BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

FOX WATERWAY AGENCY,	)	
	)	
Petitioner,	)	
	)	
vs.	)	PCB 97-151
	)	(Variance-Water)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

The following is the transcript of a hearing held in the above-entitled matter, taken stenographically by Kim M. Howells, CSR, a notary public within and for the County of Cook and State of Illinois, before June C. Edvenson, Esq., Hearing Officer, at 70 East Main Street, Lower Level, Chicago, Illinois, on the 6th day of May, 1997, A.D., commencing at the hour of 10:15 a.m.

A P P E A R A N C E S:

HEARING TAKEN BEFORE:

ILLINOIS POLLUTION CONTROL BOARD,
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601
(312) 814-6930
BY: MS. JUNE C. EDVENSON, ESQ.

GARDNER, CARTON & DOUGLAS,
321 North Clark Street
Suite 3400
Chicago, Illinois 60610
(312) 644-3000
BY: MR. ROY M. HARSCH

Appeared on behalf of the Petitioner.

ILLINOIS POLLUTION CONTROL BOARD MEMBERS PRESENT:

Mr. Anand Rao

Ms. Marile McFawn

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY MEMBERS PRESENT:

Ms. Margaret P. Howard

Mr. Bruce J. Yurdin

Mr. Robert G. Mosher

I N D E X

E X H I B I T S

(Petitioner's Exhibit Nos. 1 through 16 marked for identification, 5/6/97, prior to the commencement of this hearing.)

MS. EDVENSON: Good morning and welcome. This is a contested case hearing being conducted by the Illinois Pollution Control Board. The case number is PCB 97-151, and it is entitled Fox Waterway Agency vs. The Illinois Environmental Protection Agency. The instance proceeding is in the nature of a variance petition.

My name is June Edvenson. I'm the board's hearing officer for this case. I will now request that counsel for the parties enter their appearances for the record.

MR. HARSCH: My name is Roy Harsch with the law firm of Gardner, Carton & Douglas. I'm appearing on behalf of petitioner, the Fox Waterway Agency.

MS. HOWARD: My name is Margaret Howard. I'm an assistant counsel with the Illinois Environmental Protection Agency, and I represent the agency in this hearing.

MS. EDVENSON: Thank you.

Have counsel for the parties filed their appearances with the court in writing?

MR. HARSCH: Yes, we have.

MS. HOWARD: Yes.

MS. EDVENSON: Now, I'd like to ask any other representatives of the parties that are in attendance to identify themselves for the record.

MS. KABBES: I'm Karen Kabbes, the executive director of the Fox Waterway Agency.

MS. HUFF: I'm Linda L. Huff with Huff & Huff, Incorporated. We're an environmental consulting firm.

MR. HODGES: My name is Michael Hodges. I'm with Solomon TIC representing Solomon Technology.

MR. YURDIN: Bruce Yurdin with the Illinois Environmental Protection Agency.

MR. MOSHER: Bob Mosher, Illinois EPA.

MS. EDVENSON: Thank you very much.

Let the record reflect that there are no other persons in attendance at our hearing today, members of the public specifically.

And with us today from the board we have Board Member Marile McFawn.

MS. McFAWN: Good morning.

MS. EDVENSON: And we also have with us Anand Rao, head of our technical unit. Thank you for coming.

All right. Are there any preliminary motions or stipulations?

MR. HARSCH: I'd like to make a brief opening statement, if I could, and then I will also be -- I've introduced -- I provided you with a pre-marked exhibit list and a copy of all of our exhibits, and I've also provided those exhibits to -- a list to Margaret Howard. I'd like to have those entered into evidence at the appropriate point in time.

MS. EDVENSON: Thank you, Mr. Harsch. We will then turn to the order of the hearing.

Let's start with petitioner's opening statement.

MR. HARSCH: Thank you.

OPENING STATEMENT

by Mr. Harsch

The Fox Waterway Agency is here before the board, and we greatly appreciate the interest shown to have board member McFawn and staff member Anand Rao here.

We will be presenting three witnesses

today; Karen Kabbes, executive director of the Fox Waterway Agency, Linda Huff, principal from Huff & Huff Incorporated, and Mike Hodges who wears a number of hats. And I'm not sure if you're here on behalf of Solomon or The Industrial Water Company of Wyoming.

My three witnesses will be presenting the testimony into evidence in support of a variance request that we have filed on behalf of the agency. We are seeking relief principally from the agency's position of the 15 milligrams per liter total suspended solids -- and we may be referring to total suspended solids also as TSS throughout this morning -- limitation on the discharges, the return water, incidental water from its dredging activities.

