated from Google Earth, and so it goes from the north side of Pond 2, Highway 6, across Pond 2, and then ultimately ending at the intake channel for the Des Plaines River.

Q. Okay. And can you turn to Exhibit B of your report?

A. Okay.

Q. Looking at it?

A. Yep.

Q. So tell me how Exhibit B compares with what you're seeing here and where it came from?

A. So the source of the information is the same. The drawing that's posted here in the room today is just made to look a little bit more professional. The scale has been changed. So we've put it in autoCAD so we can make it a little more presentable for presentations purposes, but the source of the information and the basis for the profile is the same.

Q. Okay. Great.

So, Mr. Maxwell, why did you do this? What is the purpose of this?

A. So --

Q. I'm sorry.

Why did you do this evaluation on the -- in Exhibit B and of the elevations?

A. So the -- if I understand the argument that the Agency has made in terms of linking the chloride to the groundwater, there's a reference that's made to chloride stormwater infiltrating the topsoil in the immediate vicinity of the pond. And the only way that I'm aware of that the top -- that the topsoil in the immediate vicinity of the pond could be impacted as a result of stormwater flow from the highway would be for direct infiltrate -- or for direct stormwater to flow from the highway and ultimately end up in the embankments of the pond because the allegation is that the chlorides are present in the topsoil.

So if you look at the profile, this is -- this is the highway, and then there's a ditch immediately adjacent to the highway that is going to collect stormwater and then ultimately funnel it in and out of the page, okay. But then some stormwater is actually gonna infiltrate as well and go vertical, and it's gonna go vertical until it hits the aquifer at which point it's gonna flow and

follow the flow of the aquifer.

So with this profile, it just -- I don't know of a way for stormwater from the highway to ultimately end up on the embankment of the pond given the barrier of the ditch. Water would have to come up and over the ditch in order to get onto the embankment of the pond and subsequently impact the topsoils of the pond.

Q. Thank you. You can step down.

A. Thanks.

Q. So in your analysis of this chloride seepage, you -- first, you just told us that the chloride impacted water from the stormwater can't flow off the embankment of the pond. Didn't you also look at the seepage rates in the groundwater?

A. [Nodding.]

Q. What did that tell you?

A. So once -- let me just flip to my report because -- so what we looked at was the average seepage velocity that's been reported in the -- in the historical groundwater monitoring reports and the historical geological investigations, and we saw that the average seepage velocity is 0.87 feet per day. And so if you were to use that average

seepage velocity, it's gonna take roughly 30 days for the stormwater that mixes with the groundwater beneath the ditch to ultimately end up at the upgradient well, MW-10.

And then the downgradient wells are even further away from the ditch, so it's going to take at least 300 days for the groundwater to flow from the highway ditch to the downgradient wells.

Q. And by seepage, what is the seepage velocity?

A. So the seepage velocity is the rate that groundwater actually flows in the subsurface. It needs to flow around the various grains in the aquifer. So it's the rate that it flows in the aquifer.

Q. And do constituents like chloride move with the seepage velocity?

A. Yes. The dissolved constituents -- chloride is dissolved in the groundwater. The migration rate is going to be largely dependent on the seepage velocity. The faster the seepage velocity, the faster the chloride will migrate.

Q. Okay. Let's turn back to Miss Hunt's affidavit, Paragraph 36. After you've read it,

I'll ask you a question.

A. Okay.

Q. So, Mr. Maxwell, what analysis in your understanding is Miss Hunt doing in Paragraph 36 of Exhibit A?

A. I believe that the idea is to indicate that rapid or excess precipitation in the springtime is ultimately finding its way onto Midwest Gen's monitoring wells and into the groundwater quickly, and it's causing the concentrations of chloride to spike quickly, immediately.

Q. And what is your opinion of this analysis?

A. So I don't think the timing is right for the reasons that are indicated here on the board. In order for that timing to actually play out, you got to have the overload flow. The water's gonna flow faster over the ground surface than it's gonna actually flow within the subsurface in the aquifer. So for that reason I don't think that the time makes sense.

And then one other point to make would be that there's only a couple of different events that were evaluated here as part of Paragraph 36.

There's -- there was multiple other years in which we were performing groundwater monitoring in which to look. So two out of ten years were assessed, so I was left to wonder what the other eight or so years might indicate.

Q. She also looked at rain events, right, to support her conclusions?

A. Yeah.

Q. What do you think about using rain events in this instance to support her conclusions? How would you -- do you think that's a scientific way to consider rain events?

A. I don't think the rain events support the conclusion.

Q. Why is that?

A. The timing doesn't work out.

Q. Okay.

A. The -- again, in order for it to -- in order for the stormwater with chloride to -- as quickly as is indicated by the Agency's affidavit to get to the monitoring wells, it's got to go over the land, and it's gonna go slower once it gets into the subsurface. So the timing doesn't add up.

Q. Great.

So, Mr. Maxwell, in your opinion based upon this analysis here, do the chloride results in the groundwater provide any evidence of high -- of any conductivity in the surrounding soil in Pond 2?

A. No. I don't think the chloride data supports that -- a conclusion about the hydraulic conductivity of the embankments.

Q. Right. So we're gonna get to Board Question Number 2. So I'll read into the record.

The Agency suggests due to the topography of Pond 2's embankments Highway 6's associated storm drainage, "chloride is moving from the road salts into the topsoil of the Pond 2 embankment and the US Highway 6 stormwater drainage ditch during the winter months and then infiltrating to the groundwater beneath and to the north of Pond 2 during the springtime thaw of ice and snow and subsequent rain events." Citing Agency at 20 -- Pages 24 to 25.

Please clarify whether Midwest Generation has done testing of the soils in Pond 2's embankment to determine their composition and permeability. If not, is it possible to do so? How would it take -- how long would it take to

conduct the analysis?

So I guess starting with the question, Mr. Maxwell, to your knowledge has Midwest Generation done testing of the soils in Pond 2's embankment to determine their composition and permeability?

A. The composition of the soils has been documented in the various boring logs that have been investigate -- generated as a result of various different geotech investigations. So that would be the composition. I think the USDA textural classification system was utilized. So there's -- the full description is in the boring logs that were provided to describe composition.

As it relates to permeability, my understanding is that 2005 there was a geotech investigation that was performed that assessed permeability of the bottom portion of the embankment. And if I remember correctly, those hydraulic conductivity results from the permeability tests indicated a 10 to the minus 2 to 10 to the minus 4 centimeters per second range of materials.

Q. And I think the 2005 geotechnical report

you're discussing is Exhibit E to the Agency's recommendation, and that would be in the other book there.

A. Okay.

Q. Okay. So second question -- I guess the second question I'll just say both, so you can answer both.

If not, is it possible to do so, and how long would it take to conduct the analysis?

A. So I think the first part, if not, is it possible to do so, we do have the data, so that's not applicable. And I don't think the second part is applicable either because we do have data and composition permeability.

Q. Let me ask you this follow-up to that Board question.

Would the permeability tell you anything about whether it's CCR in the embankments or not?

A. It could tell you -- it could tell you -- if you have other evidence to suggest that CCR were there, it could give you information on the type of CCR. Bottom ash is courser grained. Courser grained is going to be more permeable. But there's no other information to indicate that there's CCR

there, so by itself, no.

Q. Because the permeability only tells you how quickly water goes through it, right?

A. Correct.

Q. That's what I mean if I tell you, if you think it's CCR, what it is?

A. Permeability, you could -- it could be impermeable or very permeable, and that doesn't have any relation at all to whether it's CCR or not. Permeability is primarily related to compaction, grain size, things like that.

MR. RAO: Can I ask a follow-up?

MS. GALE: Please.

MR. RAO: Mr. Maxwell, just in responding to Miss Gale's question, you said permeability by itself is not being proven in terms of whether CCR is in the embankment or not. When we ask the question about the composition, we are also wondering if any chemical analysis was done on the soils to see if CCR is present. Is that information available of whether testing has been done?

THE WITNESS: On the soils themselves, I'm not aware of information on the soils themselves. We

do have information on the groundwater downgradient of the soils, 12 years worth of data, downgradient. But on the soils themselves, I'm not aware of any.

MR. RAO: Okay. Thank you.

MS. GALE: Okay. Good? Okay.

BY MS. GALE:

Q. Mr. Maxwell, I just want to turn next to your discussion about the alleged data quality issues, that's on Page 12 of your report.

A. Okay.

Q. Okay. So you heard the testimony this morning. Generally speaking, total dissolved metals results are higher than dissolved metals results, right?

A. Generally speaking, yes.

Q. Yeah.

And we heard Mr. Gnat say that, but I'll ask you to repeat it. Why is that, generally speaking?

