ORIGINAL

ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
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WATER QUALITY STANDARDS AND EFFLUENT LIMITATIONS FOR THE CHICAGO AREA WATERWAY SYSTEM AND THE LOWER DES PLAINES RIVER: PROPOSED AMENDMENTS TO 35 Ill. Adm. Code Parts 301, 302, 303 and 304	)	R08-09 (Rulemaking-Water)

REPORT OF PROCEEDINGS held in the above-entitled cause before Hearing Officer Marie Tipsord, called by the Illinois Pollution Control Board, taken before Laura Mukahirn, CSR, a notary public within and for the County of Cook and State of Illinois, at 160 North LaSalle Street, Room N-502, Chicago, Illinois, on the 9th day of November, 2009, commencing at the hour of 12:30 p.m.

A P P E A R A N C E S

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MR. GIRARD TANNER, Chairman
MR. THOMAS JOHNSON, Member
MR. ANAND RAO, Member
MS. ALISA LIU, Member
MS. ANDREA MOORE, Member
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HEARING OFFICER TIPSORD: It's 12:44. Good afternoon, everyone. Welcome back. We're ready to start the afternoon with the testimony of Greg Seegert; is that correct?

MR. SEEGERT: Seegert.

MS. FRANZETTI: Can we also have Mr. VonDruska sworn. He may not wind up adding anything, but in the event he does, this way he's already sworn in.

(Witnesses sworn.)

HEARING OFFICER TIPSORD: Thank you. And with that, we'll mark the prefiled testimony of Greg Seegert. If there's no objection, we'll mark prefiled testimony as Exhibit 366.

Seeing none, it's Exhibit 366. And I believe we'll start with the IEPA.

Examination

By Ms. Diers

Q. Good afternoon, Mr. Seegert. My name is Stephanie Diers, and I will be asking questions on behalf of Illinois EPA. And I'm going to begin with our prefiled question 1. Please explain your experience with the waters that are part of the

Illinois EPA's proposal.

MS. FRANZETTI: And you did mean to include extensive experience?

MS. DIERS: Yes. Sorry.

MR. ETTINGER: But not with Commonwealth Edison.

MR. SEEGERT: I've been studying the Dresden, Brandon, and Lockport pools almost annually since I came to EA, which was in early 1982. I also studied the south branch of the Chicago River near the Mid General Fisk Station, and although I've been involved with those studies for 27 years, my role has changed over time. When I first came I was younger and stronger and I used to go out and do field work fairly regularly. And so as part of that I was involved directly in the fish collections, the electrofishing, the seining, the gillnetting, all the things that field biologists do. Then when I became project manager, which was about 1985, at that point I didn't go out in the field nearly as much, but I was still involved in preparing the final reports and overseeing

all of the data collection and analyzing the data. Then my associate, Mr. Vondruska, became project manager in 1990. And after that point I functioned in what EA calls the senior reviewer, which means I sort of watch over the project manager's shoulder. And in that capacity I reviewed the final report and verified that all the data presented therein was accurately provided. And then during the mid 1990s I, again, went out in the field, but this time in an audit function. And so I got to see, again, all of our adult fish collecting, our larval work which we did in the mid '90s, and the habitat evaluation.

Another study which is relevant but was not done for Midwest Generation, but was done for a different client was in conjunction with an application for an adjusted temperature standard. I studied habitat in the Calumet River and the Little Calumet River in the early '90s, and then as part of that same study, EA prepared a thermal model for that section of the river. And besides my direct involvement at

the five Midwest Generation plants, I kept abreast of what's been going on in the CAWS and the Lower Des Plaines in several ways: First of all, I regularly attended the Illinois American Fisheries Society meetings where I often presented papers on the studies that we were doing in the subject waterways. I've also, pretty much on an annual basis, attended the EPA-sponsored surface water monitoring and standards meeting, the acronym for that is SWiMS where other researchers give presentations. I know Dr. Dennison with the district a number of years ago gave a paper on the District's work in that area. So I've been keeping abreast of what the district has been doing. We heard earlier testimony from Ms. Wozniak about the biological advisory group that was formed for the Lower Des Plaines. I was an active member of that work group, and we had many meetings to discuss the various topics. Also reviewed the literature pertaining to these and other Illinois rivers and reviewed numerous habitat evaluation techniques, not

just the one we've heard about here, the QHEI, but others.

And then, lastly, in my role, one of the other hats I wear is chief ichthyologist for EA. So that means I end up looking at fish specimens that our crew brings back to the lab. And basically if they get stumped, they give it to me and basically say, Seegert, what is this fish? And that's what I try do is identify those fish. Thus, I'm very familiar with the species composition throughout the area, and actually one of the outcomes then of this was we rediscovered a species called the greater redhorse, which had not been collected in over a hundred years in Illinois. And as a result, our studies ended up going on the Illinois endangered species list. And then I've also studied the areas that basically flank this area. So I've worked in the Fox River, the Kankakee River, and the Rock River. And in those systems I've done studies specifically for the State of Illinois looking for threatened and

endangered species; some of those are western sand darter, the pallid shiner, greater redhorse, and Ozark minnow. And then, lastly, you'll hear more about the intensive habitat work that we did last year in the Upper Des Plaines Pool.

BY MS. DIERS:

Q. And did you say EA prepared a thermal model for the Calumet River?

A. For a portion of it, yes.

Q. And who was that study prepared for?

A. That was done for Acme Steel.

Q. Prefiled Question 2: Please explain how you're defining the CAWS waters and the Lower Des Plaines?

A. Well, short answer is I'm defining it the same way you are.

MS. FRANZETTI: Meaning in the proposed regulations that they filed in this rulemaking?

MR. SEEGERT: That is correct, Counselor.

MS. FRANZETTI: Said with such disdain.

BY MS. DIERS:

Q. Three, how long has EA been employed by Midwest Generation?

A. EA has worked for Mid Gen since shortly after it purchased the electric generating stations from Com Ed, which I believe was in late 1999. So basically ten years.

Q. And did EA work for Com Ed before that?

A. Yes, we did.

Q. When were you hired by Midwest Generation to specifically review Illinois EPA'S regulatory proposal?

A. We were hired shortly after the regulatory proposal was filed, which was October of 2007.

HEARING OFFICER TIPSORD: It seems like only yesterday.

BY MS. DIERS:

Q. Prefiled Question 5: What do you mean when you say that you have been engaged by Midwest Generation to review and analyze information and data to assess the use designation issues relating to aquatic life goals for the CAWS and Lower Des

Plaines? And I think this is with respect to Page 1 of your prefiled testimony.

A. Yes. Midwest Generation asked EA to review and analyze relevant information and data to assess whether or not one or more of the UAA factors was satisfied, and what would be appropriate aquatic life use designations for the subject waterways.

Q. Prefiled Question 6. This is with respect to Page 2 of your prefiled testimony.

In your opinion, how has the Illinois EPA failed to adequately consider and assess the unique aspects of the Chicago Sanitary and Ship Canal and Upper Dresden Island Pool in determining whether these water bodies are capable of obtaining Clean Water Act Aquatic Life Goals?

A. First of all, I think Illinois EPA failed to adequately assess habitat in the area. They failed to adequately affect -- adequately assess the effect of the barge traffic. They also failed to adequately consider the effects of flow and water level fluctuations. They failed to account for the highly significant effects that dams have on this system. They did not appear to take -- or make use of the large biological data set that EA

has collected over the years. They also, on the other hand, they relied, I think, far too much on what I consider to be a poorly designed and executed biological and habitat survey for much of the data. So basically they ignored a much larger and better data set and used a smaller and not as good a data set. They also failed to properly consider the effects of sedimentation, both sediment just as sediment, but also sediment in terms of being contaminated sediment. They've also failed to realistically account for the magnitude or the cost associated with remediation and restoration within the system. And they, themselves, did not collect any new data.

MR. ETTINGER: I'm sorry. In your answer you refer to this system. I just want to make sure what this system is. Are you talking about the Lower Des Plaines or --

MR. SEEGERT: I'm talking, in this case, about the Lower Des Plaines and the CAWS.

MR. ETTINGER: Okay. So your answer would apply to all of that area?

MR. SEEGERT: Yes. Some parts more

than others. But yes, that answer applies throughout the system.

MS. FRANZETTI: If I could just have a moment.

(Off the record.)

MS. FRANZETTI: If the witness can clarify or modify his answer.

MR. SEEGERT: Well, I mean there are parts of the CAWS which we haven't really talked very much about, but where there isn't barge traffic going on. So obviously the answer would not apply to there. When I'm talking about the system, I guess I should clarify, I'm primarily talking about the ship canal which begins at the south fork, but I'm also including the south fork, since functionally it's the same system as the ship canal and then the Lower Des Plaines River. So those are the areas that I'm talking about.

BY MS. DIERS:

Q. Where does Brandon Pool fit in the areas that you're talking about?

A. Well, according to the rulemaking,

there's actually two parts of that. There's Brandon Pool upstream where the Upper Des Plaines comes in, and that's part of the CAWS. And then there's the section, which I believe is four miles long, which goes from where the Upper Des Plaines comes in and goes as far as Brandon Road Lock and Dam. I understand that it's been divided that way for regulatory purposes. In the fish's perspective, it isn't really any different where the fish is in the Brandon Pool.

MS. FRANZETTI: Counsel, did you want him to tell you whether his answer to your question says -- included that he would apply all of those items that he testified about with respect to your Question 6. Is he including Brandon Pool in that answer? Was that what you wanted to know as part of your follow-up question?

MS. DIERS: I think what we're trying to understand is if it's part of the Chicago Sanitary and Ship Canal or the Upper Dresden Island Pool.

MS. FRANZETTI: When he uses those two terms, is it dropping through the cracks or

is it in one of them? Can you clarify, Greg?

MR. SEEGERT: Could you repeat the question, please.

MS. FRANZETTI: Do you mind if I jump in? You're trying to get clarity there. You tend to use two terms: Chicago Sanitary and Ship Canal and the ship canal. And then you refer to either Lower Des Plaines, or sometimes I think you say -- you use the regulatory term Upper Dresden Island Pool. Their question is Brandon Pool in one of those categories or are you leaving it out?

MR. SEEGERT: It's in both of those categories.

MS. FRANZETTI: Okay.

MR. SEEGERT: Part of Brandon Pool is in the ship canal and part of it is in the Lower Des Plaines.

MS. FRANZETTI: Based on what's been proposed in this rule?

MR. SEEGERT: What's been proposed.

MS. FRANZETTI: Counsel, does that do it?

MR. ETTINGER: I have a clarifying

question as to from your fish perspective. I like to speak for them, too. From the fish's perspective, is the Upper Brandon Pool connected to the Upper Des Plaines?

MR. SEEGERT: Is Brandon Pool connected to the Upper Des Plaines?

MR. ETTINGER: Yes.

MR. SEEGERT: Well, there's a hydraulic connection. I don't think there's much in the way of an interchange between the fish that are in Brandon Pool and the Upper Des Plaines. So they are hydraulically connected.

MR. ETTINGER: What would stop a fish from moving?

MR. SEEGERT: What would stop a fish from moving, we're not now talking about a physical barrier, but we're talking about differences in what fish prefer. So because of the Brandon Pool being part of a larger water body, you tend to get fish that like larger water bodies. Some fish like certain water bodies, and then there are going to be other fish that are basically going to prefer

the Upper Des Plaines which is a smaller water body, sort of like the distinction between some people like to live in big cities, some people like to live in small towns. There's nothing physically preventing them from moving from one place to another, but they tend to like one area over the other.

MR. ETTINGER: What if a fish had a job in the lower just north of the damn, it might have to commute.

MR. SEEGERT: I'm not aware of any fish that have jobs.

MR. ETTINGER: Thank you.

BY MS. DIERS:

Q. Mr. Seegert, in the line of questions I was asking you before where you thought Illinois EPA failed, and you talked about some of the habitat data. Could you be more specific about what data was available but ignored by Illinois EPA?

A. I don't think I said it was -- I didn't say ignored by Illinois EPA. Based on my reading of everything that was provided, it looked to me like you relied primarily on the data, the

habitat data that was collected by Mr. Yoder's group, MBI, for your final decision making. And I know there was an exhibit that was prepared by Mr. Essig who did plot QHEIs and did include data from EA engineering. But I don't think that's what you primarily relied on for your decision making process.

MR. ETTINGER: I'm sorry. I want to follow up. I'm going to jump a little bit. But getting back to the fish in little waters and big waters, are there some fish that for some stages of their life prefer smaller streams and for other stages prefer larger waters?

MR. SEEGERT: There would be or could be a few species of fish which might utilize a smaller stream for part of their life cycle, but it would be a fairly -- or not -- it would be a very small subset of fishes. We really don't -- the kind of fishes you're talking about would be species that are highly migratory, and we really don't have any representation by those kinds of fish in this system.

BY MS. DIERS:

Q. Question 7: What would you have done differently from the agency when looking at the Chicago Sanitary and Ship Canal and the Upper Dresden Island Pool? And then the second question was is this reflected in the report attached to your prefiled testimony marked as Exhibit 2?

A. Okay. Well, let me answer your second question first. And, yes, all of the differences that I'm going to be listing are included in the various report that we've provided. In terms of what we would do differently, we look much more closely at habitat. So basically getting a better level of spatial resolution. We heard a number of witnesses, I believe associated with the District, who had testified to the fact that one of the shortcomings of Mr. Yoder's approach was that there wasn't enough of it; that they -- sometimes there was a 10 or 15 mile gap in between the various stations. So we would have looked more closely at the habitat and got much better spatial resolution. We also researched the effect of barges to see what effect they might have on the system, and we considered how not only high, but low flow

conditions in the system and water level fluctuations. We had two different things: We've got flow, we've got velocity of water, we've also got water going up and down. So we looked closely at that. I had mentioned that it didn't look that extensively at the effects of impounding. So we went to the literature, and, for example, and looked at the extensive study that was done on the nearby Fox River, because I think those results are very relevant here. So we look more closely at what the effects of impoundment are. We also studied the area, and now I'm talking about the fish work, not just the habitat work, at a much finer final level of resolution so we get much more fish sampling. The studies that I think the State relied on in Upper Dresden Island Pool, they made six collections, and for the whole area combined it was on the order of about 20 or 30. We have data over the years for over 3,000 collections. So you're talking literally a two order magnitude difference between the level of effort the database we had available and utilized versus what the State was looking at. Also I believe that the studies we've done over the years have been, on average, better

performed and better designed. And when we looked at the studies done by MBI, they had a number of, I guess I called them, methodological problems, various errors that came up. And it didn't appear that they provided the appropriate oversight. They had prepared a document called QAPP, the Quality Assurance Procedures Plan. But based on my recollection of Mr. Yoder's testimony, there are quite a few times when questions of well, this is what you said in your plan. Did you do this? Well, they don't it. And one of the consequences then of not doing those things was that -- what I call bad data, inaccurate data got into the database because they didn't do the proper job of oversight.