The agency has imposed this limitation in permits, and we've been told that they will continue to pose that limitation. I'm not sure that that is an appropriate use, the 15 milligram per liter TSS limitation found in Section 304.124, as the board has stated in at least one other variance petition on behalf of the Army Corps of Engineers that had never enacted an effluent limitation for dredging.

We are also seeking relief from Section 304.105 from causing or contributing to the exceedance of a water quality standard from materials that may be contained in the dredge return water and the effluent limitation for phosphorous found at 304.123.

We are also seeking relief from Section 304.105 as it applies to un-ionized ammonia and phosphorous; 304.123(B) as it applies to phosphorous, 304.124(A) as it applies to TSS, and 304.106 as it applies to the prohibition of discharging any effluent which contains settleable solids and requires that effluent turbidity to be reduced to below obvious levels as well as any other relief which the board may deem necessary.

And in that vain, we may propose, depending upon what the outcome of today's hearing is, a variance from Section 302.203, offensive conditions, which is a prohibition in a water quality numerical standard -- non-numerical standard that the waters of the state be free from sludge or bottom deposits and turbidity, amongst other things, of other than natural origin and that no mixing be allowed to comply with water quality standard provisions. And

that --

MS. EDVENSON: Excuse me, Mr. Harsch. May I ask you just at this point, do you refer to Section 302.203 in your petition?

MR. HARSCH: No, I do not. I'm saying in our position we refer to such other relief as the board may deem necessary, and depending upon the testimony that's presented today, we may be -- that may be one of the provisions that we'll specifically ask for the relief from.

MS. EDVENSON: Thank you.

MR. HARSCH: All of this relief is necessary as you will hear this morning because when the Fox Waterway Agency carries out its legislative mandate to maintain the Fox Waterway and the channels -- lakes and channels there, it is required to do significant amounts of dredging, and it has been unable to comply with the 15 milligram per liter total suspended solids limitation that the agency has imposed in its permits.

This is not something that is unique to the Fox Waterway Agency. We think that anyone who is dredging in Illinois in practice cannot comply to the 15 milligram per liter standard.

As Miss Kabbes will testify, the agency currently utilizes a confined dredged disposal area called Ackerman Island. It has a system permitted but not under construction referred to as R15. It has another confined dredge disposal area under consideration L10.

If these are required to be built, they will be the same situation as Ackerman Island in that they will need relief from the 15 milligram per liter suspended solids limitation and the other provisions referred to.

They are exploring the use of innovative options so that they will not have to construct additional confined dredged disposal areas, and she will testify to the use of geotubes to construct essentially wetland areas that would function, during the life while they're being built, as a confined dredged disposal site, and those geotubes could be located in Grass Lake, Nippersink, N-i-p-p-e-r-s-i-n-k, Pistakee, P-i-s-t-a-k-e-e, and Fox Lakes.

In addition, the reason why Mr. Hodges is here today is to describe an additional mechanical dewatering system that the agency would like to try

out and utilize in a channel. While the final site has not been chosen, in all probability it will be Holly Channel. And that system will return the dredged water back into Holly Channel and will, likewise, need relief.

We have clarified in our response to the agency's variance recommendation, and I might say our petition is Exhibit 1 including all of the numerical attachments thereto.

The agency's variance recommendation I have marked as Petitioner's Exhibit 2, and then our response to the agency's variance recommendation is Petitioner's Exhibit 3.

In our variance petition, I may not have done, obviously, an adequate job of describing the proposed sites that I've just outlined because in the agency's variance recommendation, they have recommended relief specific to only Ackerman Island, a geotube site in Grass Lake and recommended a denial of the requested variance relief as it applies to the mechanical dewatering system.

In our response --

MS. EDVENSON: Can you speak up, Mr. Harsch? Can you speak up a little more?

MR. HARSCH: In our response to the agency's variance recommendation, which is marked as Petitioner's Exhibit 3, we have clarified that we are seeking relief for all of the dredging activities that I've outlined in my opening statement.

The purpose of the variance is to allow the Fox Waterway Agency to continue to operate beginning with this summer's dredging season in compliance with its permits which will require modification because they're predicated on the existing 15 milligram per liter standard.

The operation as we have outlined in the variance petition will allow the Fox Waterway Agency to develop the necessary information to put together and apply for an adjusted standard. We would intend to work cooperatively with the Illinois Environmental Protection Agency, and to that end, the Fox Waterway Agency will be utilizing the services of Huff & Huff to gather the necessary information to allow us to develop the record and the evidence necessary to support an adjusted standard.