A. The total are an unfiltered aliquot. The dissolved are filtered. So the process of filtering potentially could eliminate solids that are suspended in the sample that would then be part of the reported concentration.

Q. And you heard how Mr. Wilson and Mr. Gnat discussed how they collected the groundwater data, right?

A. Yes.

Q. And their collection of methods are similar to the methods you're familiar with of collecting from the groundwater with a filter or without a filter?

A. Yes. That's standard practice with a 0.45 micron filter.

Q. Great.

And is it standard practice to perform it in two separate containers collected consecutively?

A. That's generally the way most sampling analysis plans specify how it be done.

Q. But -- I'm sorry?

A. And that -- that in and of itself could potentially create variation because groundwater flows. And so because it flows, the concentrations are changing with time. The sample containers are collected one after another, but the one is technically different groundwater than the other. And so it is possible to have small variations simply because you're not necessarily sampling the

exact same groundwater.

Q. That was my next question, so thank you.

A. Okay.

Q. So now we have, as you say, two samples with groundwater from the same groundwater unit, but as you said not the exact same water. And it's sent to the lab for analysis, right?

A. Yes.

Q. And then at the lab what happens?

A. So they follow a standard USEPA procedure. Most of them are SW 846 methodology. As part of that methodology when they're running their samples through the instruments and doing their calibration, there's specific QA/QC procedures in terms of the accuracy and precision of the data that are arranged. And it can be plus or minus 10 or 20 percent, for example, high or low. And that can still be -- if you've got that type of variation, that can still be deemed acceptable when they report the results. So that's just a another level of variation that occurs when they're running the lab analysis.

The -- basically the methodology is only so tight. They run it per the methods, but the

technology is only -- and the method is only so accurate and only so precise. And so by following the method, reporting per the method, basically the method allows a little bit of leeway in the results. So there's a certain high and a certain low range of the concentration that could also account for, you know, concentrations that may not necessarily follow the general rule.

Q. Right. So with the variation in the water and the variation of the calibration and standards at the lab and your decades of experience, are total dissolved metal results always higher than dissolved metal results?

A. In my field, we don't like to use the word always, except there's always variation.

Q. Okay.

A. We'll use it then, so no, never a hundred percent in time.

Q. Great.

Can you please turn to Miss Hunt's affidavit Paragraph 40? Please read it, and then I'll ask you a couple questions.

A. Okay.

Q. So her last sentence she states, dissolved

metal results presented to the Agency were higher in value for some of the detections than the total metal results, suggesting that the sample bottles were switched in the field, all samples were field-filtered, and some other sampling error occurred.

Do you agree with her conclusion that some of the metals detected in the dissolved metals were higher than the total metals indicate switching in the field or all metal samples were field-filtered?

A. No, I don't agree with that, the testimony this morning, the data that I looked at. The majority of the total metals concentrations that I viewed -- reviewed from those two sampling events did have totals, total metal concentrations higher than the dissolved. So I didn't see anything that would indicate that there were QA/QC issues as referenced in this paragraph.

Q. Okay. So turning to her Paragraph 41, I'm gonna read through that. Actually, before you do that, I'll stop you there.

Didn't you also do a line-by-line, a side-by-side comparison of the results?

A. I did.

Q. What did you conclude or what did you find?

A. Again, the majority of the total metals concentrations were higher than the dissolved metals concentrations. In those two sampling events I believe there were only 3 or 4 instances out of 20 or so that -- where the opposite were true, so not enough to suggest that a large scale mixup had occurred.

Q. And to your recollection do you remember the concentrations of those differences?

A. The concentrations were close in terms of what one was reported versus another. One was 0.069 I believe, and one was 0.070. You know, so very minimal difference between the two which could certainly be accounted for by either the field variation that was mentioned or the analysis at the lab, the variation that could occur from that.

Q. And these are small concentrations we're talking about, right?

A. Yeah, yeah.

Q. Does that -- how does that inform your conclusions?

A. Well, it -- I mean, it -- the small

concentrations, it only takes a little bit of a difference to tip one higher than the other. You know, so the fact that they're small concentrations is an important part of it because, like I said, it only takes a little bit to kick one higher or lower than the other.

Q. Can you turn to Paragraph -- Miss Hunt's Paragraph 41 in Exhibit A?

A. Okay.

Q. Here she states in her second sentence that because the 2021 Q3 data summary seems to include field-filtered sample collection, as explained in Paragraph 40, the detections and potentially some of the nondetects could have been greater -- she's indicating in Monitoring Well 3 and 5 for cobalt -- if the total metals sample collections had been followed.

Do you see that there?

A. Yes.

Q. Based on your comparison of the total and dissolved data, is Miss Hunt's suggestion that there were field-filtered sample collections correct?

A. No. The cobalt is -- as was discussed, is

from the same sample bottles, so there's no reason to suspect that are the QA/QC issues with cobalt are present when there's no QA/QC issues with the other metals.

Q. So in your expert opinion could the results in Monitoring Wells 3 and 5 been higher?

A. I don't believe so, no.

Q. Mr. Maxwell, we've gone through the groundwater monitoring results which you state show the absence of boron and other common CCR constituents. Cobalt in the groundwater is due to the road salts. Black silty sand -- excuse me. Black silty gravel is not CCR.

Based upon all that, in your expert opinion is the groundwater contaminated by CCR?

A. I don't believe it is.

Q. And in your expert opinion is there a future potential for contamination from CCR?

A. Again, given that we've got 44 years worth of data -- or I'm sorry. Given that the embankment material has been in place for 44 years and we've got a dozen years or so of groundwater monitoring data, if something was going to leach from the embankment and/or from the pond, we'd have seen it

by now in the groundwater downgradient of Pond 2, and we just haven't.

Q. Okay. So in your expert opinion, is additional sampling analysis of the embankments around Pond 2 to analyze whether the soil is leaching metals required?

A. I don't think it's required. There would be potential issues with the representativeness if you were to do that testing. I believe the shake test or the neutral leach test has been suggested. You know, taking a lab test and trying to translate that to a field condition is risky. It's not as -- there are questions attached with trying to translate a lab test to actual field data, and we've got field data from an array of groundwater wells downgradient that -- from 12 years that is showing no, no -- the absence of common constituents and then the absence of the uncommon constituents is showing that the groundwater isn't impacted.

Q. Similarly, in your expert opinion does the Poz-O-Pac need to be sampled to analyze whether it's leaching metals?

A. Yeah. The Poz-O-Pac, because that is

underneath the HDPE liner, you would have to compromise the HDPE liner to get at the Poz-O-Pac. And assuming the liner ultimately is going to stay, that doesn't make a lot of sense because you're creating a conduit for contamination to go vertical if you were to attain that sample.

Q. So is your analysis earlier about the absence of constituent groundwater equal applicable to the consideration of sampling the Poz-O-Pac?

A. Yeah. Yes. The -- there's -- the groundwater data indicates that the Poz-O-Pac isn't serving as a source either.

MS. GALE: Nothing further for now. Thank you.

HEARING OFFICER HALLORAN: Miss Diers, do you need a moment or do you need a short break?

MS. DIERS: Just a short break, thank you.

HEARING OFFICER HALLORAN: Seven, eight minutes we'll be back. We're off the record.

(WHEREUPON, a short recess was taken.)

HEARING OFFICER HALLORAN: We're back on the record. Mr. Maxwell is still under oath.

Miss Diers, would you like cross?

MS. DIERS: Yes, just a few questions.

CROSS-EXAMINATION

BY MS. DIERS:

Q. With respect to Exhibit B attached to your affidavit, does infiltration also have lateral flow components?

A. Can you be more specific?

Q. I'm referring to Exhibit B attached to your affidavit.

A. The --

Q. Yes.

A. There's two reports.

Q. Sorry.

A. Okay. Now that I see what you're referring to, would you mind repeating the question?

Q. With respect to Exhibit B attached to your affidavit, does infiltration also have lateral flow components?

MS. GALE: Objection, only to the extent he doesn't have an affidavit. It's Exhibit B to Exhibit 22.

MS. DIERS: That's what I'm referring to, yes.

THE WITNESS: Once the infiltration reaches the groundwater, reaches the aquifer, yes, the flow at

that point would be lateral.

BY MS. DIERS:

Q. With respect to Exhibit B attached to Exhibit 22 depicting groundwater flow towards the Des Plaines River, is it possible that the lateral flow component of infiltration intersected with Pond 2 subgrade and foundation materials?

A. No. The groundwater surface is a minimum of 5 feet beneath the base of the liner, and so as a result the groundwater flow is beneath the liner.

Q. Next question, was the groundwater metals data evaluated in 2010 until the enactment of the federal rule as total recoverable metals or dissolved metals?