Also, I mentioned sediment issue. So with regard to at least contaminated sediment, EA went out and collected sediment from a number of locations. The interpretation of those data are being handled by Dr. Burton who I believe will be the next witness to testify. Also, I think we realistically accounted for the magnitude and the cost for any restoration and remediation. We've had a number of people testify -- in fact, well, you can put in some more structure, you can do this, you can

do that. Well, you can do those things, but to do it in a meaningful manner where you're actually going to make a difference in the biological community, you have to do a lot of it. When you do a lot of something, it costs a lot of money. And there aren't any plans for this level of remediation or restoration that we're not aware of. And, as I said, we've collected data on the fish, on the habitat, sediment quality. Another --

MR. ETTINGER: Excuse me. I hate to interrupt, but is this remediation study part of your testimony somewhere? Is it in the exhibit?

MR. SEEGERT: I'm not going to testify with regard to remediation, no.

MR. ETTINGER: But you just did.

MR. SEEGERT: Well --

MS. FRANZETTI: He wants you to explain further what you're referring to on remediation and restoration systems.

MR. SEEGERT: Right. I guess in this case, the way I was using it was in a limited sense. Remediation would be -- the example I'm thinking of would be removal of the

contaminated sediment. So that's not restoration. That's, in my mind, remediation.

MR. ETTINGER: I'm sorry. I thought you were taking about habitat structures, and I didn't see any study of the cost of including habitat structures. But you aren't referring to that when you were testifying?

MR. SEEGERT: Well, I'm saying that if you needed to do restoration in a system like this, the cost would, and I don't have an exact amount, but I know what restoration costs in other systems of roughly similar magnitude. And so I'm estimating that in this case for -- even for Upper Dresden Island Pool, which is only eight miles long, you're probably talking about tens or hundreds of millions of dollars.

MR. ETTINGER: I thought you were talking real money. Let's go on. I won't interrupt anymore.

MR. SEEGERT: Okay. And then the last point that I wanted to make was that the study that was done by MBI, for reasons that

escape me, did quite a bit of work. I think they had about six or eight stations in the Illinois River, not the area that's not part of this rulemaking. They also had a couple or three stations in Lower Dresden Pool; in other words, the area downstream of I-55. If you go back and read the QAPP and the study plan, it says we're going to do "X" number of stations. I think round numbers it was 30. We're going to do "X" number of stations in the Des Plaines River. There's no mention about the Upper Des Plaines, there's no mention about the Illinois. So what they ended up doing was getting only a few stations in the ship canal, a few stations in Upper Dresden Island Pool, and then almost as many in these other water bodies that are even part of the rulemaking. And it still doesn't make any sense to me. Why would you want to take what effort you are -- which is small to begin with, and then dilute it by taking half of your effort in areas that aren't even part of the rulemaking. So we concentrated all our efforts on water body

segments at our part of the rulemaking.

MR. ETTINGER: I'm sorry. On Attachment 1, Page 5 of your testimony, you do data downstream Dresden Lock and Dam. Is that part of the body in the rulemaking?

MR. SEEGERT: No. But that's historical data that we're just summarizing. We had already collected all that data, so we're not going to ignore it. But all of the work that we did as part of these proceedings all was concentrated.

MR. ETTINGER: But you do agree that that data might be relevant to this proceeding?

MS. FRANZETTI: You're talking about the data he referenced in his report?

MR. ETTINGER: Exactly.

MS. FRANZETTI: Not the Illinois River data?

MR. ETTINGER: Well, this is Illinois River data, isn't it, downstream? Dresden Lock and Dam.

MS. FRANZETTI: I meant the MBI's data in the Illinois River.

MR. ETTINGER: No. I'm asking about his --

MS. FRANZETTI: That's the distinction I'm trying to draw.

MR. ETTINGER: Actually, my question is do you believe that this information that you put in your testimony regarding the river is relevant?

MR. SEEGERT: Yes.

MR. ETTINGER: Thank you.

MS. FRANZETTI: Counsel, if I can just ask one follow-up for clarity. You referred to a study down in the Fox River on the effects of impoundment, but I don't think you mentioned who that study was done by so that in the record we can tell what study you're referring to. Can you be a little more specific?

MR. SEEGERT: My recollection was that the study was sponsored by U.S. EPA. There was a paper published, and the author -- lead author on that was Vick Santucci, 2007. I think the work was 2007. The paper might have been published the next year in 2008,

but I'm not 100 percent positive on the date. It is -- that is cited somewhere in my testimony.

MS. FRANZETTI: Thank you.

BY MS. DIERS:

Q. Prefiled Question 8: What do you mean when you say balanced population?

A. Well, to me balanced means it's not going to be dominated by one or a few tolerant species. It means there's going to be all represent -- good representations at all the trophic levels. It means that it's going to have a variety of fish which is consistent with that expected for a good warm water fish community in this echo region, and my definition of a balanced population has the same meaning as the term BIP, balance indigenous population, or balanced indigenous community as it's used in the federal regulations, 40 CFR 125.71(C).

MR. ETTINGER: Can I follow up for a second? What would be the fish that you would expect to see in this system that you don't see?

MR. SEEGERT: Well, there's two answers to the question. One is there are

some species we don't see at all. I think they're totally absent. And then there are a number of others which are poorly represented. And both are important. There's some darter species that we would expect to see and which we don't see at all. Examples of things that we expect to see in much better numbers, I believe the board -- I'm not sure if this was testified to by Mr. Yoder, but there's a group, it's part of the IBI and one of the metrics is percent round-bodied suckers that includes mostly redhorse, but it also includes white sucker and a couple of other sucker species. And so the round-bodied suckers, although they are present in this system, are present in much reduced numbers. So I would expect much better numbers of those if this was a balanced system. And there's also some minnow species that I would expect to be much better represented than actually are represented.

MR. ETTINGER: Would you expect walleye in the system?

MR. SEEGERT: No.

MR. ETTINGER: Why not?

MR. SEEGERT: Because walleye, they could live in the system, but their habitat requirements are such that I don't think that there's enough hard substrate rock and cobble that's going to support them either as adults, but particularly for spawning purposes, okay? The best thing I can -- or most appropriate thing to say is there's not adequate spawning habitat for walleye in the system.

MR. ETTINGER: Do you know anything about the Kankakee River?

MR. SEEGERT: I know some things about the Kankakee River System.

MR. ETTINGER: Is there adequate spawning habitat for walleye in the Kankakee River?

MR. SEEGERT: Yes.

MR. ETTINGER: Thank you.

HEARING OFFICER TIPSORD: Miss Diers?

BY MS. DIERS:

Q. I'm going to jump around just a little

bit for sake of topic and hopefully speed up time wise. Since we're talking about --

MS. FRANZETTI: We're all yours for this afternoon and tomorrow.

BY MS. DIERS:

Q. We're talking about the topic of balanced population. If you look at our prefiled Question 100 with respect to Exhibit 2. We ask on Page 2 of Exhibit 2 of --

MS. FRANZETTI: Give us just a second to catch up.

MS. DIERS: I'm sorry to make you jump around. It shows up as 24 on my questions. I don't know if that helps.

MS. FRANZETTI: We're there. Now I'm just trying to get to Page 2 of Exhibit 2. Okay.

BY MS. DIERS:

Q. On Page 2 of Exhibit 2 of your prefiled testimony you state that the present fish community in the Lower Des Plaines does not represent a balanced population. Do you include the Des Plaines River downstream of the interstate 55 bridge in this opinion?

A. In this case my answer is directed only to a portion of the Des Plaines River upstream of the I-55 bridge.

MS. FRANZETTI: I think, Counsel, again, just for clarity. You just referred to your answer. Did you mean to refer to your report that is the subject of counsel's question?

MR. SEEGERT: Yes.

BY MS. DIERS:

Q. Does that include parts of Brandon Pool also?

A. Yes.

Q. Prefiled Question 101. With respect to balance, what is, and I'm going to strike future and just ask, what is the attainable condition of the fish community in the Lower Des Plaines River? And then it's also asking in the Upper Dresden Island Pool and Lower Des Plaines downstream of interstate 55 bridge.

MS. FRANZETTI: Actually, Counsel, the first part of the question is the Lower Des Plaines. Would -- Do you want -- Wouldn't that include parts of what follows after

that? So I just -- Just so it's clear what he's responding to. You tell us, do you want him to break it down into first answer with respect to upper Dresden --

MS. DIERS: Let's just go to Upper Dresden Island Pool. Can you answer with respect to that?

MR. SEEGERT: For Upper Dresden Island Pool, I would say that a use equivalent to what Mr. Rankin in his report referred to as modified warm water, I'd say that's a reasonable attainable use for Upper Dresden Island Pool.

BY MS. DIERS:

Q. I'm going to strike where I reference in Lower Des Plaines downstream of interstate 55 bridge and just ask what about Brandon Pool with respect to this question?

A. Brandon Pool would, because the habitat there is even poorer, I would say that would be something equivalent to, again, what Mr. Rankin referred to as limited resource water.

Q. I'm going to go back to Question 9. What are the limiting physical and biological

conditions of -- when we say these waters, I'll break it down first and say what are the limiting physical and biological conditions of Upper Dresden Island Pool?

MS. FRANZETTI: You know what, why don't we do this? Are you planning to also ask the question separately for Brandon Pool?

MS. DIERS: Yes.

MS. FRANZETTI: Okay. Just so he has that in mind, because maybe he can assimilate a little bit where they might apply to both; if you can, Greg. I don't know what's easier for to you do. First take it with respect to Upper Dresden Island Pool and then switch to Brandon.

MR. SEEGERT: I think my answer is going to be that they apply in both areas. It's just that they're even more severe in Brandon, but it's the same suite of factors. And those factors include very little fast water, no riffles; in this case I will say except in the Brandon tail water. So there -- in Brandon there are no riffles, Brandon Pool there are no riffles at all. In

both areas there's minimal clean hard substrates. In this case by hard substrates I'm talking about travel, cobble, rubble, boulder. I'm not talking about sand, which technically speaking is a hard substrate, but I'm not referring to sand here.

Sparse cover, this applies in both areas. It's even more sparse in Brandon than it is in the Upper Dresden Island Pool. Both areas have contaminated sediments, so now I'm making the distinction between sediments which are contaminated as opposed to just excessive siltation. There's minimal spawning areas for a variety of species with that being -- with that limitation being even more severe in the Brandon Pool than it is in Upper Dresden Pool. And also we have considerable and rapid fluctuation in water levels and stream flows; and, again, that's probably a little bit more pronounced than Brandon Pool, but certainly it also occurs in Upper Dresden Island Pool.

And then the -- I mean the biggest single factor in terms of the physical is the

presence of the locks and dams. And so many of the factors that I just mentioned are a direct result of that. So that when you have a dam, one of the things that happens is that it obviously slows water down, results in considerable siltation, it covers up the riffles. So many of these things, not only are they a result of lock and dams, but unless you literally remove the lock and dams, those physical limitations are not going to go away.

Another factor that I think fall into this category of physical factors are barge traffic and just the overall urban nature of this system, that that in and of itself causes a variety of problems.

MS. FRANZETTI: Counsel, you asked about the biological conditions as well, right?

MS. DIERS: Yes.

MR. SEEGERT: Okay. In biological limitations, some of those that I could mention would be -- This is the opposite of the balanced community. So here we have

dominance by a few highly tolerant fish, we have reduced numbers of what I call quality prey items, fish obviously need something to eat, and a lot of the better macro invertebrates are either reduced or eliminated because of the kind of system that we have here. There's also poor representation by several key groups. This addresses a question that Mr. Ettinger raised about what's missing. So here we have groups like round-bodied suckers being poorly represented, and then also we have low numbers of intolerant species. One of the things that the agency said that upper Dresden Island Pool should have was intolerant species. We don't have intolerant species. They're essentially absent. So one of the things that they said by their own definition should occur in Upper Dresden Island Pool are not there. And then, lastly, I think Mr. Yoder might have referred to a biological metric called DELT. DELT refers to deformities, erosions, lesions, and tumors. These are things that are on the

outside of the fish. And we have extremely elevated levels of DELT throughout the system. There's an example where it's higher in Brandon Pool than it is in Upper Dresden Island Pool, but it's still considerably elevated in Upper Dresden Island Pool.

MR. ETTINGER: Can I just follow up on that question a little bit? Again, you say we're missing intolerant species. Which would those be that you would be wanting to find there?

MR. SEEGERT: Black redhorse would be one example, roseyface shiner would be another example, hornyhead chub, now there we've collected a few, but not enough to be really -- basically to make a difference. There's, you know, one here, one there, and every other year, but there's obviously not an established population, as opposed to the nonhornyhead chub.

MR. SULSKI: Rosyface and hornyhead.

MR. SEEGERT: They kind of go hand in hand, yeah.

MR. ETTINGER: Be glad we're not using

their Latin names.

MS. FRANZETTI: Anything else?

MR. SEEGERT: Those are just a couple off the top my head. And, of course, it all depends on what your definition of an intolerant species is.

MR. ETTINGER: Does the rosyface shiner operate in both small streams and large water bodies?

MR. SEEGERT: It's not a small -- It's more of a medium-sized stream fish. It's definitely not a head water fish. It's not a big river fish. It's basically kind of a medium river fish.

MR. ETTINGER: Okay. You also, I just wanted to clarify on this. You said there's not enough hard surface?

MR. SEEGERT: Hard substrate.

MR. ETTINGER: What has to be hard and how big?

MR. SEEGERT: Okay. I thought I had covered that. But technically speaking, hard substrates include moving up in size from small to large with sand, gravel, cobble,

rubble, and boulder. Now, for -- sand is a very poor substrate for spawning purposes for most fish, but I'm including those other categories. So we're talking about anything from basically pea gravel, gravel the size of a pea on up to boulders. And those would be the hard substrates that I'm talking about.

MR. ETTINGER: And where do these substrates have to be in relationship to the water?

MS. FRANZETTI: Counsel, you mean shoreline versus --

MR. ETTINGER: Yeah. Like too deep, too high? Where do you want your substrates?

MR. SEEGERT: That's not -- I can't think of a real short answer to this question. It very much depends on the species. So I'll just use a couple of examples. Something like small mouth bass or rock bass like boulder and large material, that could be along the edges, along the shore line of a water body. But the big limitation here is that you, for many of these species of fish, they need hard

substrates in fast water. That's where they live, that's where they spawn. So just going out and throwing a bunch of rocks out in the channel of the river or even along the edge of the river doesn't do you any good. You have to have a functioning riffle. So a riffle is defined as fast water flowing over hard substrates. So you have to have both of those things going on for a whole variety of riffle-dwelling fish, fish that like riffles. That's what they need as part of their life cycle.

MR. ETTINGER: So looking at your pictures here of the Upper Dresden Pool.

HEARING OFFICER TIPSORD: Where are those at in his testimony?