Hopefully, we will work with the agency,

come up with an agreed site with specific limitations or adjusted standard limitations that the board -- that we'll be asking the board to impose upon the agency's dredging operations. It is undisputed that there is an environmental impact associated with dredging.

The evidence you'll hear this morning and the reports that have been introduced into evidence shows that this rather temporal or short-term environmental impact will be greatly outweighed by the environmental improvement that dredging brings along with it.

You can't remove bottom sediments without causing some turbidity in the waterway whether you're using hydraulic dredging with a return line, mechanical dredging where you're actually scooping the materials out, or any other possible means of dredging.

You're physically lifting the bottom of the waterway out of the stream so there's going to be an intendment muddying or increasing the turbidity of the receiving stream. But we think, as pointed out by Karen Kabbes and Linda Huff and Mike Hodges, that the environmental improvement greatly out --

long-term environmental improvement greatly outweighs any short-term environmental observed conditions.

And with that, I'll save the rest of my long-winded testimony to my witnesses rather than myself.

Thank you.

MS. EDVENSON: Thank you, Mr. Harsch.

MR. HARSCH: Oh. I might point out in response to a request by the hearing officer to Margaret Howard, I have put together a summary of positions, which is Petitioner's Exhibit 4, which lists the projects, their locations, and that essentially sets forth what probably are the points of difference at this point in time between the Fox Waterway Agency and the EPA.

At Miss Howard's request, we have handwritten a change to the agency's rationale for proposed TSS limitations to read the impact that TSS has on aquatic life; is that correct, Margaret?

MS. HOWARD: Correct. So the sentence the lower the TSS the better would be removed?

MR. HARSCH: Correct.

MS. EDVENSON: All right. And I understand from

our preliminary discussion that there is no objection to petitioner's exhibits?

MS. HOWARD: No. Other than that, no.

MS. EDVENSON: All right. Then Petitioner's Exhibit 4 will be revised accordingly, and petitioner's exhibits are accepted into evidence.

MR. HARSCH: Thank you.

MS. EDVENSON: All right. Mr. Harsch, would you like to call your first witness?

MR. HARSCH: Does the agency --

MS. HOWARD: Can I make a brief opening statement?

MS. EDVENSON: If you'd like to make an opening statement.

MS. HOWARD: I'll try to keep it as brief as possible.

OPENING STATEMENT

by Ms. Howard

There's something that's very important that the board needs to understand in this situation, and that is that the agency, the Illinois EPA, does not have an objection to the entire dredging project and the work, the dredging work, that the FWA does in the Fox Chain O'Lakes.

We do agree that it is something that's necessary for both boating traffic in that area, and also it does benefit the environment.

In terms of the requested relief, the agency has already recommended that the board should grant a variance from Section 304.105 as that is applied to un-ionized ammonia, nitrogen, and phosphorus. We do believe the board should grant a variance to Section 304.123(B) as it applies to phosphorous.

We also recommend that the board grant a variance for Section 304.106 which prohibits offensive discharges, and all of those variances of those various board regulations should be applied to the Ackerman Island site which discharges into Fox Lake, the L10 confined disposal site which discharges into Grass Lake, the R15 confined disposal site which discharges into the Fox River, and the proposed geotubes in Grass Lake, Nippersink Lake, Pistakee Lake, and Fox Lake.

That leaves us basically with two things that we have a problem with. And No. 1 is solids limits, the variance requested for Section 304.124(A). And right now, actually, we

have agreed that Grass Lake -- they've requested 100 milligrams per liter for both the L10 and the geotubes in that lake, and we have recommended 100 milligram solids.

What we still do not agree on in terms of the solids are the solids limits for Nippersink Lake as it applies to geotubes, Pistakee Lake as it applies to geotubes, Fox Lake as it applies to both the Ackerman Island and geotubes and Fox River as it applies to confined disposal area R15.

So that is one thing that we'll have to discuss here at this hearing and also with respect to the mechanical dewatering system. We are interested in hearing the evidence that they present today. As of this time, we've recommended denial because there just wasn't enough information in the petition. We believe based on some conversations that we'll be getting a lot more information during this hearing, and we're hoping we may be able to change that recommendation with respect to the dewatering system.

I'll have two witnesses, Mr. Bruce Yurdin who is very familiar with the dredging operations of the FWA, and he works very closely in the dredging

projects here at the agency -- at the Illinois EPA. I hope I don't say agency, and then we confuse the two.