A. My understanding is that we collected both, total metals and dissolved metals, depending upon the applicable regulation or the CCA. There was monitoring that was done in compliance with compliance commitment agreement, the CCA, which was comprised primarily of dissolved metals. And then once the federal rules were enacted, the federal CCR rules in 2015, and later the Illinois CCR rules last year, those require total metals. So both have been monitored at various points throughout

the monitoring program.

Q. Is it the practice of Weaver Consultants Group to evaluate human health risks and/or compliance with class one groundwater protection standards using dissolved metals data?

A. We will follow the applicable regulations. In some instances dissolved metals are required to comply with various permits. For example, in other instances we will collect total. I would say that on a general basis just our standard operating procedure, if we're doing -- if we're investigating groundwater for a site that's in the site remediation program, let's say, we'll do both. We will do both total and dissolved because to have both informs as to what's going on, how much concentrations are in the sediments suspended and then how much concentrations are dissolved in the groundwater.

Q. In your testimony I believe you state that the geotechnical permeability testing showed that hydraulic conductivity was 10 to the negative and 10 to the negative 4, I'm sorry, 10 to the negative 2 and 10 to the negative 4.

Are those consistent hydraulic

conductivities for clay?

A. No. That would not -- unless the clay is awfully sandy, the permeability of clay is going to be lower than that particular range. Typically clays would be in terms of centimeters per second in the 10 to the minus 5 or 10 to the minus 6 or lower permeability. So, no, that wouldn't be characteristic of clays.

Q. Has cobalt been detected in MW-10? Monitoring Well 10?

A. I don't recall it being collect or being -- was it collected or detected?

Q. I'm sorry, detected.

A. Was it detected. I don't believe it's been detected in MW-10.

Q. Do you know, is MW-10 downgradient of Route 6?

A. Yes.

Q. Then I have one more question. I believe Mr. Rao asked this. I just wanted to make sure it was on the record.

Did you do a chemical analysis at Joliet 29 Pond 2?

MS. GALE: Objection, vague. Chemical analysis

of what at Joliet Pond 2?

BY MS. DIERS:

Q. Of the soil, I'm sorry.

A. I'm not aware of any analytical data on the soil. I've discussed the groundwater data downgradient of the soil, but the soil itself, I'm not aware of any analytical testing data done on the soil of the embankment.

MS. DIERS: Okay. No further questions. Thank you?

HEARING OFFICER HALLORAN: Thank you, Miss Diers.

Miss Gale, any redirect?

MS. GALE: Nothing from us. Thank you.

HEARING OFFICER HALLORAN: Thank you.

(Witness excused.)

MS. GALE: Can we go briefly off the record?

HEARING OFFICER HALLORAN: Sure.

(WHEREUPON, a discussion was had off the record.)

HEARING OFFICER HALLORAN: Back on the record. Everybody looks ready.

(WHEREUPON, the witness was duly sworn.)

THOMAS DEHLIN,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MS. GALE:

Q. Mr. Dehlin, for the record can you please say and spell your name?

A. Of course. Thomas, T-h-o-m-a-s, Dehlin, D-e-h-l-i-n.

Q. Mr. Dehlin, I want you to turn to the first tab in Volume 1 of the binders you have in front of you.

A. Okay.

Q. What is this?

A. This is my CV.

Q. Okay. Mr. Dehlin, what is your educational background?

A. I have a Bachelor's Degree and Master's Degree both from the University of Illinois at Urbana-Champaign in civil and environmental engineering.

Q. And what professional licensing do you have?

A. I'm a professional engineer licensed in

the state of Illinois, state of Wyoming and recently became licensed in the state of Kentucky.

Q. How do you become a professional engineer?

A. Similar to becoming a professional geologist as Mr. Maxwell indicated, there are baseline educational requirements and professional practice requirements. So from the educational side, it's four years at an ABET accredited university in engineering, and then also three to four years of practice under a licensed professional engineer. The three years being if you have a master's degree, they count it as a year of professional practice.

Q. And then did you take a test?

A. Yes. You take two exams. One is called the fundamentals in engineering exam or FE. As the name suggested, test you on the fundamentals for engineering principles. And then you take after that to get your actual PE license what's known as the PE exam where you test your proficiency in the area of engineering that you work to practice. For example, I took the civil engineering version of the PE exam.

Q. And now that you're a professional

engineer, what are your duties and responsibilities?

A. So as a licensed civil engineer, my primary duties are to understand the behavior of materials in terms of how they can be used to construct various things. So that can be understanding steel for design and steel structures, concrete for designing concrete foundations, soil for embankments or as in the case of Pond 2 here, understanding the HDPE for use as a liner for waste containment.

Q. As a professional engineer isn't there also an ethical duty?

A. There's an ethical duty. And also one of our first and foremost responsibilities is to protect the public.

Q. Mr. Dehlin, who do you work for?

A. I work for Sargent and Lundy. They're an engineering firm based out of Chicago.

Q. And how long have you worked for Sargent and Lundy?

A. I've worked for Sargent and Lundy since February of 2014, so just over eight years.

Q. And can you please briefly and generally

describe what you do at Sargent and Lundy?

A. Sure. So my primary responsibilities going back to August of 2015 have been various applications related to federal CCR rule or various state CCR rules. So I've done everything from designing new CCR surface impoundments or retrofitting existing ones, closing CCR surface impoundments, preparing or overseeing various compliance demonstrations for compliance with the various CCR regulations.

Q. I guess I'll ask.

So for Midwest Generation Joliet 29 station, generally speaking, what are you doing?

A. For Joliet 29, I am looking at the ability to reuse the existing HDPE membrane liner installed in 2008 so that the Pond 2 which was or I guess is a CCR surface impoundment can be repurposed for low volume waste water.

Q. And isn't that part of the closure process?

A. Yes, that is part of the closure process. So the first part would be obtaining a construction permit to close Pond 2 which would be removing above the existing geomembrane liner. There exists

two layers that help protect the liner when the facility used to remove ash from it periodically as part of regular maintenance practices.

It's a 6-inch gravel what they term a warning layer that warns the excavators as their removing CCR to proceed no further so they don't damage the geomembrane. And then there's a 12-inch thick sand cushion layer that provides additional protection to the geomembrane. There's a geotextile between there as well that provides additional protection. So all of that has to come out, and then the existing HDPE geomembrane would be decontaminated.

Q. All right. You want to turn to the first exhibit in your binder which is Exhibit G of the Illinois EPA's recommendation.

A. Okay.

Q. This is your January 18, 2022 report, right?

A. Yes.

Q. And -- I'm sorry.

In this report what did -- generally speaking, high level, what did you do?

A. The purpose of this report was to document

the construction history of Pond 2 at Joliet 29 going back to when it was first constructed in 1978 through the relining process in 2008.

Q. So let's first start talking about the embankments, your first conclusion. Do you see there on Page 2 --

A. Yes.

Q. -- your first conclusion there?

A. So my first conclusion after reviewing the various construction documentation attached to this report was that Pond 2's embankments and subgrade consist of natural earthen materials obtained from on-site and/or off-site borrow sources.

Q. So turning to Page 2 of 3 of your report, let's talk about that. What documents did you start with in coming to that conclusion?

A. So the original construction of Pond 2 in 1978 is documented in a document referred to as the History of Construction that was prepared in 2016 by Geosyntec as part federal CCR rule compliance.

Q. Okay. And if you want to turn to that, that's actually Exhibit -- Attachment 1 of your report, right?

A. Correct.

Q. Specifically, I believe you looked at Sheets 2 and 3?

A. Of which appendix?

Q. Appendix --

A. Are you referring to Sheet 2 as I have called out in the first line on Page 3 of my January 18 --

Q. I am.

A. -- report?

Q. Thank you.

A. So that sheet -- in Attachment 1, that Sheet 2 is in Appendix A-2 of Attachment 1.

Q. Yeah.

So I thought I had larger copies of it in here because these are rather hard to read, but --

A. I did bring larger copies of these with me. Granted it's just the one set, but I can use that to facilitate the discussion.

Q. Would that be easier for you to read them?

A. Yes.

MS. GALE: If we can grab those copies. Can we go off record for a second?

Mr. Halloran, can we go off the record real quick?

HEARING OFFICER HALLORAN: Yes.

(WHEREUPON, a short recess was taken.)

MS. GALE: So I'd like to mark this new page as Exhibit 31 that we can mark that you can take with you.

HEARING OFFICER HALLORAN: Very good.

(WHEREUPON, Exhibit No. 31 was marked for identification.)

BY MS. GALE:

Q. Okay. So, Mr. Dehlin, just can you tell us what you're looking at first?

A. Sure. This is a typical cross section through Pond 2 at Joliet 29 when it was first constructed in 1978. Typical means that if you were to look at this cross section anywhere along the length of the pond, this would be representative of how the contractor was instructed to shape the impoundment for the storage of ash.