MR. ETTINGER: It's on Page 7 of -- Well, there's a bunch of them here. Page 7 of Attachment 2B. I'm sorry. It says river mile 24 -- 284.4. Looking at the middle picture on the left, those look like rocks to me. Is that what those are?

MR. SEEGERT: You've nailed it.

MR. ETTINGER: I guess I'm better at

geology. So that would be a hard surface, would it?

MR. SEEGERT: Right. But I should --

MR. ETTINGER: I'm sorry. Go ahead.

MR. SEEGERT: No, it is. But you need, when you're doing evaluation, you asked where these need to be, and I was going to smartly say in the water. But that answer actually applies here. If you look and see rocks up on the shore line, if they only go a foot down from the shore, extend only out a foot, they're not going to be of any use. So it's a combination. That's one of the things as part of the QHEI, you're looking at the hard substrates that are in the water and how much of the zone, the area, are they comprising.

MR. ETTINGER: But if we stood on that rock and looked down and saw other rocks, we'd be okay.

MR. SEEGERT: We would be okay -- Well, first of all, the rocks have to not be imbedded. There are a lot of places where you can have rocks, but there's so much

siltation that it fills in the spaces between the rocks. So they stop functioning for their intended purpose. Also then we get the question this area, and I don't have all the areas memorized, but just in looking at it, this looks like it's a slow water area. So this is an area that, assuming the rocks do extend down into the water column, might be okay for some of the species I mentioned like rock bass or small mouth bass. It would not be preferred habitat for a number of the redhorse or for darters.

MR. ETTINGER: Okay. I won't take you through all the pictures now. But I appreciate you putting them in the package.

BY MS. DIERS:

Q. Is a white sucker an intolerant species? This is follow-up based on what we've been talking about.

A. No. That's a very good question. In fact, it's a highly tolerant species, but it does happen to be a round-bodied sucker, so it counts as part of that metric. But it's a -- as defined by Ohio EPA, and I think most other folks, it's a

highly tolerant species.

Q. What about the small mouth bass?

A. Small mouth bass would be moderately intolerant. So it's not an intolerant, but it's towards the intolerant end of the spectrum.

Q. What about redhorse suckers?

A. That depends on which of the redhorse suckers you mean. There are six species of redhorse suckers in the system.

Q. What about a black redhorse sucker?

A. Yeah. Black redhorse is generally considered to be an intolerant.

Q. Are there any others that are intolerant?

MS. FRANZETTI: That are present that have been found in the system?

MS. DIERS: Yes.

MS. FRANZETTI: Something that's been found at least once.

MR. SEEGERT: Yeah. River redhorse may be classified as an intolerant. I'm frankly not positive. It might be a moderately intolerant. And in short redhorse is another moderately intolerant. I think

the only intolerant in that, in the group of redhorse that's found here is black redhorse.

BY MS. DIERS:

Q. Prefiled Question 10: How did you go about assessing the potential applicability of the UA factors excluding factor six to the Chicago Sanitary Ship Canal and the Lower Des Plaines with respect to aquatic life uses?

A. Well, that's a pretty broad question covering a lot of work that I've been involved with, but also the assistance of other people at EA. And it covers a multi-year time frame. In this case, as it applies to this rulemaking, one of the things I did was participate in the UAA stakeholder process, both in general, but particularly as a member of the biological advisory group. And we had a number of meetings and talked about many of the same issues that are the subject of these hearings. In much of how we assess the potential applicability of the various UAA factors is described in the report that's attached to my prefiled testimony. Generally, we reviewed and determined whether any of the UA factors, that's factors 1 through 5, were or were not present in either the ship canal, the Lower

Des Plaines, or the south branch of the Chicago River. So we went through the list and said does this apply or does this apply. And then as part of that process, we reviewed the various regulatory UAA factors. We reviewed relevant materials regarding interpretation and application of the UAA factors as they've been published in various guidance manuals provided by primarily U.S. EPA, but also some other agency. We've reviewed the available data on the physical and biological conditions in the ship canal and the Lower Des Plaines River. And we also reviewed the available data on aquatic life in the system as part of that. We looked, of course, at our large data set. We looked at the data set that was collected by MBI and we looked at some of the data that was collected from the district. And then we conducted various surveys and studies in the waterway. I've already mentioned the sediment collections that we've made, the habitat reviews that we've done. We also reviewed studies and surveys done by others in this waterway. So we've reviewed the report prepared by Mr. Rankin, the various reports prepared by Mr. Yoder, many UAA reports, and looked not just at this water body, but

other water bodies that we thought would be relevant in this situation. And then drawing upon the knowledge, skill, and experience of the people at EA. And so it's not just myself, but other people like Mr. Vondruska being involved in the process, determine how this information applied and could be integrated into the process of determining whether or not one or more of the UAA factors were applied. And then, lastly, then based on putting everything together, evaluating whether and why the ship canal, the south branch of the Chicago River and the Lower Des Plaines did or did not satisfy any of the five UAA factors that we looked at.

Q. What you just described, that work was done when you were hired by Midwest Generation in 2007 which led to Exhibit 2 which is dated, I believe, October 2008; is that correct?

A. Yes. Now, we drew on some biological data earlier than that, but the process of evaluating the UAA factors, all that was subsequent to being hired by Midwest Generation in 2007.

Q. I think you stated you looked at other water bodies when you were doing this analysis. What water bodies were you referring to?

A. Well, water bodies that we specifically looked at in this area were the Fox River and the Kankakee River. Now, as part of the biological advisory group, the general consensus was those areas weren't exactly the same because they didn't have as many or severe limitations, but nonetheless, they would provide some useful information, and they certainly would be good -- a good frame of reference for looking at the kind of species we should be expecting since they're in the same geographic area. So those were the other water bodies that we looked at in some detail in arriving at our conclusions.

Q. When you looked at the Fox and Kankakee river, were you looking at those when you were doing the analysis or when you were with the biological subcommittee, or were those waters you looked at in preparing Exhibit 2? I'm getting kind of confused.

A. Well, the -- In my capacity as one of the members of the biological advisory committee, that would have predated my being hired for Midwest Generation to look at this -- as the issues as they've now been identified. But then I drew upon

that information.

Q. Okay. Thank you. Question 11, and this is going with respect to Exhibit 2: Did you, in essence, attempt to redo the UAAs done for these waters?

A. I would say no. We looked at -- we certainly looked at the UAAs that had been already done. We didn't want to reinvent the wheel.

Q. Have you performed or participated in other UAAs?

A. Personally I've done a UAA for Brush Wellman which is a company in Northwest Ohio. I also did one for the Coeur d'Alene Mining Corporation. That was done at a site in the upper peninsula of Michigan. And then we did I call them portions of UAAs for two other sites in Ohio: One for BP Chemical and one for Malcolm Pirnie, which is a consulting company. And then EA staff from other offices have done UAAs on a variety of sites along the mid-Atlantic coastal area, Maryland, Virginia, that neck of the woods.

MS. FRANZETTI: Counsel, if I can just do a follow-up and clarifying the earlier part of your prior question. When counsel

asked did you, in essence, attempt to redo the UAAs, you're referring to reinvent the wheel. But do you think that there were parts of this UAA that you did, in fact, conduct a separate review akin to what the UAA consultant did? Were there aspects where maybe you got close to reinventing the wheel?

MR. SEEGERT: Well, certainly I would say we looked, I would call it independently, at each one of the UAA factors sort of without regard to what the UAA had concluded and said do the data justify the conclusions that were reached? But we reached our own conclusions for each of the various factors.

BY MS. DIERS:

Q. Question 12: You testify on Page 2 of your prefiled testimony that one of your tasks for Midwest Generation was to conduct a review of the aquatic habitat suitability for the Chicago Sanitary Ship Canal and Upper Dresden Island Pool directly relevant to Illinois EPA's proposed UAA rules. You also title Exhibit 2 to your testimony, Report on the Aquatic Life Use Attainability Analysis For the South Branch of the Chicago River, the Chicago

Sanitary Ship Canal, and the Upper Dresden Island Pool. Why did you not mention the Brandon Pool as a part of this analysis?

A. Well, most of our analysis and discussion has been focussed on the south branch of the Chicago River, the Sanitary and Ship Canal, and Upper Dresden Pool with a more limited discussion of Brandon Pool. And so because we didn't spend a lot of time talking about Brandon Pool, it wasn't highlighted in the title or included in the title for that report. However, the analysis does include Brandon Pool.

Q. I'm going to skip 13. I think you just answered it.

Question 14: Based on your understanding of the Agency's proposal, is the south branch of the Chicago River expected to meet the Clean Water Act Aquatic Life Goals?

A. No.

Q. Is the sanitary -- Chicago Sanitary and Ship Canal expected to meet the Clean Water Act Aquatic Life Goals?

A. No.

Q. Is Brandon Pool expected to meet the

Clean Water Act Aquatic Life Goals?

A. No.

Q. And is Upper Dresden Island Pool expected meet the Clean Water Act Aquatic Life Goals?

A. According to what you -- in the statement of reasons it says it's going to marginally be able to attain those goals.

Q. Fifteen: What is a limiting biological condition as you use the term on Page 2 of your prefiled testimony?

A. Well, by this I mean biological factors or components that are going to limit how good the fish community can be. I think I probably mentioned all or most of these before, but some of the ones in this particular system that are currently limitations, and, in my opinion, will continue to be limitations are dominance by a few highly tolerant fishes, reduced numbers of quality prey items, poor representation by several key groups of species, low numbers of intolerant species, and a high percentage of fish with DELT anomalies.

Q. Sixteen: Why do you conclude that the

limiting physical and biological conditions of these waters are only unrelated to thermal discharges? See Page 2 of the prefiled testimony.

A. Because the physical conditions are limiting regardless of the thermal discharges.

Q. What about the biological conditions? I believe you just answered to the physical. And the question asked --

A. No. I just answered biological.

MS. FRANZETTI: I think you just answered physical.

MS. DIERS: I thought it was physical.

MS. WILLIAMS: Can we have the court reporter read it back.

(Record read as requested.)

MR. SEEGERT: Yes. In terms of the biological conditions, any of the biological responses that we've seen like dominance by highly tolerant fish, high levels of DELT anomalies, and all the other ones I've mentioned, they all are completely consistent with habitat limitations. And if you have poor habitat, or, in the case for the DELT

anomalies, contaminated habitat, contaminated sediment, those factors just by themselves will produce all the responses that we saw and regardless of what thermal discharge is doing.

BY MS. DIERS:

Q. How did you rule out temperatures and impact?

A. I mean it seems to me that's what I just explained of all these other -- that everything that we've observed is consistent with the physical and biological limitations that are going in there. We don't need to try to invoke another factor when the weight of the evidence points directly in a different direction.

MR. ETTINGER: Would you consider entrainment as a factor?

MR. SEEGERT: I don't see how that would be relevant here.

MR. ETTINGER: You have fish that aren't there. One of the things that could have happened to them is they could have been entrained.

MR. SEEGERT: Well, that presupposes

some level of entrainment, and there's been no evidence introduced as to what, if any, level of entrainment is going on in the system. And even if fish are entrained, the fact that some number may be lost since you're dealing with early life history stages, typically there's actually no effect at the population level.

MR. ETTINGER: But you believe that the barge propellers are having an effect of the population?

MR. SEEGERT: I didn't say that.

MR. ETTINGER: Oh, okay. We'll go on.

HEARING OFFICER TIPSORD: Miss Diers?

MS. DIERS: Just a moment, please.

BY MS. DIERS:

Q. Question 17: On Page 2 of your prefiled testimony you state under U.S. EPA's rules the existence of any one of the six UAA factors alone is sufficient to demonstrate that a water body is not capable of meeting Clean Water Act aquatic life uses.

Question A: Is it correct that you analyzed five of the six UAA factors and found

four of them applicable to the Chicago Sanitary Ship Canal, south branch Chicago River, and Upper Dresden Island Pool?

A. Yes. And the same four factors also applied throughout Brandon Pool.

Q. Do you agree that there's no requirement in U.S. EPA's rules to examine all six factors?

A. I don't know.

Q. Do you know if Midwest Generation has asked someone else to perform a factor six analysis?

A. I don't know.

Q. D, explain why factor one was found not to be applicable.

A. Although various pollutants are present in the system, as far as I know, none of them are naturally occurring. So that's why we discounted factor one. They're not -- There are pollutants, but they're not naturally occurring.

Q. E, explain in more detail how you think the natural, ephemeral, intermittent or low flow conditions or water levels prevent attainment of the use? And I believe that's with respect to factor two.

A. Well, factor two talks about water levels. And, to me, that means rapid fluctuations in water levels. It would also encompass abnormally high water levels or abnormally low water levels. We heard testimony earlier today about the rapid changes in water levels that take place within the system, so that's what I was talking about. And it could either be problems because of the high or the low water levels. Now, to the extent that these water level fluctuations are the result of human-caused conditions, I think you could also include water levels under factor three. Similarly, if the dams or other hydrologic modifications in the subject waterways cause or contribute to the water levels and the fluctuations of those levels, then it's also a relevant issue under UAA factor four. So you could include it in all -- in two, three, and four. However, I do disagree that water levels are more appropriate in three or four. I think they're equally appropriate based on the EPA language to be covered under UAA factor two, and that's where I covered them.

HEARING OFFICER TIPSORD: For the record, before you move on, Miss Diers, we've

been talking about the UAA factors, and I sometimes forget that we're all very familiar with this, but someone reading the transcript may not be. The UAA factors are the factors listed in 40 CFR, 131.10, Subpart G.

MS. DIERS: Correct.

MS. FRANZETTI: And, Counsel, I think Mr. Seegert's answer wound up answering some additional subparts of E.

MS. DIERS: That's what I was looking at. Thanks.

MS. FRANZETTI: Of 17E.

BY MS. DIERS:

Q. G, you state on Page 3 of your prefiled testimony that similarly low flow regulation, which is controlled by U.S. Army Corps of Engineers, in anticipation of flooding, can also adversely affect fish by exposing fish nest and eggs to ambient air and causing stranding in shallow areas which leads to increased predation on fish. Please provide an example of this phenomenon on the CAWS or Lower Des Plaines River.

A. I'm sorry. Are you on G?

Q. Yes.

A. G. Well, based on available data, some of that Ms. Wozniak referred to earlier, and then we know that water levels and flows occasionally drop precipitously. And the EA field crews have personally observed that one of these examples is described in my testimony and one of the ramifications of the water levels dropping rapidly is that small fish, especially more than big fish, could get stranded in the areas that quickly became confined. In other words, they couldn't find their way back out of these areas. Also it's reasonable to conclude based on the amount of fluctuation that nest areas that would be in the same shallow areas would be -- might become desiccated or subject to predation.

Q. I'm going to strike Question H.

HEARING OFFICER TIPSORD: And before you move on to Question 18, why don't we take a ten-minute break.

(Short break taken.)

HEARING OFFICER TIPSORD: Are we ready to go ahead? Question No. 18 I believe is where we are, Miss Diers.

BY MS. DIERS:

Q. In describing the applicability of Factor 2, you only reference conditions in the CAWS. Is it your testimony that Factor 2 is applicable to the Lower Des Plaines also?

A. I don't think that what you stated is a correct characterization of my testimony in the associated report on Pages 5 to 6 of my report which is Exhibit 22 to the prefiled testimony. I do describe conditions in the lower Des Plaines River that apply to Factor 2. So, yes, Factor 2 is applicable to the Lower Des Plaines River because fluctuations in both flow and water levels do affect the Lower Des Plaines.

Q. I'm going to strike 19 and go to 20. Do you have data from the waters addressed in this rulemaking showing that these flows adversely affect fish by causing nest abandonment and displacement of recently hatched fish and by causing sediment deposition that buries and suffocate eggs?

A. Well, as I previously mentioned, we know that the water levels do change precipitously in the system, and myself and other members of the EA have personally seen these effects take place in

the waterway. So from our knowledge and experience we can reasonably conclude that given the fluctuations that are documented and that do occur, we would expect these effects to occur. Now, we have not gone out into the waterway specifically to try to document these effects, and we don't have photographs. However, as an aquatic biologist, we've worked in many different systems, we know that the kinds of effects that I'm talking about can reasonably expect -- be expected to occur. For example, I worked a lot on the Wabash River in Indiana, and one of the main factors that effects reproductive success of fishes there are high water events, that when you have high water fishes that are nest builders and some other species, the high water comes up and basically just flushes everything away. So we know that those things go on, and that there's no reason to believe that somehow the, I guess they call it the hydraulics that are going on at this system are somehow different than other systems. It's basic physical principles. Similarly, the adverse effects associated with sediment deposition is a widely-accepted fact. And, again, in this case, the species that are going to

be most affected are those that fill the nest because the eggs are going to be on the bottom. And then the group that we call simple lithophils. When Mr. Ettinger was asking some questions before, something about why the rocks are important. Well, the group of fish that's most affected or needs clean rocks the most are the group we caught simple lithophiles which these are fish that when they spawn, the eggs get deposited in these open spaces in the rocks. And for the eggs to hatch successfully, you have to have good aeration, you have to have circulation going on, and if the silt and sediment clogs up the rocks, then you're not going to get adequate hatching. And species which then Mr. Ettinger referred to before, to walleye, that -- walleye is a simple lithophil. So that's a species that's going to be affected very severely by excess sedimentation.

So all these effects are widely known and accepted. And water level fluctuations, it's more -- it's been investigated more of hydrosites, because hydro power sites operate as peaking operations. So they cause major fluctuations. And so because of that, there's been

a lot of research in that area showing what the effects of water level fluctuation. So, again, these are all just standard responses to changes in water levels.

Lastly, I'd note that the difference here is that as opposed to hydrosite where you can work with the hydro operator and design a study to go on and say, okay, I want you guys to raise the pool or lower the pool or do something, here we have no control over the core, how the core operates the dam. So, you know, they do what they want to do primarily in response to rainfall events. So we can't schedule high or low flow events which is what you'd really need to document, fully document the effects that I've been describing. And also I would -- lastly I'd say that because there are so many stressors in the system, it's very hard to say, okay, the water level fluctuation, that contributes 17.3 percent of the stress in the system and all these things act collectively and synergistically together. But, again, just based on the physical changes that are going on, there's no reason to expect that the effects that have been seen in other water bodies

would not occur here.

Q. And did you say you saw these effects in the Wabash River?

A. In this case I was referring to high flow events.

Q. And the Wabash is general use waters; is that correct?

A. Well, they don't use that classification system in Indiana.

Q. Oh, okay.

A. I think Mr. Vondruska wanted to --

MR. VONDRUSKA: Another site we have been out in the field in numerous occasions in the Brandon tail water where they've got the sanding and stuff, and we've seen these fluctuations that have been talked about here. Ms. Wozniak said that the core report sees flow levels every like two hours. Well, we've been out there in literally 15 or 20 minutes and see water go from about thigh deep to ankle deep. You have to be careful where our -- we tie up our boat. But on the same lines, we've seen actually small fish isolated that get stuck in these isolated

pools along the edges of the Brandon tail water because of these severe rapid fluctuations.

BY MS. DIERS:

Q. So Question 22, how high does the flow need to be to cause these problems?

HEARING OFFICER TIPSORD: Excuse me. Just for the record, 21 is how high and 22 is how low.

MS. DIERS: Yes, thank you.

MS. FRANZETTI: And we're taking how high first?

MS. DIERS: Yes.

MR. SEEGERT: Well, I mean, again, I don't think I can give you an exact number in terms of either level or flow. That's not how the literature frames this particular question. And it also has to do not just with the absolute number, but how rapid the change is. So if there's a gradual build-up in flow or a gradual decline in flow, you might end up at the same place. You might not end up as high as you would or as low as you would, but it's going to be much worse if

the change occurs over a few minutes or a couple hours versus over a few days. Basically if the water level goes up slowly, fish are able to move and take refuge. Conversely, if it drops slowly, then they can say, hey, it's getting really low in here. I've got to get the hell out of here. That's what they do. But if all of a sudden it drops like a rock, and, as Mr. Vondruska mentioned, they can get stranded. In this case, the little fish are going to be even more at risk because they don't have as much swimming ability as the larger fish would.

And seasonality also has a -- is a factor. The high flows like in the Wabash, if that happened during the winter, it obviously wouldn't affect nest building because the fish breed during the spring and summer. So you have to consider when the high or low flow events take place.

MR. ETTINGER: You have to be careful year to year, because sometimes the whole year reproduction can be wiped out by a flood, can't it?

MR. SEEGERT: I'm sorry? Is that a question?

MR. ETTINGER: Yes.

MS. DEXTER: He said can't it.

MR. ETTINGER: Can't it?

MR. SEEGERT: I don't think that all the -- I mean 100 percent of the individuals would be wiped out. It might be a fairly high percentage. If you look at your class strength in fish is one of the things that you see is it's not constant. It is highly variable. The other factor would be what species. Some species are -- mainly because of their reproductive -- or their strategy, they're going to be affected much more. So some fish would be able to handle high flow events much easier than other species would. So it would depend on the species.

BY MS. DIERS:

Q. Twenty three: Do you have any data from the waters addressed in this rulemaking showing that barges produce wakes or waves that push water into the back water channels causing rapid changes in the water levels and stirring up harmful

sediment?

A. Well, the EA field crews working on the waterway, and we've been working on this waterway for a long time, have personally observed and experienced the effects of these barge-caused waves. We've actually seen it happen, and I've seen it happen. And if you just think about the volume of water that's being pushed by these barges, it's not hard to envision that this would also stir up the sediment. Again, it's just you push a whole bunch of water. You expect that things are going to get churned up.

Q. Twenty four: What extensive studies are you referring to on Page 4 of your prefiled testimony with respect to sediments?

A. I had mentioned early on in my testimony that EA has been doing studies in the ship canal and the Lower Des Plaines for more than 25 years. So over that entire period we've observed sediment conditions, and, in addition, we did QHEI studies, specific habitat studies where part of that is looking at the sediment. We did studies of that nature in '93, '94, 2003, and the most recent one in 2008. That specifically includes a component or a

metric where we look at sediment amount and sediment quality. And all of that information has been included in our submittals. And then also as far as contaminated sediment, that information is attached to Dr. Burton's prefiled testimony as Appendix C of Attachment 1.

MR. ETTINGER: Can I just break in here to ask whether you're aware of any studies of the effect of barge traffic on waterways and fisheries?

MS. FRANZETTI: Generally, any waters?

MR. ETTINGER: Any waters.

MR. SEEGERT: Well, I cited in my prefiled testimony studies that were done on the Mississippi River where they were able to show that barges, there's actually a physical thing with the propellers on the barges strike a certain number of fish. It doesn't happen very often, but if you have many, many barges, I don't -- I can't remember the number, but I think of thousands of barges, it stands to reason that every once in a while besides the water being pushed around and sediment being stirred up, that these

props are periodically going to hit and either then kill or injure fish in the waterway. But studies were done on the Mississippi River that actually based on, I'll call it a hit rate, that extrapolated based on a number of barges how many fish were going to be killed over the course of one barge season.

MR. ETTINGER: Are you aware of any studies done by the Corps of Engineers of the barge companies of the Illinois River and the effect or lack of effect of barges there?

MR. SEEGERT: I'm not aware of any studies.

BY MS. DIERS:

Q. Question 25: What higher quality fish, that's in quotes, are you referring to on Page 4 of your prefiled testimony?

A. Well, when I say higher quality, I'm generally talking about species that would either be intolerant species or moderately intolerant species. Some of those would be groups that I've already mentioned; pretty much all the darters, redhorse, smallmouth bass, madtons, and certain minnows.

Q. Question 26: How did you come to the conclusion reached on Page 4 of your prefiled testimony that the removal of one limiting factor such as sediments would not improve aquatic habitat?

A. Because if you remove the sediment factor, there's going to still be other limiting factors on the aquatic life that are going to be sufficient to satisfy one or more of the UAA factors, aquatic habitat, not aquatic life.

Q. I'm going to ask Question 41 of our prefiled questions here. I think it fits in better here. And 41 is on Page 12, so I'll give you time to get there. You testified that fine silty and organic nature of sediments in the Chicago Sanitary and Ship Canal and the Lower Des Plaines are not suitable for many higher quality fish species which require hard, clean substrate for spawning and reproduction. Isn't it true that -- I'm going to change many to, I'll just say some, natural water bodies have the same condition of silty sediments not suitable for certain species of fish?

A. First of all, I'd say that silty sediments are not the natural condition in most streams. It's a result of excess inputs of

sediments. So that's the first point that I would make. And that whenever this condition is encountered, in other words, deposition of silt, you're going to have a negative effect on the overall fish community. Yes, there might be some fishes that wouldn't be affected, but, again, those would be ones that would be in this highly tolerant group. So when you have excess siltation, regardless of what caused it, that is going to -- that is going to negatively effect the fish fauna. And the fact that you have an excess amount of silt indicates, one, a lot is coming in; and, two, there's not sufficient scouring to move it out. That's one of the real problems that we have here. I haven't done studies to determine the actual loading of sediment into this system, but what happens is whatever does come in, it drops out because it runs into the dam. The dam caused the water to slow down, and then the water slows down, this material settles out and causes the problem. And, lastly, I'd say that, you know, what you're referring to as natural water body that has the same amount of siltation, sedimentation that we're seeing here, that we see here, would experience the same

kind of problems and result in poor fish community.

MR. ETTINGER: Have you studied the level of siltation in the Kankakee River?

MR. SEEGERT: Define study.

MR. ETTINGER: All right. Do you know the level of siltation in the Kankakee River?

MR. SEEGERT: The Kankakee, this directly addresses what I was just saying about it's not just a mouth that comes in; it's not just the loading, but what happens to the loading. I have sampled the Kankakee quite a bit. The riffle areas and the fast water areas in the Kankakee are quite clean. So you have -- the Kankakee has an absolutely wonderful fish community. Without a doubt it's far and away the best fish community in northeast Illinois, and one of the big reasons for that is you get -- not get -- you have the things that the CAWS and the ship canal and the Lower Des Plaines don't which is clean riffles, riffles without a lot of sedimentation. This allows the Kankakee to have a very diverse darter community, have redhorse number s that are at least in order

of magnitude higher than we see in this system.

MR. ETTINGER: Is the Kankakee impounded?

MR. SEEGERT: The Kankakee has -- I believe only one dam, and there's definitely a dam at Wilmington.

MR. ETTINGER: Yes.

MR. SEEGERT: I thought there was one up at Kankakee, but I was looking at a map and I couldn't find it. So maybe it doesn't -- maybe my memory is foggy on that.

MR. ETTINGER: I think we were trying to get rid of it years ago.

MR. SEEGERT: I've sampled both above and below that dam. It's relatively low, so it's not a high dam. So it doesn't impound very much of the waterway. So it's really not having much of an effect. I mean there would be a small negative effect immediately upstream in the dam, but if you look at how long the Kankakee is from when it enters, just talking about the Illinois portion from when it enters from Indiana and joins the

Illinois River, I don't know, 40, 50 river miles, you have one dam, and it's a fairly small dam.

MR. ETTINGER: Isn't the same dam impounding the Kankakee, the lower Kankakee that's impounding the Upper Dresden Pool or the Lower Dresden Pool?

MR. SEEGERT: No.

MR. ETTINGER: Isn't the Dresden Dam below the Kankakee?

MR. SEEGERT: The -- I think what you're asking is -- Is what you're asking is does Dresden Dam impound a portion of the Kankakee River? Is that your question?

MR. ETTINGER: Yes. Well, that would be part of an answer.

MR. SEEGERT: Yes. Because the level of Dresden Pool has been artificially raised. There is a few miles of the lower Kankakee that are impounded as a result of the Dresden Island Lock and Dam.

MR. ETTINGER: So the Dresden Island Lock and Dam is the same dam impounding the Upper Dresden Pool up to Brandon, isn't it?

MR. SEEGERT: Yes. But there's a big difference that the Kankakee, the amount that the Dresden Dam impounds of the Kankakee is a small percentage. I haven't done calculations, but just off the top of my head, I guess that's less than 10 percent of the lower Kankakee. Dresden Island Lock and Dam impounds 93 percent of Dresden Pool. So it's -- Any time you're talking about dams, you've got to think about three things: One is how many dams are there, how high are they, and what's the grading? Because ultimately -- And then ultimately what you then want to know is how much of the water body in question is impounded. Is it 5 percent? If it's 5 percent, it's probably not a big deal. But if it's 90 percent, or, in this case, 93 percent, that's a big deal.

MR. ETTINGER: Okay. There's a dam at Wilmington and there's a dam at Dresden. How much of the Kankakee is impounded?

MR. SEEGERT: Again, I would guess that the Illinois portion may be 10 percent or less. I'd say 10 percent or less.

MR. ETTINGER: Thank you.

BY MS. DIERS:

Q. I think we're on 27.

MS. FRANZETTI: I'm sorry?

MS. DIERS: I think we're going to 27, but just a moment, please.

MR. ETTINGER: I'm sorry. I have one more follow-up. How do you measure how far upstream from a dam that a water is impounding?

MR. SEEGERT: Well, you could look at elevation maps and see where the normal level of the dam is and basically how far it backs the water up. And so that would be more of an analytical way of doing it. In our case, we relied -- or I relied on the observation of my field crews and basically said or asked the question of them as when does a transition from a tail water area with some reasonable velocity to where the impounding starts. And the answer was one mile. And I believe Mr. Yoder also addressed this question. My recollection is he said about a mile also.

MR. ETTINGER: I'm sorry. A mile --

MR. SEEGERT: So it was about a mile is free flowing. The tail water area encompasses roughly one mile of Dresden Pool, and that -- which means there's 13 miles that are impounded.