Q. So based upon this drawing, can you just explain to us the original construction of Pond 2, the Pond 2 embankment specifically?

A. Yes. So based on this drawing, the contractor was instructed to excavate existing

ground which is shown by a dashed line across the section.

Q. Now, are you looking at Section S, Sheet 2?

A. Yes. Thank you. Section S, typical section through Ash Pond Number 2. So they were instructed to excavate below existing ground to a bottom elevation of 516 feet that was to be approximately 168 feet long. And then the side slopes for the embankments were to be at a 3-to-1 slope from that elevation 516 up to elevation 535.

Q. Okay. So Sections S and U for pond -- well, what does that -- I guess I'll ask this.

What does that tell you about how it was constructed? What does 3 by 1 you said?

A. A 3-to-1 slope refers to a slope that is 3 -- for every 3 feet you go horizontally, you drop in elevation by 1 foot.

Q. Okay. So the original conclusion was that the embankments were made with natural materials. How does that inform that conclusion? How does -- excuse me.

How does Exhibit 31 inform your

conclusion?

A. So based on what I'm seeing here, material was removed from the existing ground that was there at Ash Pond 2, and then it was sloped up to the new top of the embankment. And you can also see on Section S here that fill material was placed where either they had to go up to this design elevation of 535 or they had to remove unsuitable material.

Q. Okay. So you said fill material, and you started with the original drawings. What other documents did you review for your conclusion that the embankments were not made of CCR material?

A. I looked at soil borings that were drilled through the embankments dating back to KPRG's investigation in 2005, Patrick Engineering's investigation in 2010, 2011 time frame, as well as Geosyntec's borings that they drilled to prepare the History of Construction and various other CCR rule documents.

Q. So I'm gonna pause right there and pull out another diagram. I'll try to make it -- bring it closer.

Mr. Dehlin, what is this? What is the diagram we're looking at depicting?

A. This diagram is a plan view of all of the borings that Geosyntec used to prepare their History of Construction and various other CCR rule compliance documents that show the locations of borings that were drilled as part of the aforementioned KPRG investigation, Patrick Engineering investigation and Geosyntec's own investigation.

Q. Mr. Dehlin, can you turn to Attachment 2 of your Exhibit G? What is --

A. Okay.

Q. What is it?

A. It is the same figure as shown here on the larger board.

Q. All right. I want to ask you Board Question Number 11. That should be in front of you?

A. Yes. Okay.

Q. Footnote Number 6 of Midwest Generation's response to the Agency's recommendation states that Geosyntec collected the boring samples from 2015, but were not available. Please clarify whether the boring logs have been located since the filing of Midwest Gen's response. If so, submit the logs

into the record.

Mr. Dehlin, can you clarify?

A. Yes. The logs are in the record, so I'll start with the logs first.

Q. Okay.

A. Those are in an attachment to the next few pages after the boring location plan. The first boring is labeled JB1 and then the next is JB2.

Q. To clarify, the Geosyntec map that's in Attachment 2 and on this board, that locates each of the boring logs taken on the embankments, correct?

A. Yes, that's correct. JP1 -- I'm sorry. JB1 is located in that eastern corner, and then JB2 is located in the southern southwestern embankment.

Q. And as part of your opinion you reviewed each of those boring logs?

A. Yes.

Q. And, generally speaking, to your recollection what did the boring logs show?

A. The boring logs identified various fill materials as well as the native soils that the embankments are founded on. In general, the Geosyntec borings as provided in Attachment 2 here

show primarily clay fill, silty gravel with sand fill, and then gravel with silt and sand as the uppermost native soil there.

Q. To your recollection, in reviewing those boring logs, was any ash identified in the logs?

A. No ash was identified in the boring logs.

Q. Are you sure not the top foot in 2005?

A. For the -- I'm sorry. I was referring to the Geosyntec borings.

Q. Oh, I'm sorry, collectively, the 2005 boring logs you looked at, the 2011 boring logs you looked at, and the 2015 boring logs you looked at.

A. Of all the borings that are shown on this map, the only locations where CCR was identified was in the upper foot of two borings drilled by KPRG, not in the primary fill material of the embankments. The material was identified in the aggregate roadway, so that the upper foot.

Q. So what do you mean by aggregate roadway?

A. Aggregate is constructed primarily with crushed rock. I believe it's referred to as Illinois Department of Transportation Gradation CA6 which is a specific gradation type for a course aggregate material. So it's not CCR aggregate.

It's just like rock material.

Q. So in your opinion what is -- what is the bottom ash that was the top foot in those KPRG borings?

A. If I had to speculate in my opinion, it's likely just ash material that came off onto the roadway during handling perhaps during excavation of the CCR. I don't think it was intentionally placed there.

Q. So the roadway, where -- that you're talking about, where is it?

A. The roadway is around the perimeter of Pond 2. So looking at this plan of the borings here, the roadway would be just north of Ash Pond 2 on the crest of the embankment. That elevation 535 that I referenced, that's where it would be, and it goes around the perimeter of Pond 2.

Q. Thank you.

Mr. Dehlin, if ash were used as fill material in construction of Pond 2, in your expert opinion what would you have expected to see?

A. I would have expected to see it identified on the boring logs.

Q. You also reviewed the expert opinion of

Mr. Mike Maxwell, correct?

A. I did.

Q. And we just heard Mr. Maxwell's opinion that the groundwater data does not indicate the presence of CCR in the proximity of Pond 2?

A. Correct.

Q. And his opinion is actually attached as Attachment 5 of your report, right?

A. Correct.

Q. How does Mr. Maxwell's conclusions inform your opinion here?

A. Given Mr. Maxwell's conclusion that the groundwater at the site doesn't indicate the presence of CCR fill material in the embankments, that further supports my conclusion that it is highly unlikely that CCR fill material was used to construct the embankments for Pond 2.

Q. Great. Thank you.

I want to turn to discussing the Poz-O-Pac.

A. Okay.

Q. Which will be on Page 2 of your report.

A. Okay.

Q. So we were here, and we heard

Dr. Radlinski talk about Poz-O-Pac. What is your understanding of Poz-O-Pac?

A. Poz-O-Pac, the way I understand it, it's similar to concrete. You have -- it ends up -- you have an aggregate filler material, and then you have the lime that's similar to cement that's used in making concrete that causes a reaction and causes it to bind to create this concrete-like substance.

Q. And I think you have it detailed here on Page 5 of your report. What was the -- Pond 2, what was the Poz-O-Pac composed of?

A. The Poz-O-Pac mixture consisted of 3 percent hydrated lime, so water mixing with lime, 20 percent fly ash, and 77 percent boiler slag aggregate.

Q. In your third bullet you say, has a minimum of seven days curing time. What does curing time mean?

A. Curing with respect to cementitious materials like this or like concrete, it allows the material to harden, to gain strength, to form into that -- I forget where the sample went, but that material that you brought with today, to end up

becoming that form.

Q. And -- well, I'll just ask it. I think you answered it already.

Why is curing time important?

A. Curing time is important because you need to gain strength, and you have to gain that final solid form.

Q. So once the curing time is finished, what happens to the boiler slag in the Poz-O-Pac?

A. It becomes encapsulated within that Poz-O-Pac matrix. It's held together by that cementitious reaction between the fly ash and the hydrated lime. Or pozzolanic reaction, I apologize.

Q. And you rely here on Page 5, you mention the Federal Highway Administration, excuse me, Federal Highway Administration's User Guidelines.

A. Yes.

Q. Why were those important to you?

A. These were important to me because my understanding is the primary use of Poz-O-Pac or a similar type of substance was as a base material for roadways, and so this would be of interest for the Federal Highway Administration to document its

use across the United States and what typical standards were.

So what I did is I reviewed the user guidelines to see how the Poz-O-Pac mixture that was used as Pond 2 here for the liner would compare to what they refer to as PSB mixtures or pozzolan stabilized base mixtures just to make sure that the proportion of components was within what the FHWA has documented in their guidelines.

Q. What did you conclude based on that?

A. I concluded that the Poz-O-Pac liner that was installed at Pond 2, its compositions were in line with FHWA guidelines.

Q. All right. Moving on, in 2007, for Midwest Generation, what did Midwest Generation initiate?

A. They initiated a systematic relining program at its four power plants, so including Joliet 29. They looked at their CCR surface impoundments at Powerton in Pekin, the Waukegan generating station in Waukegan, and then the nearby Will County Generating Station in Romeoville.

Q. And they engaged an engineer to do this?

A. Correct.

Q. What did the engineer for the project initially think about the Pond 2 Poz-O-Pac liner?

A. My understanding is that the engineer tasked with this designing this relining program, implementing this relining program, assumed that the Poz-O-Pac liner would not have been in good condition, it would have been in bad condition, and therefore would have had to have been replaced prior to relining, for example, the Pond 2 at Joliet 29, relining it with an HDPE geomembrane liner.

Q. The original plan was to remove the Poz-O-Pac, right?

A. Correct.

Q. But what happened when Midwest Gen dewatered Pond 2 and removed the ash?

A. They found the Poz-O-Pac liner to be in better than anticipated condition so far as to say good condition.

Q. How do you know this?

A. Based on photographic records that I've attached to my January report and my March report, as well as changes that were made in the design drawing process. We were fortunate enough to have

draft drawings likely submitted to Midwest Generation for comment as part of the design process, and at some point in the design process, the drawings changed a note that had previously instructed the contractor to remove the --

Q. Let me stop you there.

A. Yes.

Q. So we can go to Attachment 6 of your report --

A. Okay.

Q. -- which has those drawings.

A. Okay.

Q. So let's start again.

You compared -- what is this Attachment 6?

A. So this Attachment 6 is a draft drawing that was prepared by the engineer that was tasked with the systematic relining program for the Midwest Generation CCR surface impoundments, Natural Resource Technology. This specific drawing is titled, Sheet Number C020, liner subgrade preparation ash impoundment liner design, and it covers both Pond 2 and Pond 1.

Q. And the date is May 4, 2007, right?

A. The -- yes. The draft date would have

been May 4, 2007.

Q. Okay. What did you look on this drawing to in your opinion?

A. So on this drawing where it says Ash Impoundment 2 in the middle of the pond, there are various triangles with numbers in them. Those triangles represent contractor notes, and those notes are listed below Ash Impoundment 2 just above where the drawings says, not for construction.

The note of interest here is Note 5 which states, contractors shall remove existing liner from impoundments and dispose at an approved landfill. And existing liner here would have referred to the Poz-O-Pac liner that was installed in 1978.

Q. Okay. Can you turn to Attachment 7?

A. Okay.

Q. Attachment 7 is the technical specifications for Ash Pond 2, right?

A. Yes, this is correct. I did note in my report that these technical specifications are labeled as Draft 4, Midwest Generation review. However, based on my comparison of as-built drawings and the construction records that were

submitted by the contractor to Midwest Generation, I do not believe any significant updates were made to these technical specifications insofar as to say I believe these to be representative of how the contractor was to construct the impoundment.

Q. Okay. Attached to it are drawings, and hopefully in yours there are some that are in large form with a paper clip?

A. They are.

Q. So what is this?

A. Is there a drawing --

Q. I'm sorry, the large ones. So I'm looking at --

A. The --

Q. -- Ash Pond 2 Liner Replacement Sheet C020?

A. Okay. So this drawing, Sheet C020, is a updated, revised version of the drawing that we just looked at that was labeled draft and would have been issued to Midwest Generation for review. The date on this drawing appears to be August 2 of 2007, and the revision note suggests that it was issued for bid. So this would have been the drawing that would have been submitted to the

contractors bidding on the relining work.

Q. And what does this tell you about what was done with the Poz-O-Pac?

A. So when I reviewed the contractor notes on this revised version of Sheet Number C020, I noted that the previous Note 5 which instructed the contractor to remove the Poz-O-Pac liner was replaced by a different note that had nothing to do with removing the existing Poz-O-Pac liner. And upon reviewing the nine contractor notes that were submitted on this bid version of the document, I did not see an indication that the Poz-O-Pac liner was to be removed.

Q. I want you to turn to Attachment 8 of your report.

A. Okay.

Q. What is this?

A. Attachment 8 is two field change requests, also commonly referred to in the industry as change orders that contractors will submit when they encounter conditions that weren't specified on the design drawings, technical specifications or that they would otherwise have thought to be aware of.

Q. Okay. And what is Attachment 8? What do

the field change requests tell us?

A. So field change request Number 1 was submitted by the contractor, Brieser Construction. Brieser is B-r-i-e-s-e-r. This first one was with respect to nine marker posts that were to be installed at the bottom of the pond. These marker posts serve as warning posts and also level indicators to indicate how far above the liner the ash and water was stored. Brieser noted here on field change request Number 1 that the nine parker post required drilling into bedrock in lieu of soil. Drilling into rock requires specialized equipment and more time. We will hire a subcontractor for this work.

Based on my review of the boring logs that are shown here on the board, bedrock is not encountered at the elevation that the marker posts were to be installed. The marker posts were to be installed at the base of the pond. So I interpret this bedrock to be the Poz-O-Pac liner that they encountered.

And, furthermore, the fact that they are -- they're calling it bedrock is telling me that it was still in good condition, intact, and

they required special equipment to have to drill into it to install these nine marker posts for the reliner work at Pond 2.

Q. Yeah.

I'm gonna turn to Board Question Number 1.

A. Okay.

Q. I'll read it into the record. Please elaborate on why Midwest Generation decided to retain the Poz-O-Pac liner in Pond 2 during the installation the HDPE liner in 2008. Comment on the remaining estimated life span of the current Poz-O-Pac liner. If the Poz-O-Pac liner is required to be removed, would that also require the disposal of the HDPE liner?

A. So to answer the first part of the question, my understanding is that Midwest Generation decided to retain the Poz-O-Pac liner because they found it to be in good condition. Regarding the remaining estimated life span of the current Poz-O-Pac liner, I'm not sure of an exact estimate. I would say that given the Poz-O-Pac liner was found to be in good condition in 2008 when it was re -- when it was covered with the new HDPE geomembrane liner, the design conditions

haven't changed at the pond since other than the purpose of this project is to no longer use it for CCR, just use it for low volume waste water, and the fact that's been covered with the HDPE geomembrane liner, in my opinion I don't think the Poz-O-Pac has added a significant risk of deterioration. I would expect it I guess to be in similar condition now, 14 years later, as it was when they installed the HDPE liner in 2008 after it had been in place for 30 years.

Q. And last question, if the Poz-O-Pac liner is required to be removed, would that also require disposal of the HDPE liner?

A. Yes. The HDPE liner is installed over the Poz-O-Pac liner. So to get to the Poz-O-Pac liner, you would have to remove that liner. You would also have to remove the HDPE geomembrane liner.

Q. Great.

Now I want to turn to Board Question Number 7.

A. Okay.

Q. I'll read it into the record.

The Agency states the Poz-O-Pac liner material is known to crack substantially over time,

so it is likely the Poz-O-Pac liner damaged -- it is likely the Poz-O-Pac is damaged because the use conditions, the nature of the liner, and should be removed, citing the Agency recommendation at Page 10 through 11.

First of all, do you have a response to that conclusion by the Agency?

A. So based on what I had just said based on the photographs that I've reviewed of the subgrade when it was relined, the fact that the Poz-O-Pac is no longer exposed to the elements, it's covered with an HDPE geomembrane liner, it's found to be in good condition, that's why it was left in place, I disagree with this statement that the Poz-O-Pac liner was damaged because of the conditions and the nature of the liner.

Q. So Question 7A from the Board, is it possible to determine the integrity of the Poz-O-Pac liner without removing the HDPE liner?

A. If you wanted to perform some sort of integrity testing today, you would have to damage the HDPE liner.

Q. Okay. Question 7B, if not, comment on how Midwest Generation can ensure integrity of the

Poz-O-Pac liner other than relying on groundwater monitoring.

A. I think the construction history and in photograph evidence that I submitted with my reports supports that the Poz-O-Pac liner was in good condition when it was -- prior to the HDPE liner being installed. And then since it's been covered with this HDPE liner, it's not exposed to the elements, and it's that similar operating conditions as had been in place for 30 years prior to being relined.

Q. I want to turn to Board Question 14.

A. Okay.

Q. On Pages 8 through 9, the Federal Highway Association's report, Exhibit C I believe of the Agency's recommendation, states that crack control has been a prime concern for many state agencies when using PSB mixtures.

Question 14A, please comment on whether Midwest Generation has similar concerns about the use of Poz-O-Pac liners.

A. I think given the successful history that Midwest Generation has had with Poz-O-Pac liners, particularly here at Pond 2, I would say we do not

have similar concerns with the use of Poz-O-Pac liners.

Q. Question 14B, how has Midwest Generation ensured that Poz-O-Pac liners have not been damaged or started cracking?

A. So couple things here, again, going back to the construction history that I referred to a few times here, Poz-O-Pac was found to be in good condition in 2008 prior to the liner being installed. The HDPE liner has since been installed covering the Poz-O-Pac liner, so it's not subject to the elements.