MS. WILLIAMS: Can I ask a quick follow-up? You said there was a third -- you listed three things you have to look at, and the third one was gradient?

MR. SEEGERT: Yes.

MS. WILLIAMS: Do the Kankakee River and the Des Plaines River have similar characteristics with regard to grading?

MR. SEEGERT: Based -- I haven't looked at a topo map for elevations, but just based on my observations, I would say that the Kankakee has a higher gradient.

MS. WILLIAMS: And in the absence of the dam that's impounding Upper Dresden Island Pool, do you have any evidence that the -- a natural flowing Des Plaines River would have riffles?

MS. FRANZETTI: I'm just going to

object to the hypothetical nature of the question, but.

MR. SEEGERT: Well, the short answer is why wouldn't it? I mean think -- if the Kankakee has riffles, and even though it might have a little bit higher gradient, basically all water bodies are going to have riffle areas. The question is how far apart are they spaced? If they look on the other side, we look at the Fox River, which I think there probably the gradient is probably even closer to what it is in the Des Plaines, the Fox River also has well-defined riffle areas. So basically all the systems I'm familiar with, including the Rock River, all the big rivers in Northern Illinois have riffles. So --

MS. WILLIAMS: I intended to limit my question to the Upper Dresden Island Pool portion. That's geographically speaking.

MS. FRANZETTI: You mean north of I-55, upstream of I-55 bridge as defined in this proceeding? Is that what you want him to limit his answer to?

MS. WILLIAMS: Yes, I think so. I'm not talking about the -- what I want to get at is I'm not talking about the entire Des Plaines River. I'm just looking at this portion to see if you would agree that the gradient is very flat, and in its natural state would not have riffles either.

MR. SEEGERT: I don't know that.

MS. WILLIAMS: Okay.

BY MS. DIERS:

Q. Twenty-seven: What areas were salable in 2003 to help you come to the conclusion that sedimentation was moderate to severe in 70 percent of the areas where QHEI scores were assessed?

A. In 2003 we sampled 30 main channel border and four off-channel location -- off-channel locations in Dresden Pool. Based on those 34 locations, then 70 percent had moderate to severe sedimentation.

Q. Did that include the upper and lower Dresden Island Pool?

A. Yes.

Q. Twenty-eight, what was the percentage of sedimentation that was moderate or severe for

2008?

A. Well, in this case I should -- and I'll start off by saying in 2008 we only did Upper Dresden Island Pool, and it turned out just coincidentally that it was also 70 percent, exactly the same number. I actually had to go back because when I first saw that and I had one of my guys calculate it and said are you sure this is right? I'm not talking about 2003. And it turned out in 2008 it was the identical number, 70 percent.

Q. Twenty-nine: What extensive studies are you referring to on Page 5 of your prefiled testimony with respect to contaminated sediments?

A. These would be the various studies that have been done by Dr. Burton.

Q. And are all those studies done by Dr. Burton, are they in the record or are they attached to Dr. Burton's testimony?

MS. FRANZETTI: Well, at least the 2008 is the subject of the data, on the reporting the data, is in the EA report that is attached to Burton's prefiled testimony and on which then in his testimony in his report he relies and draws conclusions based

on. Then Dr. Burton's earlier study -- he supervised the EA study, and I know it gets a little confusing, so I'll just add this in anticipation of Dr. Burton's appearance here maybe and lend some clarification.

Dr. Burton oversaw that EA study. In other words, he decided what should be included, number of locations sampled, that sort of thing. They then physically went out and collected the samples and had them analyzed. Dr. Burton then did an earlier study with respect to sediment back in, I'm going to blank, was it 1990 --

MR. ETTINGER: He testified in the '80s.

MS. FRANZETTI: In the '80s. I'm blanking off the top of my head when his prior studies are. They are all at least referenced in his prefiled testimony and attached report. I do not believe that you're asking is a separate copy of any study report also attached to those earlier ones, no. I believe just that the data from them is summarized in what was filed with the

board.

MR. SEEGERT: If I may answer the question about where we had sampled in 2003. I did want to add on that when we did the work in 2003, I believe both Mr. Smogor and Mr. Essig did accompany EA during all or a good portion of our field effort. We always try to, wherever we can, engage the Agency, and basically make our studies as transparent as possible. And, as far as I know, they both were satisfied with the locations that we chose to sample and how we did the sampling.

BY MS. DIERS:

Q. Thirty: Do you know why contaminated sediments are predominantly found in the side channels in back water areas?

A. Yes. Most contaminants are found out with small grain sediment. This would be clays and silt. These materials stay in suspension when the current speed is moderate to high, but drop out in areas where there's little or no current. And, in this system, that's going to be areas in the side channel, especially in the back waters to the extent

that back waters exist, and then to some extent as we talked about earlier, in the areas just fairly close to the dam because that's where the current velocity is going to be the least. So anywhere where there's little or no current, these fine materials settle out, and that's what these materials are bound up with.

Q. Question 31: Is it your professional opinion that the sediments will not improve in these waters? And when I say "these waters," I'm referring to Chicago Sanitary Ship Canal and the Upper Dresden Island Pool.

MS. FRANZETTI: And, Counsel, just a clarification: Do you intend to include both in terms of quantity and quality, cover both potential areas on that question?

MS. DIERS: Yes, cover both, please.

MR. SEEGERT: I'll break my answer into two parts. As far as just the volume of sediment, not dealing with whether it might or might not be toxic. I don't think things are going to change appreciably. I think relatively the same volume of material will come in. I know TARP is going to go online

and presumably will result in some -- There's going to be fewer CSO events, but I'm still expecting that overall about the same amount of sediment is going to come into the system. In terms just about sediment quantity, I don't think that's going to change appreciably over the next, say, five to ten years. As far as the quality, their problem is the amount of -- that some people term legacy pollutants. This isn't necessarily material in the sediment that was deposited in the last days or weeks or even last couple years. There's material from way back when when the rules and regulations weren't nearly as strict. And that material is still there. Now, we had testimony from the State basically eons ago, something to the effect that this material would essentially be capped, that clean new material would fall on top of the old contaminated material. I don't see how this is going to happen, because the barges keep resuspending this. So the nasty stuff might temporarily get capped off by new material, but it's going to

be constantly resuspended within the channel due to prop wash and all these waves sloshing back and forth are going to keep stirring up the sediment. So I think the contaminated sediment are going to continuously be reexposed. So given that, I don't see that the quality, that sediment quality, is going to improve appreciably in the future.

BY MS. DIERS:

Q. And would that answer change if we looked at the Brandon Pool?

A. Pardon?

Q. Would the answer change if we looked at Brandon Pool?

A. It would be the same answer.

Q. Okay.

MR. ETTINGER: Would the answer change if you looked at the Illinois River?

MS. FRANZETTI: You mean are there sediments improving in the Illinois River?

MR. ETTINGER: Is there not a ton of sediment coming from agriculture in the Illinois River?

MR. SEEGERT: Well, remember, there's

two answers: One has to do with sediment quality and one has to do with sediment quantity. And I can't -- There's, coming into the Illinois River, I would expect that the quality of the sediment is better. Whether the sediment load is going to change in the next five or ten or 20 years, I have no opinion.

MR. ETTINGER: Have you looked at the efforts of the Metropolitan Water Reclamation District to establish storm water control in systems for Cook County?

MR. SEEGERT: No, I have not.

BY MS. DIERS:

Q. Would the more severely contaminated sediments that are resuspended eventually move downstream through the system?

A. I'm sorry?

Q. Would the more severely contaminated sediments that we've talked about that are resuspended eventually moved downstream through the system?

A. Not being a hydrologist, I don't think I can answer that question.

Q. I'm going to strike 32 and 33 and go to 34. How are you defining viable population as used on Page 12 of the prefiled testimony?

A. Viable populations are those that are self-sustaining and of a size expected for the water body in question. For a population to be self-sustaining, the water body in which the population lives about must provide habitat for all the needed life history functions. In other words, it needs places to spawn successfully, places to feed, places to hide so it isn't predated upon. And for various species and groups, the Upper Des Plaines -- Upper Dresden Island Pool does not have these attributes.

Q. Thirty-five: Please explain your conclusion that the Upper Dresden Island Pool has far more in common with Ohio's modified warm water use designation than with Ohio's warm water use designation?

A. Well, it has more of the characteristics of a modified stream. And Mr. Rankin's report, he had a table where he put checkmarks in boxes whether it had certain -- whether it had the characteristics of modified

stream or warm water stream. In this system there are a lot more boxes checked in the modified side of that table than there were in the warm water side. So it has -- It has the characteristics of a modified stream.

MR. ETTINGER: Do you know of any streams in Ohio --

MS. FRANZETTI: Just a second, Albert.

MR. SEEGERT: Well, right, the characteristics of modified streams are things like impounded, channelized, lack of sinuosity, excessive siltation, lack of riffles, lack of -- a lack of riffles and fast water, and basically all of the things that this system lacks are the things that he's talking about. I mean he basically describes his attributes of a warm water stream describe this system to a tee for the modified. They describe what this system is. It has all of these things. It's impounded, it's channelized, it has no -- except for the Brandon tail waters, no riffles. It has a lot of siltation, it has a lack of gradient. It's got the characteristic of modified

stream, not a warm water stream.

MR. ETTINGER: I was going to ask whether you're familiar with any waters in Ohio that have this classification.

MR. SEEGERT: Of which classification?

MR. ETTINGER: Modified.

MR. SEEGERT: Yes.

MR. ETTINGER: Which ones would those be?

MR. SEEGERT: Parts of the Great Miami used to. I think they've done an upgrade. There's some of the stream up in the Akron/Canton area, Tuscarawas River. Part of it is modified, and then there are some small tributaries up in that area that I've worked on. There's a place called Pyrford Run where you have a stream that's only three miles long and it has three different uses. It goes -- Basically the upper mile is limited resource water, then it goes into modified for another mile, and the last mile is warm water. So it's just in a roughly three-mile long head water stream, Ohio EPA divided it into three different uses based on how

habitat changes over three miles.

MS. WILLIAMS: And does Ohio distinguish temperature criteria between modified warm water and warm water use designations?

MR. SEEGERT: I believe -- I don't believe so, that they -- Well, yes and no.

MS. WILLIAMS: So by yes or by no, you would mean they have the same criteria for warm water and modified warm water?

MR. SEEGERT: No. What they do is for setting temperature, they look at basins, and then they say for this particular basin, what is the species assemblage that needs to be protected. And then based on the species assemblage that needs to be protected, then they set their temperature limits accordingly. So it's really not use driven, it's species composition driven.

And then the reason I said yes and no -- so that's the no. But then the yes part is that because modified and limited resource streams often have different species assemblage then depending on how much of a

percentage of the basin streams in that classification make up, that could result in different thermal levels.

BY MS. DIERS:

Q. Do you know how many sites Rankin visited in the Upper Dresden Pool?

A. Pardon?

Q. Do you know how many sites Rankin visited when he was in the Upper Dresden Island Pool?

A. I believe two, either two or three. I think it was two.

Q. I think we did 35. I'm going to strike 36, I'm going to strike 37, and go to 38.

You testify on Page 4 about heavy barge traffic. Are you testifying that barge traffic is a protected use or a limiting factor to aquatic life or both?

A. Both. It's my understanding that navigation is a protected use. And so if you're going to have as a protected use -- I'm sorry. That's -- it's both, again, because my understanding is that navigation is a protected use.

Q. A, if barge traffic is a protected

use, what standards are necessary to protect that use?

A. I haven't been asked to review that issue, so I can't speak to what standards might be necessary to protect barge traffic.

Q. B, if it's a limiting factor, are you saying it is a human cause condition or source of pollution pursuant to UA Factor 3? And, if so, would it cause greater environmental harm to remove this factor or leave it in place?

A. Okay. For the first part I would say yes, I consider it to be a human cause condition. The -- For the second part I'd say the relevant question is not whether it would cause greater harm to remove the barge traffic, but whether barge traffic can or should be removed. The UAA factor three asked whether human cause conditions cannot be remedied. My understanding is that barge traffic as a longstanding navigational use in this waterway is a protected use. Therefore, I don't believe it could be eliminated in order to improve the waterways' potential for obtaining the Clean Water Act goals, supporting full aquatic use. Also, eliminating the barge traffic would probably have

significant economic ramifications to the barge industry and the companies that depend on the materials they provide, which then could become an issue under UAA Factor 6, but that was beyond the scope of my inquiry.

Q. Thirty-nine: Why do you consider sedimentation in the CAWS, particularly in the Upper Dresden Island Pool unpreventable and irreversible? And do you have data to support this conclusion?

A. Well, my conclusion is based generally on the fact that this is a highly urbanized environment in which this water body is located. And in highly urbanized industrial areas; riparian zones are typically very small but they're nonexistent. You also have a large amount of impervious area, and also where there's going to be significant contributions from CSOs and from nonpoint source runoff into the waterway. And at this juncture, I'm not aware of anyone who has a solution or means of preventing input of sediments into the waterways. Now grant it that TARP is certainly moving in the right direction, but I don't think it's going to solve all the problems. And I know from the results of the various EA studies that

we've done over the years in this system, and I'm not talking about sediment contamination, I'm just talking about sediment in general. I'm talking about the extent of the sediment is extensive, and I'm not aware of any sedimentation removal projects of the size necessary to take sediment out of this waterway, but I haven't done specific studies. Again, it's just looking at the volume of material that are out there. And I think also Dr. Burton will probably address some of the issues related to sediment quality, but just as far as the quantity is concerned, we haven't seen any evidence in the 20 plus years that we've been working that sedimentation is getting any better.

Q. Question 40: You mentioned that contaminated sediments exist in all three navigational pools. Do you have evidence that more recent sediment that is being deposited is more or less contaminated?

A. Well, I think this question should be addressed to Dr. Burton.

MS. FRANZETTI: Counsel, if you don't mind, Dr. Burton specifically looked at those issues. Mr. Seegert really did not.

MS. DIERS: So Dr. Burton would be the more appropriate witness to ask how the samples were collected and --

MS. FRANZETTI: Yes.

MS. DIERS: Thanks.

MS. FRANZETTI: Now, Mr. Vondruska could have still been here, but he did have to pick up his children from school. He might have been able to handle that part because he was, I believe -- wasn't he a member of the field team?

MR. SEEGERT: Yes, he was part.

MS. FRANZETTI: But we'll cover it. We'll make sure he is at least here when Dr. Burton testifies, okay?

MS. DIERS: All right. Thank you.

BY MS. DIERS:

Q. I think we've already addressed 41, so 42. Please define excess sediment as you use the term near the bottom of Page 4 of your testimony.