If the Poz-O-Pac liner was significantly damaged or started cracking to the point that it might compromise the HDPE geomembrane liner, then I think that's something we would have also seen in the groundwater monitoring results if there was an issue with the performance of the liner system at Pond 2 since 2008.

Q. I think we touched on this, but there's an important detail I want to ask. So you said if the original plan was to -- you know, we said that they changed the plan to not remove the liner, and that's because in your opinion it was in good

condition.

They were gonna lay over an HDPE liner over this, right?

A. Correct.

Q. So how does the plan of putting an HDPE liner inform your opinion of the Poz-O-Pac?

A. I would expect the Poz-O-Pac to be in good condition just based on them deciding to leave it in place, to place an HDPE liner over it, because you can't place HDPE liner over subgrade that isn't relatively smooth. Yes, you're gonna have some small particles, but they can't be especially large. They can't be sharp. Significant deviations in subgrade could lead to situations where the liner could get punctured, and that would compromise the integrity of the liner.

So when you're installing it and during that installation process, there's subgrade specification criteria, and that was specified in the technical specifications that we can revisit that are meant to ensure that the liner isn't damaged during the installation process.

Q. We will revisit those in just a second.

A. Okay.

Q. Mr. Dehlin, are you familiar with the construction of Ponds 1 and 3 at Joliet 29?

A. Yes.

Q. And what is -- generally speaking, what is their construction?

A. It's similar to Pond 2, earthen embankments around the area used to store ash, and then they were initially lined with Poz-O-Pac liners 12 inches thick, same as Pond 2.

Q. In your expert opinion would your opinion of the Poz-O-Pac in Pond 2 apply also to Ponds 1 and 3?

A. Given that they were installed around the same time, despite having not seen the same like photographic evidence that I've looked at for Pond 2, it would lead me to believe that they would have been in similar condition. In especially Ponds 1 and 2, they're very similar in size, they were operated the same, so yes.

Q. Now I do want to talk about the subgrade.

A. Okay.

Q. So let's go to Page 7 of your report.

A. Okay.

Q. So here, Mr. Dehlin, you're talking about

the preparation of the subgrade for Pond 2, right?

A. Correct.

Q. What is the purpose of your examination here?

A. The purpose of the examination is to confirm what I alluded to that the subgrade was appropriately prepared before the HDPE geomembrane liner was installed so far as to say that there weren't conditions that would have been present that could have caused the liner to be punctured, for example, or otherwise damaged during installation, but with respect to placing it onto the subgrade.

Q. So that's the subbase.

Didn't they also have to do some work on the embankments?

A. Yes, per the specifications, specifically Section 02300, Article 305.

Q. Do you want to go to it?

A. Yes. Yeah.

Q. What -- we're going to Attachment 7, right?

A. Yes, that's correct.

Q. So we're looking at Attachment 7, and I

believe here on -- well, fortunately we have a Bates Number here.

A. Yes.

Q. So we have Midwest Gen 13-15 underscore, what number you at?

A. 18696.

Q. Thank you.

Okay. So can you tell us what you see here and how it forms your opinion?

A. Sure. So Article 305 is titled, Liner Subgrade. Paragraph A states, liner subgrade surface shall be graded to 3 horizontal to 1 vertical, that's the 3H to 1V or 3-to-1 I referenced earlier, along side slopes or as approved by the owner and/or engineer. The base of the impoundment subgrade surface shall not exceed a 1 percent slope to be relatively flat.

So pausing here, what I had noted comparing these specifications for relining the embankments to the original construction of the embankments, going back to -- I forget what exhibit Number this was.

Q. 31.

A. 31, thank you.

Section S on Exhibit 31 calls for 3-to-1 or 3 horizontal to 1 vertical side slopes for the original embankment construction. So the way I read these technical specifications is that minor regrading work was anticipated by the engineer to reline the pond. Essentially what they would have to do is smooth out the existing embankment material prior to installing the liner.

Q. And did any of that material include CCR?

A. No, it did not.

Q. Okay. I want you to turn back to Attachment 8.

A. Okay.

Q. So you just said it didn't include CCR. What does that Attachment 8 tell us?

A. So Attachment 8, specifically field change request Number 2, so that's the field change request after the first one that we just discussed submitted by Brieser Construction April 17, 2008. That date is important. The description of the field change request is written as follows.

Bottom of Ash Pond Number 2 has unsuitable material that has been deposited in the pond. The material will not dry out. It needs to be removed.

We have estimated that 1200 cubic yards of material may have to be removed.

And based on my calculations of the pond bottom, I calculate that would be approximately 6 inches of material.

Q. Okay. So you said material will not dry out and needs to be removed. I think you said it -- my brain is losing focus. What does that mean to you?

A. This means that material that was on the bottom of Pond 2 when the HDPE liner was to be placed would not have served as suitable subgrade material for the liner to be installed on. Based on what's being stated here, it's material that was very wet and can dry out. You would not install -- it's not recommended to install an HDPE liner on wet material that will not dry out.

Q. Why don't you turn to Attachment 9? I think this will help me here wherever I want to go.

A. Okay.

Q. What is that?

A. These are job invoices that were submitted by Brieser Construction to Midwest Generation for -- throughout the project. Specifically these

are related to the material that was addressed in field change request Number 2.

Q. And the third one actually is the earliest one dated April 17, '08?

A. Correct.

Q. What's the description of the work?

A. So the description of the work shown in the left column here, it says, push coal residue into piles. So the unsuitable material that is referenced in field change request Number 2, also dated April 17, 2008, referring to unsuitable material, and then looking at these job invoices tells me that that was CCR material that was above the Poz-O-Pac liner that was deemed unsuitable to be used as subgrade to support the HDPE liner and therefore had to be removed.

This first job invoice that we are discussing, Job Invoice 35549, is that first step of pushing the CCR material on the bottom of the pond into piles.

Q. Okay. So actually I have Exhibit 11 as a picture, a large picture here. Let me put it up on the easel. This isn't exactly Exhibit 11. It's close.

So in your report you reference Exhibit 11. This is similar to it. We're looking at a large picture which is actually Exhibit 1 of your March 2022 report, but this is the same picture as Exhibit 1, right? With your notations?

A. Yes, that's correct.

Q. Okay. And what does Exhibit 11 tell you?

A. Exhibit 11 shows the installation of the new geomembrane liner on the existing Poz-O-Pac and the embankments for Pond 2. So if I could actually step up.

Q. Please do. Please, for the record, please describe what you're pointing out.

A. Yes, absolutely. So this board photograph is looking northeast, so this would be the southernmost embankment that this photograph is showing. So we're looking northeast on the southern embankment. This shows kinds of a step-by-step construction procedure of how the geomembrane line was installed at Pond 2.

So the background shows the white geomembrane liner being installed over this black fabric. This black fabric is a nonwoven geotextile which serves as a cushion material, additional

insurance to protect against damage to the geomembrane liner when it's installed. This black fabric or geotextile as you can see on the foreground of the photograph here is being installed directly over the pond subgrade. And pond subgrade based on my review of this photograph is a dark brown sand and gravel material.

And then just to comment on the condition of the Poz-O-Pac liner, you can see on the left side of this photograph the Poz-O-Pac here on the pond floor; and based on my review of this photograph, I'm not seeing any significant cracking or damage or ruts or something that would be inappropriate to install an HDPE geomembrane liner on.

Q. Okay. Great. Thank you.

Okay. We are done with Volume 1. We can move on to Volume 2.

A. Okay.

Q. Okay. First off, Volume 2 is Exhibit 28 of Midwest Generation's response?

A. Okay.

Q. And this is your March 24, 2022 report, right?

A. Correct.

Q. Generally speaking, what was the purpose of this report?

A. The purpose of this report was to respond to two items in the Agency's recommendation that the Illinois Pollution Control Board not allow Midwest Generation to use the existing HDPE geomembrane liner in Pond 2. Specifically those two items, and I'll read them here from Page 1 of my report, is the Agency's claim that Midwest Generation knowingly used CCR material, including coal ash or black silty gravel, as structural fill or foundational backfill in the 2008 construction of Pond 2's current HDPE liner system without meeting the Agency's coal combustion byproduct or CCB for beneficial reuse.

The second claim that I investigated here and responded to was the implication that Pond 2's existing HDPE geomembrane liner has suffered degradation due to its exposure to the elements.

Q. Okay. We'll get to that.

So for this part in your -- oh, there it is. After your report is Exhibit A which is Lauren Hunt's affidavit. Can you just go ahead and pull

that out of your affidavit? We'll be referencing both at the same time.

A. Yes. Okay.

Q. Can you please turn to Paragraph 19 of your affidavit?

A. Okay.

Q. So please read it to yourself, and then you'll ask you some questions?

A. Okay.

Q. All right. So I guess this is the second sentence where she states the black silty gravel, I'm sorry, second sentence --

(Reporter clarification.)