A. Okay. Excess means more than you expect in a healthy stream. What I'll do is try to provide a frame of reference; that the QHEI talks about the amount of sediment, and it

characterizes -- I think it has five classes: Severe, moderate, normal, minimal. Maybe it's four classes. And it asks the people doing the evaluation basically -- to say is the amount of sediment that's in a particular stream about what you'd expect. Is it normal? Which means the people doing it have to be experienced, they have to, in their mind, have an idea of how much silt you would normally expect. The other -- but they do give some additional guidance. They say when you expect silt to be normal, the fast water areas, the riffle areas are going to be essentially silt free. So a normal stream would not have any silt and riffles. And then what you'd see along the edges would be, the word they use is a fine coating. So there's a little bit of silt in these shallow depositional areas, but not anything more. And if you see either sediments in appreciable amounts in the riffles or along the shore, that would be more than normal, and then they make some differentiations between moderate and severe.

Q. I'm going to strike 43, 44. With respect to 45, I'm just going to ask the question at the end. Are you saying that no streams in urban

areas are capable of meeting Clean Water Act Aquatic Life Goals?

MS. SEEGERT: You're on the very last --

MS. DIERS: Yes. On 45.

THE WITNESS: No. There could be streams in urban areas that could achieve aquatic life goals, but as a general proposition, they don't. That's not to say there isn't -- There aren't some streams somewhere that could. But based on the studies that have been done, it's basically you've got two strikes against you if you're in a highly urbanized area as far as Clean Water Act goal attainment.

BY MS. DIERS:

Q. Would that be true looking at large streams?

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

Q. When we were talking about streams when I asked you do you mean that no streams in urban areas are capable of meeting Clean Water Act Aquatic Life Goals, you said there's a possibility where that could happen. Could it happen on large

streams?

A. Yes.

MS. FRANZETTI: Counsel, if I can, just for clarity, do you consider this a large stream?

HEARING OFFICER TIPSORD: Which "this"?

MS. FRANZETTI: Let's say Upper Dresden Island Pool.

MR. SEEGERT: I don't consider it a large river, no.

MS. FRANZETTI: Same answer for the ship canal?

MR. SEEGERT: Yes. From there on up it gets progressively smaller, so.

MS. DIERS: Forty-six. And I guess first is this question for Greg or should we --

MS. FRANZETTI: I'm sorry. I'm not looking down. 46?

MS. DIERS: We're still talking about sediment.

MS. FRANZETTI: He can respond to this. Thank you for asking.

MS. DIERS: Forty-six, explain your statement on Page 5 of your prefiled testimony where you state that deleterious sedimentation in the CAWS is both unpreventable and irreversible and will remain a major impediment to biological improvements. What makes it unpreventable? I guess we can start there. I can break it down.

THE WITNESS: Okay. To answer those first two questions --

MS. DIERS: Unpreventable and irreversible?

MR. SEEGERT: Right. Well, no, and -- yeah, unpreventable and -- much of the sediment comes from nonpoint sources. And we witnessed a good example of that during our recent habitat survey.

MS. FRANZETTI: What year, Greg? Recent?

MR. SEEGERT: The 2008. So in attachment 2B for river mile 82.5 right bank, that's how it's labeled in Attachment 2B, that photograph shows an area, a big pile of

bare dirt right along the edge of the river. And we wondered what was going on, so we stopped the boat, got out, walked up above, up the side of the bank, and there was an area that was being graded. And I don't know if they're -- they're doing some sort of development. I don't know if it's commercial or what, but some kind of development. And it had an area, I'm guessing, of 50 acres or so completely scoured, no vegetation, and they had attempted to put some silt fences in the area, but the silt fences were all gone. So anything from that 50 acre site was going to get funneled right through that about 100 foot wide section, and that's just one example of what goes on in a system like this on a regular basis. And the reason then this is essentially unpreventable is that unfortunately Illinois EPA has very little control over this sort of thing, so it just keeps going on. They don't have the rules to handle nonpoint source.

MR. ETTINGER: Well --

MS. FRANZETTI: Excuse me. Let him

finish his answer.

MR. ETTINGER: Go on. I'm sorry. Are you finished?

MS. FRANZETTI: No. He's not.

MR. SEEGERT: So and also in an urban area there's a very high percentage of impervious surface area. So, again, whatever sediment comes into the system gets washed off and finds its way to the waterway. So, again, the actual loading might not be -- well, probably are not as much as they are in the downstate agricultural areas. But in this case whatever sediment does come in gets washed off and finds its way into the waterway.

HEARING OFFICER TIPSORD: Mr. Seegert, for the record, Attachment 2B to your testimony, correct?

MR. SEEGERT: Yes.

HEARING OFFICER TIPSORD: And the area that you were talking about, the construction area, is that on Page 19?

MR. SEEGERT: Well, it's river -- I don't have the --

HEARING OFFICER TIPSORD: What's the river mile?

MR. SEEGERT: 282.5 right bank.

HEARING OFFICER TIPSORD: Yes. That is, in fact, Page 19 as I'm looking at it.

MS. FRANZETTI: We'll double-check. We have a copy right here.

HEARING OFFICER TIPSORD: And it's labeled construction activities adjacent to this location.

MS. FRANZETTI: Yes.

HEARING OFFICER TIPSORD: Thank you.

MS. WILLIAMS: Do you know who was doing this construction that you're describing in this picture?

MR. SEEGERT: I'm sorry?

MS. WILLIAMS: Do you know who was doing this construction in this picture?

MR. SEEGERT: No, I do not.

MS. WILLIAMS: Did you call the EPA when you saw this?

MR. SEEGERT: No, we did not.

MR. ETTINGER: Are you aware of the Phase 1 or Phase 2 storm water?

MR. SEEGERT: No, I'm not.

MR. ETTINGER: Thank you.

MS. FRANZETTI: For clarification, when you were talking about in your answer the nonpoint source pollution due to the amount of impervious area, that was a separate factor that we're talking in terms of the source of the sedimentation or sediments entering this waterway from this factor where construction activities go on because of development in the area of this waterway; is that correct?

MR. SEEGERT: That's correct. So there's going to be run-off that's nonpoint source. I'm not familiar with the regulations as to know how this is regulated. I look at this and say water coming from -- not from a -- not in the way I think of it as not a point source, whether it is regulated or not regulated, whether they have to get a permit to do this or not. I'm not familiar with that.

MR. ETTINGER: I think we can go on, but you're not testifying here today as an

expert in the Clean Water Act or its controls over any form?

MS. FRANZETTI: I think for the most part that's right, Counsel, except that I would say that from his work on the UAA factors, that I think he could qualify as an expert in terms of review and application of the UAA factors to this waterway.

MR. SEEGERT: And I mean I should, since you brought up the question, there are parts of the Clean Water Act that -- like Sections 316A and 316B that I would consider myself an expert in.

MR. ETTINGER: Okay.

BY MS. DIERS:

Q. I think we did the unpreventable, irreversible. I'm not sure if we got to where I left off. Where is the deleterious sedimentation coming from?

A. Well, I mean I believe I've answered that. My response would be from various impervious areas, it's coming from CSOs, it's coming from the kind of thing referred to in the photographs. So it's kind of from a variety of sources, all of which

I think come under the general category urbanization. It's what you see in an urban area. You have a lot of run-off.

Q. I'm going strike the rest of the question and go to 47.

HEARING OFFICER TIPSORD: Let's take about five minutes here and we can come back and we'll shoot for going until 5:00 o'clock.

(Short break taken.)

BY MS. DIERS:

Q. I'm going to strike 47, 48, and 49 and go to 50.

MS. FRANZETTI: I'm sorry. I'm going to be a bugaboo here just on one. I think it would be helpful to have it as part of Mr. Seegert's testimony. So if you don't mind, I am going to just ask one part of your Question 46 that you did not ask. And that is do you agree, Mr. Seegert, that the deposition of new sediments has decreased over time?

MR. SEEGERT: Well, we partly addressed that. And when I said I didn't

think there was any change that we've observed over time, and one specific piece of evidence that I could point to was something I also mentioned earlier which was in both 2008, 2003, the percentage of sites that we looked at and classified using the QHEI and the sites that we called moderate or severe was 70 percent. The identical percentage both times, both time periods. So in that case, there's a five-year period, 2003 to 2008 where at least just looking at sediment quantity there was absolutely no change whatsoever in the amount of sediment between 2003 and 2008. So based on that plus our own anecdotal observations, I would say no, it's not decreasing.

BY MS. DIERS:

Q. Question 50: On Page 6 you state that extensive studies of the nearby Fox River funded in part by U.S. EPA documented significant and wide-spread adverse impacts on the aquatic communities due to the effects of impounding. Is it your testimony that these extensive studies concluded these impoundments are irreversible and

should Illinois be promoting dam removal as you point out on Page 12 of Exhibit 2 which is occurring in Wisconsin and Michigan?

A. I think there are three separate questions there. It's been a while since I've looked at it, but I don't believe the Fox River studies address the question of or included any findings regarding whether the impacts from impoundments were or were not reversible. In other words, they documented what they saw, but they didn't reach any conclusions as to whether or not they were reversible. As far as the second question is concerned, I would say from a biological integrity standpoint, just from that standpoint, dam removal would generally be a good thing, but there are other factors that someone would need to consider before they recommend a dam be removed or not be removed. And then as far as the question, I think the last one was about should -- I'm sorry. Was Illinois -- should they be promoting? I'm not sure what Illinois should or shouldn't be doing. I think, again, you would have to look on the broad context. I tend to look at things in an ecological perspective, and I think generally that dam and

removing dams is probably a pretty good thing. But I think you'd have to look at each situation individually. There are a number of dams that no longer serve an effective function. They might have been an old mill dam from 100 years ago. They could probably be removed and it really wouldn't affect anyone. On the other hand, there are places where -- There's development all the way around, and if you take it back just the natural course of the river, people used to have waterfront property, now don't have waterfront property. So there are other factors that would need to be considered.

Q. I'm going to go to 52 right here. Explain why you conclude on Page 7 that the impacts on the Chicago Sanitary and Ship Canal and Upper Dresden Island Pool from dams is irreversible?

A. Well, this is fairly easy. I mean unless you remove the dam, the reach is going to continue to be impounded. And all the attendant effects that I talked about before are still going to be present. And I'm not aware of any plans to move the dams in the system. And given the fact that navigation is, as I understand it, a protected use, I don't think that they would be able to

remove -- move the dam. So as far as I'm concerned, those dams are going to have to stay.

Q. Just jumping back a second. When we were talking about the Fox River, do you know how many dams are on the Fox River?

A. No, I don't.

Q. I'm going to go back to 51. You testified that the Brandon Pool is 100 percent impounded and the Dresden Pool is 93 percent impounded. Are the upper and lower Dresden included in these figures, and where did the figures come from?

A. Okay. For Dresden Pool, the 93 percent, we talked about this a little bit before. Based on our estimates, the upper -- only the upper one mile of Dresden Pool, and I'm including both upper and lower, that the pool is 14 miles long. Only the upper part is free-flowing, which means 13 miles free-flowing, divide 13 by 14 and you get 93 percent.

With regard to Brandon Pool, there is no tail water below the Lockport Lock and Dam, so that's 100 percent. The Brandon Pool is only about five miles long, and it's all impounded.

Q. I'm going to strike 53 and go to 54. Have you concluded that factor 5 applies throughout the CAWS and Lower Des Plaines?

MS. FRANZETTI: And now for this question, Lower Des Plaines --

MS. DIERS: I had -- I was going to ask him to clarify the Lower Des Plaines area.

MS. FRANZETTI: All right. I think when you were applying factor 5, weren't you looking at 55? So first clarify that.

MR. SEEGERT: Well, for factor 5, the areas that we looked at, we talked about this at the very, very beginning of this afternoon's session was I'm talking about the south branch, the Chicago River, all of the -- all of the ship canal and all of the Lower Des Plaines River which includes four miles of Brandon Pool and eight miles of Upper Dresden Island Pool. So within the areas I've just mentioned, factor 5 applies.

BY MS. DIERS:

Q. I'm going to skip 55.

A. They would all apply to Brandon Pool

because it has the same limitations as the rest of the ship canal.

Q. And 56, did you rely on any data to conclude that factor 5 is applicable?

A. As I believe was mentioned earlier, we collected QHEI data in previous years. I think '93, '94, 2003, and then most recently in 2008. So all of that information is information that we relied upon.

Q. And then did you compare this data to other impounded rivers?

MS. FRANZETTI: Counsel, I'm not sure. Did he compare the QHEI data from Upper Dresden Island Pool and Ship Canal to other rivers for what purpose?

MS. DIERS: I'm sorry. Can you say that again? I lost my train of thought.

MS. FRANZETTI: I'm not following the question. Because he talked about relying on QHEI data from three separate efforts, I'll call them, '93, '94, 2003, 2008. And then you said did you compare that QHEI data to other rivers. And I'm not sure where that goes.

MS. DIERS: I meant other impounded rivers. I don't know if that helps clarify my question.

MS. FRANZETTI: For what purpose? To see if the QHEI values were comparable as between ship canal, Upper Dresden Island Pool, and some other impounded river?

MS. DIERS: Yes. I think that's --

MS. FRANZETTI: The answer may be no, he didn't do any comparison, but I'm just not sure.

MR. SEEGERT: Well, the question isn't -- or looking at other impounded rivers isn't relevant. It's not what the question is. The question is relative to habitat in rivers, free-flowing rivers, how does this stack up? If you would do what you're implying is you'd say, how does the crappy habitat in this system compare to crappy habitat in other systems? That's not what the QHEI is designed to do. It's designed to establish basically a reference condition and say in a reference condition you have a variety of physical constraints, and you want

to know whether this system or the Rock River or any other river, regardless of whether it has impounded, has barges, doesn't have barges, how it stacks up against what a river should be; because it's those characteristics that make the river good. And you just want to know how good can this particular series of segments be relative to rivers in general, not other impounded rivers.

MS. WILLIAMS: I think that -- Can I do a follow-up? I think that's fine as an explanation of what QHEI does. But this question, you said the QHEI data was part of what you used to conclude that factor five, which is physical conditions related to the natural features of the water body such as lack of proper substrate cover, flow, depth, pools, riffles and the like unrelated to water quality preclude attainment of aquatic life types of uses. So I think it's fair then to ask are the QHEI scores in the Upper Dresden Island Pool significantly different than another impounded river that would be capable of attaining Clean Water Act goals

such as general use water bodies in Illinois.

MR. SEEGERT: Well, you have at least two errors in that question. The fact -- There's the general presumption that other impounded rivers in Illinois attain Clean Water Act goals. The rivers in Illinois were assigned general use basically by default. No one went in and did a structured study, looking to see whether or not they're good, bad, or indifferent. Somebody, I don't know whom, probably some bureaucrat waved a magic wand and said --

MS. FRANZETTI: Easy, easy.

MEMBER MOORE: There's a lot of bureaucrats in this room.

MS. FRANZETTI: Danger.

MS. WILLIAMS: Let him answer, Susan.