BY MS. GALE:

Q. The side slope of the impoundment subgrade is compacted black to dark brown silty gravel.

Do you see that there?

A. I do.

Q. And then she continues and says, potentially the aforementioned black silty gravel or unconsolidated Poz-O-Pac?

A. Yes, I see that.

Q. Okay. And then I want -- I'm saying this because I want to break this down eventually. And

then later on she states at the end, the black silty gravel described in the History of Construction and shown in the picture of the construction of Pond 2's HDPE liner, likely contains fly ash and/or bottom ash to which Midwest Gen has not provided evidence to the contrary.

A. Yes, I see that.

Q. So first question, she says to which Midwest Gen has not provided evidence to the contrary. Do you agree with that statement?

A. I disagree with that statement.

Q. Yeah, why is that?

A. Just the boring logs that have been submitted in the record alone do not indicate that the presence of CCR material as primary fill other than the two instances that were noted by KPRG in 2005 where it was found in the upper foot in the road base material.

Q. Okay. Great.

And then the sentence I said earlier about the side slope of the impoundment subgrade is compacted black to dark brown silty gravel, she cites to Exhibit G, Attachment 11. That's your photo that we just discussed, right?

A. Yes.

Q. Yeah.

What do you think of her interpretation of your picture, Attachment 11, in your Exhibit G?

A. I disagree with that interpretation. I interpret it to be a dark brown material, gravel and sand material. And I, in fact, what I did find was another photograph that I submitted in my March report.

Q. We can get those out. They're right behind there.

A. So I do just want to call everyone's attention to the bottom of this marker post. Here the photograph -- this is labeled Photograph P1. The photograph that I'm gonna show is a zoomed in version focused on the bottom of the marker post here and then along the base just south of the geotextile fabric.

So this shows some better lighting admittedly because it's a closer picture. From looking at this, I'm seeing, as I had mentioned, dark brown sand and gravel material. I'm not seeing black CCR or material that I would presume to be CCR. Admittedly, it is darker here at the

bottom, but based on my analysis of this photograph, that appears to be related to moisture.

And there's a third photograph I can bring up that shows the condition of the subgrade two days, I believe, yes, two days below -- before this photo was taken. So this is the condition of the subgrade on April 28, 2008. The other two photos we looked at were taken April 30, 2008. And this is the picture -- the subgrade after rainfall. So presumably that material that we looked at that was darker near the marker post is just moisture in the material as a result of the rainfall, hence the darker color.

Q. So just to clarify, these photos, these blow-up photos, are Attachment 1 to your March 22 report?

A. I know I attached them on my March 22 report. Let me verify that that's --

Q. Go ahead.

A. -- the correct attachment.

Yes, it is Attachment 1.

Q. Great.

Okay. So I want to go back to looking at Paragraph 19 where she's talks about the History of

Construction -- the black silty gravel in the History of Construction. Do you see that last line -- last sentence of her Paragraph 19?

A. Yes, I do.

Q. And the History of Construction was actually attached to your first report, right?

A. Correct.

Q. That's what we just looked at. So you might want to -- yeah. So she's looking at Page 5 of the History of Construction.

A. In Volume 1?

Q. Volume 1.

A. Okay.

Q. What section is this page -- do you see where it says black silty gravel on Page 5?

A. Yes, I do.

Q. What section is this -- is that black silty gravel within?

A. This is within Section 2.6.1 of the History of Construction which is titled, Engineering Properties.

Q. What is the engineering properties section about?

A. Engineering properties are properties of

interest to determine how these materials would behave when, for example, Pond 2, specifically when used as construction materials for the embankments. So when Geosyntec in 2016 prepared the factor of safety assessment as required by the federal CCR rule, to do that evaluation they would have had to known the properties of the materials that were used to construct the embankments.

So this section summarizes what material properties they used, what fill materials they used to the embankments to model how the embankments would perform in various operational cases.

Q. But it's not the soil description section, is it?

A. No, it is not.

Q. That's in Section 2.5, correct?

A. Yes.

Q. And in Section 2.5, what does it state about the soil, the description of the soil around Pond 2?

A. Foundation materials in the vicinity of Ash Pond 2 vary from clay to sand and gravel with Silurian dolomite as a bedrock layer at approximately 40 feet below the embankment crests.

Q. Okay. And can you please turn to Section 3 of the History of Construction which is the references section?

A. Yes.

Q. Related to the soil in this report, what did they rely upon?

A. So looking through these references, they would have relied upon their own investigation in 2016, soil properties calculations, their, I apologize, KPRG's 2005 investigation which was discussed earlier today, and then Patrick Engineering's 2011 soil investigation which was also discussed earlier today.

Q. So the same three boring logs we've discussed already, correct?

A. Correct.

Q. And in your recollection what was found in those three boring logs, not three, but same three reports of boring logs?

A. A variety of embankment fill materials, gravel, sands, clays, natural earthen materials. No ash was identified as primary fill materials in those borings.

Q. Great. Thank you.

Continuing with Miss Hunt's affidavit, I want you to look at Paragraph 21?

A. Okay.

Q. So read that through, and then we'll talk about it.

A. Okay.

Q. So here she states, Midwest Gen removed between 1 to 3 feet of black silty gravel and/or Poz-O-Pac along the internal side slopes and then reused that black silty gravel to rebuild the side slopes. Is that accurate?

A. That is not accurate.

Q. Before we get into that, can you just turn to Paragraph 222 and 23?

A. Okay.

Q. And read through those?

A. Okay.

Q. And then I want to go to -- here her conclusions are about removing the typographic contours from Pond 2 embankments, and she relies on Appendix A-3 of the History of Construction. Same thing with Paragraph 23, she looks at the History of Construction where she states Midwest Gen had knowledge of the nature of the CCR material being

reused prior to construction and knowingly reutilized the CCR materials for geotechnical applications.

Do you agree with those conclusions?

A. I do not agree with those conclusions.

Q. So let's start talking about why. I want you to turn back to the History of Construction.

A. Okay.

Q. And the reason I want you -- what -- I guess I'll say this.

When she makes those conclusions, she's looking at Exhibit D, Attachment 3. That's the History of Construction, right?

A. Yes.

Q. Okay. So let's turn back to that. I swore it was attached to this. So you there?

A. Yes.

Q. Actually, I want you to go to Attachment 3 of the History of Construction.

A. Appendix A-3 or --

Q. I'm sorry, Appendix A-3.

A. Yes, I am there.

Q. What does Appendix A-3 show?

A. Appendix A-3 shows -- it's titled, Liner

Replacement Construction Drawings. These look like versions of the design drawings that NRT, Natural Resource Technology, the engineer for the project, prepared for the relining work. They appear to be the bid drawings looking at the revision histories and the various drawings in this appendix.

Q. Okay. So it's the bid drawings. As a professional engineer, what map -- I guess I'll ask this.

As the bid drawings, when were those drawn, before or after construction?

A. Before construction.

Q. Okay. As a professional engineer, what maps should you use to evaluate construction of a surface impoundment?

A. When looking at a project like this, the first thing that I would use to see what was actually constructed is what's referred to as an as-built plan. What that is and as its name implies, it's how the impoundment was actually constructed. So when that will -- when that plan is prepared is after construction. A surveyor will come in after all the elements of the project have been completed. So that would the HDPE geomembrane

liner is installed, and the sand cushion and gravel warning layers are then placed over that. Surveyor come in, survey the pond area, and that represents the as-built condition of the pond.

Q. And was an as-built map available in the History of Construction?

A. Yes, it was.

Q. Where is it?

A. Appendix A-4, the next appendix after these design drawings that we were just looking at in Appendix A-3.

Q. All right. So let's turn to Page 3 of your report where we can talk about the as-built.

A. The March report?

Q. March, I'm sorry. You're right. Page 3 of Exhibit 8, your March 28 report -- March 24 report.

A. Okay.

Q. So in response to Miss Hunt's conclusion that CCR material was reused prior to construction, what did you look at?

A. I compared the as-built survey that was prepared for Pond 2 construction to the existing conditions that were surveyed prior to

construction. And based on what I found there is that there was -- most of the significant regrading work occurred in the -- what I term the eastern corner of the pond.

Q. So I think we have it blown up as well?

A. Yes.

Q. So let's get that so everyone can see it. For the record, I'll be showing you Attachment 5 of Exhibit 28 which is an as-built drawing.

So a preliminary question, though, when we looked -- I guess maybe we didn't. But the as-built that I looked at before in the History of Construction under Appendix A-4, it looks different than what I'm looking at here, right?