MR. SEEGERT: No. But somebody somewhere decided they were general use. They didn't go through the structured assessment that we have that we're trying to make here. So we don't know how any of those other systems, we don't know if there are any other impounded water bodies in Illinois

which do or do not attain Clean Water Act goals because nobody has looked.

MS. WILLIAMS: Nobody has looked?

MR. SEEGERT: Nobody has looked.

MS. WILLIAMS: Do you believe that all impounded rivers are unable to attain Clean Water Act water life use goals?

MS. FRANZETTI: I don't think that's what he said.

MS. WILLIAMS: No. That's my question.

MR. SEEGERT: I didn't say that. But I said in Illinois no one has looked. I'm not aware of a UAA that's been done on another medium to large river in Illinois.

HEARING OFFICER TIPSORD: Mr. Seegert, isn't it true you would only do a UAA analysis if you were demonstrating that it's not a fishable stream? Isn't that correct? I mean isn't that when you do a UAA is to try and -- you can't meet fishable swim rule, so you do a UAA to see what you can meet? Isn't that correct? So if it's already fishable/swimmable, then nobody would do a

UAA. So nobody would do QHEI scores?

MR. SEEGERT: Right. But in this case it's the chicken and the egg. You're assuming that it's fishable/swimmable because somebody wrote down on a piece of paper that it was general use. And I'm saying nobody had a basis, an objective scientific basis for concluding that the Rock or Iroquois or any other river was fishable/swimmable as defined in part of Clean Water Act goals. Illinois just hasn't gone through that process. Most states are not -- having indictment against Illinois. Most states haven't. Most states said, jeez, we want to show that our rivers are great. And so we're going to call them general use or some other category. EPA, U.S. EPA has basically come back to the states and said prove it. Prove this to us. And now we're going to have to go through and look at a lot of individual water bodies, and I'm sure you will find some in Illinois -- I mean I'll offer up the Kankakee. The Kankakee is partly impounded, but given the small amount of impoundment, I

would expect that it meets Clean Water Act goals. But I don't know that for certain because no one has done a UAA type assessment of the Kankakee River.

MR. ETTINGER: Have you looked at the portion of the Kankakee that was impounded?

MR. SEEGERT: Yes.

MR. ETTINGER: Does that portion of the Kankakee have a balanced fishery?

MR. SEEGERT: The area immediately upstream of the dam in Wilmington, I would say, probably does not, but that's a very limited area.

MR. ETTINGER: What about the area upstream of the Dresden Island --

MS. FRANZETTI: I couldn't hear you. What about the area?

MR. ETTINGER: What about the area upstream of the Dresden Island Lock and Dam in the Kankakee?

MR. SEEGERT: We haven't looked at the entire part that's impounded. The part that we have looked at I would say probably does not meet Clean Water Act goals.

MR. ETTINGER: And where did you look at that?

MR. SEEGERT: It's within roughly the lower one mile. Unfortunately, Mr. Vondruska is not here. He could give you chapter and verse, but I know we have two locations in the extreme lower part of the Kankakee. But sitting here today, I can't say exactly where they are.

MS. WILLIAMS: I need to get back to this idea that no one has looked at the other impounded rivers. Is that okay?

MR. SEEGERT: Sure.

MS. WILLIAMS: Are you familiar with the 305(b) report and the 303(d) list?

MS. FRANZETTI: Which year.

MS. WILLIAMS: The concept of such a report.

MS. FRANZETTI: And also referred to at times as the impaired water study.

MR. SEEGERT: I guess the answer -- the answer is I'm aware of them. I wouldn't say I'm familiar with them.

MS. WILLIAMS: Is it your

understanding that as part of that process, the Agency assesses the waters of the State for attainment of the Clean Water Act goals?

MR. SEEGERT: My --

MS. FRANZETTI: If you have an understanding of what they do.

MR. SEEGERT: Again, my -- as I understand it, they go through a process, but it's not very detailed. It's kind of high altitude. They're not going to it to the level that you would do for a real use attainability study.

MS. WILLIAMS: Do you know if any impounded rivers in Illinois are assessed as attaining Clean Water Act goals?

MR. SEEGERT: I don't.

MS. FRANZETTI: Wait, Counsel. Clarification. Are you asking whether the Agency has assessed those waters using the UAA factors or no?

MS. WILLIAMS: No, I'm not. No. I'm not asking about that.

MS. FRANZETTI: Just separate and apart from that?

MS. WILLIAMS: I think he's implied that unless you've done a UAA you couldn't possibly know if Clean Water Act goals are attainable. And I'm asking him whether there are impounded rivers in Illinois that are currently attaining those goals because they are studied through that process, otherwise they would have to be put on the 303(d) list.

MS. FRANZETTI: And by that process, the -- what process are -- that's what I'm asking. What process are you referring to? Something other than the UAA process?

MS. WILLIAMS: The use assessment process, aquatic life use assessment process.

MS. FRANZETTI: That the Agency is saying it conducted when it is doing its 305(b) 303(d) list?

MS. WILLIAMS: Correct.

MS. FRANZETTI: I'm not sure you can establish that with this witness because of his lack of any familiarity -- detailed familiarity with what you all do to prepare that list.

MS. WILLIAMS: But if he can try to

answer it.

MR. SEEGERT: Based on what admittedly is a limited understanding in that process, I don't think that process is rigorous enough to lead to an accurate determination as to whether or not there's true attainment.

MS. WILLIAMS: So you think that waters in Illinois that are not placed on the 303(b) list may actually be impaired for the Clean Water Act?

MR. SEEGERT: I would be very surprised if they're not. And I mean let me say one other thing kind of related. I know that the State doesn't have -- they don't have a -- we're talking about impounded waterways, so presumably talking about at least some larger water bodies. The State doesn't even have a fish IBI to assess those large water bodies. If they don't have a tool, how could they possibly accurately assess it, assess such water bodies?

MS. WILLIAMS: I think I'm finished with this line. We can move on.

BY MS. DIERS:

Q. Fifty-seven: Do all natural large rivers have riffle run segments in each sampling reach or are some rivers predominated by pool and other nonriffle habitats? And I'll just break it up there. I'll just stop there and ask the remaining questions.

A. Okay. First, as I mentioned before, I wouldn't characterize the Des Plaines River as a large river. And -- But in -- then as a follow-up, rivers the size of Des Plaines and ones that are even considerably larger have some amount of riffle run habitat. I've already mentioned the Fox, the Kankakee, even rivers the size of the Wabash River in Indiana have riffle pool run sequences. They differ not in not having them, but how far apart they are, but they have them.

Q. What about the following question: Are these pool and other nonriffle habitats and factors such as cover then the determining factors for fish species diversity?

A. Well, as I said, these -- all of the water bodies you're referring to will have riffle run segments, so, you know, the premise of that question is will something else be the determining

factor? And I'm saying no, that it's going to be the -- it's the collective habitat of which riffle run is part of it, but pools and other areas are also part of it.

MR. ETTINGER: How close do the riffle run segments have to be to each other?

MR. SEEGERT: Well, as rivers get larger, you have more -- a higher and higher percentage of fishes that are not necessarily highly migratory, but which kind of, I'll say, wander around. That's not very scientific, but basically do wander around a lot. So what happens is they end up in these areas. I'll give you an example. On the Wabash River, there's a decent riffle in the middle Wabash roughly every 20 miles, and then when you get into that riffle habitat, you have this really, really diverse fish community. Then you have this intervening 15, 18 miles which is kind of ho-hum. It's got bass and blue gills and a lot of other things, but it doesn't have the thing that depend on the riffle. So one way or the other, the fishes that depend on the riffles

are able to find them even when they're spread out like in that example roughly 20 miles apart. And another example is I've worked on the lower Missouri. The Missouri River is obviously one of the largest rivers in the country. There's a place called Pelican Island that's basically on the outskirts of St. Louis. There's a big riffle shole complex there, it's more of a shole than a riffle, but the water flows rapidly over these hard substrates, and that thing is just jammed with fish that are otherwise unusual in most of the Missouri River. Some people think that the Missouri River is very turbid and not supporting smaller fishes that require this kind of habitat, but even on a river the size of the Mississippi, you still have that component. It's still there.

HEARING OFFICER TIPSORD: Missouri.

MR. SEEGERT: I'm sorry, in the Missouri.

MR. ETTINGER: So the Big Mighty has a few good spots and that's enough to enable it to overcome its sediment over the rest?

MR. SEEGERT: I didn't say that at all.

MS. FRANZETTI: Albert said that.

MR. SEEGERT: And what happens, again, you're dealing with -- you have to -- you have to think about what are the expectations. The expectations for the Missouri River are very different because now we're talking about a very large -- by definition a lot of people now call those great rivers. They say the Ohio, the Mississippi, and the Missouri are great rivers. And now you have to look at the box for your expectation in that kind of system. And so in that kind of system, one of the things you want to see are what we call big river chubs. The mackerel hypoxis chub we like to see. We like to see them. And they hang out in those areas and -- but they can hone in on a few areas so that overall the Missouri River gets its quota of what I would call the big river chubs. But most of the rest of it has a different set of expectations. But you collectively they all

go in to assessing what should be there. That's really what you're trying to do. You're saying, well, what should be there and how far does the system deviate from what should be there and what's preventing it from going from where it is to where it should be? And I'm saying in this system, it's the habitat that is -- and all these things that are part of it that's preventing it from going where it is to where we would all like it to be.

CHAIRMAN GIRARD: Could I ask a question then? How do you decide what should be in a system that's 70 percent manmade?

MR. SEEGERT: Well, you basically have to lower the bar. And actually the Agency, I think, is -- they're on the right track in the sense that they came up with three categories: An A, a B, and an Upper Dresden Island Pool use. And then you said Upper Dresden Island Pool use should include all the kinds of fishes that represent a balanced -- they didn't use that word, but you have tolerance, moderately tolerance, and

intolerance. They're saying it's got this whole gamut. And then as you get further and further away from that, then eventually when you get to Class B that's dominated by tolerance. And so you look at what the expectations are and say, well, what could live here. And if the answer is because of habitat or other limitations, only tolerant species or predominantly tolerant, then that's how you would set up the use, basically as they did for Class B. I'm not saying that it's a perfect class, but conceptually that makes perfect sense. You basically say where do I need to set the bar, and then you set the bar accordingly.

MS. FRANZETTI: Does that answer your question?

CHAIRMAN GIRARD: Thank you. That was a general question.

HEARING OFFICER TIPSORD: Miss Diers?

BY MS. DIERS:

Q. I think we're on Question 58. Do you foresee some limited restoration short of removing the locks and dams that could enhance the Upper

Dresden Island Pool? For example, could restoration of littoral areas increase habitat heterogeneity and create habitat that could support some of the species associated with waters that attain the Clean Water Act aquatic-life goal?

MS. FRANZETTI: Did you purposely drop the minimally attained?

MS. DIERS: I don't like that word, but --

MS. FRANZETTI: No. That's why I'm asking, because the witness has some issues, too, with what the heck does that mean.

MS. DIERS: I don't like that word, so.

MS. FRANZETTI: Okay. Fine. So you're not asking it with the minimally, just water that has attained the Clean Water Act goals.

MS. WILLIAMS: I like it better than marginally.

MR. SEEGERT: Okay. Well, first of all, what would limited restoration consist of? Give me some examples.

MS. DIERS: I thought the second part

of the question I did ask. For example, could restoration of the littoral areas. Did that help with the first part?

MR. SEEGERT: Okay. We've heard some testimony to the -- for example, from Dr. Thomas to the effect that, yeah, we could increase cover, we could do some other things and that would lead towards obtainment of aquatic-life goals. I don't see it that way. Again, the problem is that the littoral zones, and by that I take it you're talking about the near shore areas along river? Okay. That's not where the limitation is. The limitation is in these fast water shallow areas; i.e., riffles. Think of this as -- the limitation is the lack of riffles. And think of the analogy of the chain is only as strong as its weakest link. Our weak link here is riffle. You can improve those other areas just like you could strengthen the other links in the chain, but the chain still breaks unless you fix the weakest link. This is not going to affect the weakest link. So why is that? Well, that's because you've

indicated that in Upper Dresden Pool, according to your definition, you want to see all the species, you want to see not only tolerant, not only moderately tolerant, you want to see intolerant species. Those intolerant species, most of them, a disproportionate number of them, need and inhabit riffle areas. If you don't have riffle areas, you're not going to bring in that part of the fish community. So enhancing things along the shore line, yes, you might have more bass and you might have more blue gills, but you're not going to get the balanced fish community that you're saying is part of your definition.

MR. ETTINGER: Only God can make a riffle?

MS. FRANZETTI: Objection to form, Counsel.

MR. ETTINGER: Is it possible to make a riffle?

MR. SEEGERT: In a system that's -- with the lack of gradient, I don't know. I assume engineers could do it if you gave them

enough money, infinite time and money they probably could construct a riffle.

MR. ETTINGER: But you've never been involved in the construction of a riffle and you don't know how much it would cost?

MR. SEEGERT: I've been involved in small stream restoration, have in idea what they cost, and given the size of this system, again, you're talking about major, major dollars here.

MR. ETTINGER: Well, what do you mean by major, major dollars?

MR. SEEGERT: Pardon?

MR. ETTINGER: What do you mean by major, major dollars?

MR. SEEGERT: I think we're talking at least in the tens of millions, probably the hundreds of millions, and that's even if it could be done. Again, given -- you only have so much gradient to work from. Basically you have to raise the water up, shoot it down through a riffle. I don't know that this even could be done. Maybe there's some massive engineering project that could be,

but even if it is because of the scale, all the restoration studies that I've been aware of on relatively small, relatively small systems, right now the city of San Antonio wants to restore eight miles of the Colorado River. The price tag that they've assigned to restore eight miles of the Colorado river is $240 million.

MR. ETTINGER: What town?

MR. SEEGERT: San Antonio.

MR. ETTINGER: California River goes through San Antonio?

MR. SEEGERT: Yes, it does.

MR. ETTINGER: Texas?

MR. SEEGERT: Texas.

MR. ETTINGER: Okay.

MR. SEEGERT: And that's a system that's in the size ballpark, actually, I mean having collected fish in it, if anything it's larger. The drainage area is certainly larger. We're talking about here not a heck of a lot larger, but it's in the ballpark. So when you get into talking about systems of this size, talking about tens or hundreds of

millions of dollars, if it can be done at all.

MS. WILLIAMS: I'm trying to understand, Mr. Seegert, didn't you testify earlier that you don't know whether the Lower Des Plaines River would have riffles in the absence of the impoundments? Is that what you testified earlier, Greg? If the dams were gone, do you know if there would have been riffles or not?

HEARING OFFICER TIPSORD: I believe he you compared it with the Kankakee.

MR. SEEGERT: Well, what I said was I would expect that if a 14-mile section that you probably would have a riffle based on the riffle distant sequence that I've seen in other areas. And then one of you followed up and said, well, what about in Upper Dresden Pool. And at that point I said, well, I'm not sure within upper, just in Upper Dresden Pool whether there would or would not be.