A. Yes, that's correct.

Q. Why?

A. So the relining project to Joliet 29 was done in two phases. The first phase was to reline Pond 2. After they reline Pond 2, they went and relined Pond 1. The survey that's shown in the History of Construction is the first version of this survey which is the as-built for just Pond 2 cause Pond 1 had not been relined yet.

This version of that as-built survey shows

Pond 1 included in it with the Pond 2 as-built. However, the survey information shown on here for Pond 2 is the same as the survey information that was shown on the as-built plan in Appendix A-4 of the History of Construction for Pond 2.

Q. Great.

So -- and I invite you to stand up for my next question.

A. Okay.

Q. So looking at the as-built of Pond 2, what did the subcontractor -- what did you conclude the subcontractor had to do to the subgrade?

A. So when I compared this final as-built condition to the existing conditions that were present, I noted that there appears to have been what I refer to as this cut area as that material had to be removed from the eastern, northeastern portion of this embankment to smooth it out to relatively 3-to-1, 3 horizontal to 1 vertical side slopes.

On the northwestern or western embankment here, I also noted that the upper several feet had similar work done that they had to cut away material to smooth it out that it was relatively

steep.

Q. And you said, again, you said 3-to-1. Can you just tell us what that means?

A. Yes.

Q. Where was it originally and where did it have to go to?

A. So originally, particularly in this eastern area of interest where I noted the existing conditions prior to the lining were relatively steep, these were -- I forget exactly if it was 1-to-1, but it was pretty steep. For example, a 1-to-1 is, you know, 1 horizontal by 1 vertical, a 45-degree angle.

So what they would have had to do to make that material shallower is they would have come in and cut along the top to make that a shallower angle, so a 3-to-1, so 3 horizontal to 1 vertical. So every 3 feet you go horizontally, you change in elevation by 1 foot vertically.

Q. You said it was 1-to-1 at first, a 45-degree angle. What does that tell you about the soil that had -- that maintained that slope?

A. So soils of that kind of slope tend to have cohesive properties, so clays, in other words,

in order to retain that kind of natural -- it's not a natural anger of repose, but in order to maintain that and be stable, you have to have some sort of cohesiveness in the material. So that told me the material of the embankment was clay.

Q. Could CCR maintain that slope?

A. In my opinion, no, based on discussions that we've had here today about the nature of CCR tends to be bottom ash, for example, sandier. The natural angle of repose for sandier materials like that is in the range of 30 degrees, certainly not 45 degrees.

Q. So you said that you had to cut off the top of the slope to make it a -- what's it? Less steep?

A. Shallower.

Q. Shallower, thank you.

And what did the contractor -- I believe you said -- what did the contractor do with the clay cut from the top?

A. So I don't know for sure what the contractor did with the clay material from the top. I didn't see that in the construction records. Typically what gets done in these situations is

that material will get used elsewhere. If it's not used elsewhere in the project, it would be stockpiled for later use.

Based on the photographs that I've seen and some of the cut material that's being shown here on the comparison of the as-built construction to the existing conditions prior to relining, it's my opinion that that material would have been cut down into the base of the pond and then just smoothed over on top of the Poz-O-Pac because you don't want to -- well, one, you don't want to have sharp changes in grade, and, two, the specifications at the pond bottom had to be relatively flat.

So in my opinion the contractor would have taken that cut material and smoothed it over the top of the Poz-O-Pac liner to get that relatively flat subgrade.

Q. Okay. I believe in here we have the technical specifications about that. Let's turn to the Attachment 6 of Exhibit 28.

A. Okay.

Q. And these are the same technical specifications we discussed early every, right?

A. Yes.

Q. Yeah. So can you turn to Bates Number MWG 13-1518697?

A. Okay.

Q. At the top of that page, Section 3.05, which is liner subgrade, B, what does that tell you?

A. Paragraph B states, contractor shall prepare the liner subgrade by clearing and grubbing vegetation and removing rocks and other debris greater than 3 inches in diameter alongside slopes and base of the impoundment and excavating at least 18 inches of existing ramp surface material.

That first part with respect to what we just discussed tells me that material that would have posed risk to the HDPE geomembrane liner's integrity when it was installed was removed from the embankment, was removed from the floor at present, and certainly would not have been placed along the floor if -- to avoid puncturing the liner when it was installed.

Q. Can you please also look to Paragraph F on that same page?

A. Yes. Paragraph F states, the surface of

the subgrade shall be to the satisfaction of the owner and/or engineer and geomembrane installer, graded so it is free of irregularities, protrusions, loose soil and abrupt changes in grade. Rocks with sharp intrusions and rocks or other debris greater than 3 inches in any dimension shall be removed.

So that further builds off of Paragraph B where that the subgrade would have been relatively smooth when the liner was placed on it.

Q. And just to clarify, the geotextile went first, right?

A. Yes. I apologize. There was a 16-ounce per square yard nonwoven geotextile that was installed over the subgrade prior to the HDPE geomembrane liner being installed.

Q. But not to belabor the point, even with that geotextile they had to make sure that subgrade was free of sharp -- what was the word? Sharp protrusions and rocks, right?

A. Yes. Correct, because you could have a situation where that would damage the geotextile or could damage the geotextile. So damaged geotextile, it's not going to perform its function

for the geomembrane, so yes.

Q. So, Mr. Dehlin, in your opinion reviewing the photos in Attachment 1 and the as-built drawing which is in Attachment 5 and also within the History of Construction as Appendix A-4 and the invoices, the technical specifications, was CCR used as fill in Pond 1?

A. No. I think it is highly unlikely that CCR was used as fill in Pond 2, I think is what you meant to ask.

Q. I'm sorry. I said Pond 1. I meant Pond 2. Thank you for answering correctly.

I'm gonna go to Board Question Number 3.

A. Okay.

Q. I'll read it into the record. Please comment on whether Midwest Gen can provide evidence that shows any use of CCR in construction of the existing liner system in Pond 2 was done under beneficial use requirements of the act and that it does not pose a risk to groundwater quality now or in the future if left in place.

A. I believe based on what we just demonstrated, that CCR was not used in the construction of the embankments for Pond 2 or for

the liner system.

Q. And since CCR wasn't used, were there any requirements for beneficial use under the act?

A. No.

Q. Okay. Mr. Dehlin, in your opinion, is any additional testing required of the embankments of the soil of in the embankments such as a shake test?

A. No. In my opinion based on the materials that have been identified in the boring logs, that would not be necessary.

Q. And why?

A. The boring logs indicate the primary fill materials for the embankments in Pond 2 to be gravels, sands, clays, natural earthen materials, not CCR.

Q. Great.

Mr. Dehlin, I also want to ask you about how to sample the Poz-O-Pac which as the Agency suggests. Agency suggests collecting three separate samples. How would that work?

A. I think it would follow a similar procedure as was done to extract the sample that was brought here today that Mr. -- I believe

Mr. Gnat testified to that was extracted from Will County. You would bring in a vehicle, the backhoe with a core -- concrete core mounted to it. You would go down the access ramp at Pond 2 into the pond floor and you would start coring.

You'd have to go through the 6-inch gravel warning layer, 12-inch sand layer. You would then puncture the geotextile above the HDPE geomembrane liner, the HDPE geomembrane liner itself, the geotextile under the liner, and then get into the actual Poz-O-Pac material.

Q. Okay. So you drill through all those layers. Now you have a hole in the HDPE liner, right?

A. Correct.

Q. What's your opinion about that?

A. I think based on what we've demonstrated here today, that is an unnecessary action to intentionally damage the liner to test the Poz-O-Pac that we have demonstrated is in good condition. Therefore, if we don't think the integrity test is needed, I don't see a need to intentionally damage the liner to get to that. Cause then once you damage the liner, you have to

remove all that material that you just cored through and then patch the liner in those three spots. I just don't think that that's necessary based on the evidence that we have.

MS. GALE: Mr. Halloran, can we go off the record for a second?

HEARING OFFICER HALLORAN: Yes, Miss Gale, you may we're off the record.

(WHEREUPON, a discussion was had off the record.)

HEARING OFFICER HALLORAN: We're back on the record.

We decided that we're going to adjourn for today and continue this matter until tomorrow, June 29, 2022, at 9:00 a.m.

Safe travels thank you.

(WHEREUPON, proceedings were continued to June 29, 2022, at 9:00 a.m.)

STATE OF ILLINOIS)
) SS:
COUNTY OF C O O K)

RAELENE STAMM being first duly sworn, on oath says that she is a court reporter doing business in the City of Chicago; and that she reported in shorthand the proceedings of said hearing, and that the foregoing is a true and correct transcript of her shorthand notes so taken as aforesaid, and contains the proceedings given at said hearing.

Raelene Stamm

Certified Shorthand Reporter

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