MS. WILLIAMS: Because it's very low grading, correct?

MR. SEEGERT: Well, again, I'm not

sure of the exact -- it's low grading. I don't know if it's very low grading.

MS. WILLIAMS: Would you expect that a low gradient river of the size of Upper Dresden Island, you know, size meaning not the length Upper Dresden Island Pool, but that size of a river, would have different fish assemblages than a high gradient river?

MR. SEEGERT: Well, you'd have to be -- Again, now, we're talking about low versus high, and I don't know what you mean by low or high.

MS. WILLIAMS: I want to understand if it's necessary to have high gradient and lots of riffles to attain Clean Water Act goals in your opinion.

MR. SEEGERT: Well, let me try to answer it a different way. Because that --

MS. FRANZETTI: I would say, Counsel, that he has answered that question.

MS. WILLIAMS: Well, I don't understand.

MS. FRANZETTI: In his prior testimony with respect to the Missouri, for example.

But I'm, you know --

MS. WILLIAMS: Was it yes or no? I don't know.

MR. SEEGERT: Okay. Well, let's use Ohio as our example, because they've done more of this assessment than any of the other midwestern states. So we're not talking about the Rocky Mountains that have really high gradient. And Ohio doesn't make a distinction. They don't -- they don't say, okay, this river is low gradient, therefore, it's not going to attain. They look at an -- the overall condition within that ecoregion, said this is what rivers, and this ecoregion of Ohio should attain. They don't say low gradient and high gradient, they say just rivers. And they break in their class boatable. We talked about -- We heard testimony months ago on boatable. And the only place they make an exception is in the Erie Lake Plane where they say there's been so much channelization that basically they've discounted everything and made almost everything up there modified. But everywhere

else in the state, regardless of what the gradient is, they say this is the expectation for rivers. I don't see where this system falls outside that general bounds of the rivers that comprise 95 percent of Ohio.

MS. WILLIAMS: I think that makes sense. But what's troubling me is your answer to the previous question that Ms. Diers presented was that riffles are the key to the problem in the Upper Dresden Island Pool.

MR. SEEGERT: They are. They are the key to the problem. That's why you don't have the intolerant fish -- your problem is you've got a definition what the system won't support. If you want, you can change the definition. You can say moderately tolerant and tolerant, but then you have to go down to a lower use classification. This system is not going to attain Clean Water Act goals by any definition that I can think of.

MS. WILLIAMS: Because it --

MS. FRANZETTI: Counsel, I'm going to now object to the tag-teaming. One of you

should be asking the questions, and particularly given the hour. I let it go a little bit, but now I'm going to object.

MS. WILLIAMS: That's fine.

MR. ETTINGER: So can I just ask would you modify the Ohio habitat method that we're talking about so that if there was no riffle there should be a zero habitat score?

MR. SEEGERT: I'm sorry? Did EA change that?

MR. ETTINGER: I'm just asking would you --

MS. FRANZETTI: He's asking you hypothetically.

MR. ETTINGER: Hypothetically if you were going to use the Ohio model and you found -- you were going to look at this system and you found that there was no riffle in a system, you would then automatically assign it a subfishable swimmable category?

MS. FRANZETTI: Objection to the extent if you are characterizing his testimony. So I don't think you are proper when you're characterizing it.

MR. ETTINGER: I wasn't. I asked a question, Counsel.

MS. FRANZETTI: Is the question would he modify Ohio systems?

MR. ETTINGER: Ohio has a system here, it counts riffles as one of the factors. Do we agree on that?

MR. SEEGERT: Yes.

MR. ETTINGER: Okay. Would you, if you were free to change the system, change the system such that, one, it did not have riffles it would automatically have a subfishable/swimmable rating?

MR. SEEGERT: No.

MR. ETTINGER: Why not?

MR. SEEGERT: Because riffle, although it's an important component, it's not necessarily going to be the only component. And also if -- so you do have to look at the habitat overall and have an understanding of what the requirements of different fishes are. There are some areas that although they might not be a riffle, which is defined as kind of a high grading area where the surface

is broken as opposed to a run is also high gradient, but you don't have the kind of the white water on top. If you have enough run areas, decent run areas, they can, for some species, mainly the redhorse, can function as riffles.

MR. ETTINGER: Go on.

BY MS. DIERS:

Q. I'm going to strike 59 and go to 60.

On Page 8 states in 1993 and 1994, QHEI scores were derived at 169 locations in the Lockport, Brandon Road, and Dresden Pools and were on average found to be low (mean scores in the 40s), demonstrating that habitat generally was of poor quality.

A, why did you, and I'm going to say group the data from these four stretches to be included in the average?

A. Because I wanted to know on average what was the habitat like.

Q. B, what was the average highest and lowest values of the different segments at Lockport, Brandon Road, and Dresden Pools (above and below I-55)?

A. Okay. Let's --

MS. FRANZETTI: Counsel, just for the record, he's going to, I think, try and explain this in a bit more detail. But what the average is will vary somewhat from company to company that did the QHEI.

MS. DIERS: Okay.

MS. FRANZETTI: So I think you'll try and explain that in a little more detail giving the average -- I'm sorry -- giving the high and the low.

MR. SEEGERT: Okay. In Lockport Pool in 1993, two companies scored the QHEI. The company I represent, EA, was one of those. Our average score in Lockport Pool was 44, and the other company, their average score was a 42. The range of scores that EA reported was from 31.5 to 57.5. The other company had a little bit tighter range. They went from 35 to 49. And the other company was -- at that time it was ESE, and I can't even remember what that acronym stands for. They're out of St. Louis. They have a different name now. I believe it's Mach

Tech. Also in Lockport Pool, but now we're talking about 1994, we have three contractors: The two that I mentioned and another one, LMS. I do know what LMS: Lawler, Matusky & Skelly. And they don't exist anymore. They were bought up by somebody else. And there the average score that we reported was 45 with the range of 32 to 56. So very similar to what we reported in '93. ESE in '94 reported a little bit lower scores than reported in '93, an average of 41 with the range from 29 to 53.5. And then the third contractor, LMS, reported an average of 46 with the range of 33 to 56. So to summarize, in all -- or in both years and all three contractors, we had averages in the low 40s with ranges from basically in the 30s to the lower 50s. Okay. Brandon Pool in '93, again, there's two companies. We reported an average of 54 with a range basically from 50 to 65. The other company, ESE, an average of 51 and range of 37 to 79. Oh, and I should mention, this is important. When this was done it was, of course, using

the version of the QHEI that was available to use at that point in time. That QHEI has been modified both by Ohio EPA and also Mr. Yoder's group, and the result of those modifications would result in a general lowering of the scores compared to what they were. But this was done back in 1993, so we use the QHEI version that was available in 1993. And then for Brandon Pool in '94, again, it was the same two companies. We had an average of about 49 with the range of 27 to 66. The other company had a -- I guess they only did one location, because I see that they had a score, an average of 35.5, and there's no range. It was just 35.5. So apparently they only did one location. And Brandon Pool. And then in Dresden Pool, and in this case Dresden Pool includes both upper and lower Dresden Pool, 1993 we reported an average of 53 with the range of 40 to 69.5. ESE reported an average of 48 in a range of 39.5 to 68, and -- I'm sorry. Strike that. The -- I read the values from ESNE from 1994. Their 1993 average was 51 with the range of

42 to 68. And then still in Dresden Pool, but now in 1994, we have four companies. EA reported an average of 55 with the range of 40 to 69; ESE, those numbers I erroneously gave, 40 now for 1994, it's 48 with the range of 39 to 68; and the other company LMS in 1994 for Dresden Pool had an average of 49 with a range of 42 to 56. So everyone in Dresden Pool using the QHEI that prevailed at that time was scoring right around 50, a little plus, a little minus, but right around 50. And the occasional higher scores, meaning 60 or above, were consistently associated with either the Brandon tail waters or the tributary mouth locations.

BY MS. DIERS:

Q. Sixty-one: Are the habitat data collected by the EPA Engineering in 1993-1994 part of the Lower Des Plaines UAA report and the record of this proceeding? And then what about the data collected in 2003?

MR. SEEGERT: Those, according to what -- Mr. Vondruska looked this up. And according to what he told me, those data were

provided as part of Exhibit 36.

MS. FRANZETTI: Nope. I don't think so.

MR. SEEGERT: I guess --

MS. FRANZETTI: Give us a second, Counsel.

MS. WILLIAMS: Do you want to come back to this one tomorrow?

MS. FRANZETTI: Unless this is wrong, but the exhibit list for this -- I think 36 is meeting minutes from the Lower Des Plaines work.

MR. SULSKI: Would it be Exhibit 30, this?

HEARING OFFICER TIPSORD: No. That's the Army Corps of Engineers map.

MR. SULSKI: All the scores were on here.

MS. FRANZETTI: We believe, now I'm not sure about these other two companies, but at least the EA in '93/'94 sampling QHEI scores, I think that was included in Exhibit 32. That's entitled Qualitative Habitat Evaluation Index Scores in the Upper

Dresden Island Pool and Des Plaines River. Remember that -- I've got a piece of it here.

MR. SEEGERT: I believe Mr. Essig prepared that.

MS. FRANZETTI: Do you remember? It's hard for us to say what's included with things you did, but it does reference some EA QHEI information from the '93 and '94 time period. It may not cover each one of these pools: Lockport, Brandon, and Dresden in that exhibit. We're not sure just what was used.

MS. DIERS: Do you know if the '93/'94 is it in Attachment A?

MS. FRANZETTI: Excuse me?

MS. DIERS: The '93/'94 data I'm asking about, do you know is it in Attachment A, the UAA report?

MS. FRANZETTI: Oh, is it in -- I don't know off the top of my head. That's what you're referencing here in your Exhibit 32.

MS. DIERS: That's what we're thinking. We're just trying to --

MS. FRANZETTI: I don't think either Greg or I could say off the top of our heads. It's been too long to look at the UAA report attachments.

HEARING OFFICER TIPSORD: I read it every night before I go to bed.

MS. DIERS: And we talk about 2003. Is it in the record?

MS. FRANZETTI: I'm sorry?

MS. DIERS: Is 2003, that data, is that in the record?

MS. FRANZETTI: It is referenced in Mr. Seegert's report, and to some extent in his actual testimony, Exhibit 366, and his report that is attached to the Exhibit 366. If your question is asking are the actual, you know, scoring sheets.

MS. DIERS: Right.

MS. FRANZETTI: No. I don't believe the scoring sheets themselves are in the record.

MS. DIERS: Okay.

BY MS. DIERS:

Q. I'm going to strike Question 62. I'm going to go to 65, and I might back up. But I think if I start with 65 it'll help put it all in content. Sixty-five: You testify on Pages 8 through 9 that these low scores are a strong indication that a majority of the habitat in the Upper Dresden Pool is not sufficient to support Clean Water Act aquatic-life goals. I'm going to jump back up to 63 and first start with what do we mean by low?

MS. FRANZETTI: First answer 63.

MR. SEEGERT: Low scores are those below a 60.

BY MS. DIERS:

Q. And then 64, you testify on Page 8 that the QHEI scores were below 60 in most of the Dresden Pool. Were there any above 60? And, if so, where?

A. Yes. The Brandon tail water area score was greater than 60.

Q. I'm going to go to 66. You call habitat in the Upper Dresden Pool less poor, but aren't the scores you generated generally considered fair in a narrative sense as stated in the QHEI manual?

A. In this case I was using the phrase less poor for comparison purposes between Upper Dresden Pool and the Brandon Pool and the Sanitary and Ship Canal areas. The habitat in upper Dresden Pool is somewhat better than those areas, and I'd say fair is a -- I was going to say fair is a fair -- fair is an appropriate characterization of that habitat, but I would note that fair does not equate to Clean Water Act attainment.

Q. So going back to 65, that part of the question, how much good quality habitat is required to support a balance aquatic-life population in the Upper Dresden Islands Pool?

A. Well, I'm not aware that anyone has established a precise cutoff. I would say that in general you would need something like 50 percent or more to be in good habitat. I base that on the fact that Mr. Rankin in his publication talking about how to do QHEI scoring says that fish respond sort of in general to what's going on. So that means that one bad area doesn't make the whole area bad and one good -- conversely, one good area doesn't make the area good. It's -- That's kind of why I wanted to look at average to begin with. But so I would say

you'd need to have about 50 percent or more be good habitat, and, in this case, we're talking about less than 10 percent being good habitat. So we're well below what I believe is an appropriate cut-off.

Q. I'll strike 67. What cover scores average in the Upper Dresden Pool? This is 68, the second part of it.

MS. FRANZETTI: You're asking the second question in 68?

MS. DIERS: Yes. What do cover scores average in the Upper Dresden Pool.

MR. SEEGERT: The cover scores in Upper Dresden Pool in 2008 range from 4 to 15, but most sites scored between 8 and 12. So, you know, probably the overall average would be around 10.

BY MS. DIERS:

Q. So is cover a limiting factor in the Upper Dresden Pool, getting back to the first part of the question?

A. I would say that cover is one of the contributing factors to lower QHEI scores in Upper Dresden Pool.

Q. I'm going to go on to 69. Do you have

a citation for your statement on Page 10 regarding the 45-point cutoff that, under Ohio EPA's use classification protocol, would automatically qualify the Upper Dresden Pool as a limited or modified use category? And what do you mean by automatically qualified?

A. This statement was based on information provided in Mr. Rankin's 1989 paper where he sets forth the rational for doing the QHEI, and he provides a series of flow charts and associated rationale. And if you follow those flow charts, you see that when streams have a QHEI below 45, they're always classified either as limited resource water or modified warm water habitat, unless the biological scores for such a stream already show it to be an attainment.

Q. I'm going to strike 70, I'm going to strike 71.

MS. FRANZETTI: Are you striking 70?

HEARING OFFICER TIPSORD: Yes.

MS. FRANZETTI: And 71?

MS. DIERS: 70 and 71, yes. I think I'm going to skip 72. I think we've talked about it.

MEMBER RAO: You thought you'd save 100 for tomorrow?

HEARING OFFICER TIPSORD: You know what, why don't we go ahead and call it a day. It's ten to 5:00, and you're obviously looking at striking some more questions.

MS. DIERS: Thank you.

HEARING OFFICER TIPSORD: It might be more comfortable to do that in your hotel room tonight. 9:00 o'clock tomorrow morning, same room.

(At which time the hearing was continued to November 10, 2009, at 9:00 a.m.)

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STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

I, LAURA MUKAHIRN, being a Certified Shorthand Reporter doing business in the City of Chicago, Illinois, County of Cook, certify that I reported in shorthand the proceedings had at the foregoing hearing of the above-entitled cause. And I certify that the foregoing is a true and correct transcript of all my shorthand notes so taken as aforesaid and contains all the proceedings had at the said meeting of the above-entitled cause.

LAURA MUKAHIRN, CSR
CSR NO. 084-003592