And Mr. Mosher is involved in setting standards for water quality and also effluent limits in order to protect the water quality of water bodies here in Illinois, and we hope we'll get some things cleared up, and we'll be able to maybe change some recommendations or come to an understanding as to why we're having difficulty with the difference in the recommendation as compared to the requests for the TSS solids limits.

MS. EDVENSON: Okay. Thank you very much. I believe that our case schedule does provide a small amount of time for briefing and for the submission of additional written materials. And we can talk about that off the record before we finish today.

All right. At this point, would petitioner like to call their first witness?

MR. HARSCH: Yes. But first I'd like to just briefly respond and thank the Illinois Environmental Protection Agency for clarifying on the record its support for the various projects that I've outlined that are listed also in Petitioner's Exhibit 4.

In response to the agency's concern, petitioner in its response to the agency's recommendation which is Petitioner's Exhibit 3 has indicated that it would accept 100 milligrams per liter limitation on total suspended solids for all of the confined dredged disposal sites and the geotube projects.

So I think our difference at this point probably is over what numerical limitations the agency would ask the board to impose on total suspended solids, and I think I have listed those, have I not, Ms. Howard, in Petitioner's Exhibit 4?

MS. HOWARD: Yes, and that's accurate.

MR. HARSCH: And with that clarification, I'd like to call my first witness, Karen Kabbes.

MS. EDVENSON: Will the witness please be sworn?

(Witness sworn.)

WHEREUPON:

KAREN C. KABBES,

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

DIRECT EXAMINATION

by Mr. Harsch

Q. Miss Kabbes, will you please state your full name for the record?

A. Sure. It's Karen Ann Cuff Kabbes.

Q. And will you -- I'm going to show you what has been marked and accepted into evidence as Petitioner's Exhibit 5.

A. Yes.

Q. Is that a true and accurate copy of your resume?

A. Yes, it is.

Q. Thank you.

Would you please explain briefly what your position is at the Fox Waterway Agency?

A. Yes. I'm the executive director of the Fox Waterway Agency, and my role is to run the agency's operations. I report to the local elected board. I'm responsible for the agency.

Q. And what exactly is the Fox Waterway

Agency?

A. The Fox Waterway Agency is a special purpose unit of local government created to maintain and improve the Fox Waterway System from Wisconsin state line to Algonquin.

Q. Who governs that agency?

A. The agency is governed by an elected board of seven officials. Three are elected from the McHenry County portion of the defined territory, and three are elected from the Lake County portion of the defined territory, and a chairman elected at large.

Q. When you talk about managing the Fox Waterway chain, what's entailed in that?

A. In the sense the agency is concerned, it's about a number of issues and by statute concerned about maintaining and improving it for recreation, environmental quality, flooding, tourism, and, of course, coordination with federal, state, and local agencies on any improvement issues.

Primarily, our activities revolve around cleaning up the waters for a number of recreational uses including boating, fishing, hunting. It's a

well-known fishing and hunting area and any other recreational uses that are appropriate for lakes and river systems such as the Fox River system.

Additionally, we get involved in marking navigational channels for boating safety purposes. We also get involved in marking of flooding issues, and if there's a flood, we are the ones that actually go ahead and put up weights to avoid boating traffic and do media announcements to control the access to the waterway, use of the waterway during the flooding event. We --

Q. Has --

A. -- also --

Q. Okay. I'm sorry.

A. We also have worked with different groups on tourism issues.

Q. Has the Fox Waterway Agency prepared a mission statement?

A. Yes, we have.

Q. I show you what has been marked and accepted into evidence as Petitioner's Exhibit 6?

A. Yes.

Q. Is that a true and accurate copy of your mission statement?

A. Yes, that is.
Q. Does the Fox Waterway Agency have a newsletter?
A. Yes, we do.
Q. If I show you what has been marked and accepted into evidence as Petitioner's Exhibit 7, is this a true and accurate copy of the winter/spring 1997 newsletter?
A. Yes, it is.
Q. How often does the newsletter come out?
A. Once a year.
Q. When you're referring to the area that you have responsibility for, if I show you what is Petitioner's Exhibit 8, would you explain what this is?
A. Sure. This is a map that we provide to boaters who use the waterway to help navigate the waterway and understand the waterway depths and locations of different services and locations that they may want to visit on the waterway.
This is put out by us and available for purchase, but it notes that we basically cover the Wisconsin state line and all the way on the other

side down to roughly the Algonquin dam at Route 62.

Q. Can you in general describe the Fox Waterway system?

A. Sure.

Q. Maybe start with Wisconsin boarder and move your way down.

A. I'd be happy to.

It's a river system that comes from Wisconsin that drains over 800 square miles of land that is primarily agricultural. The watershed starts just west of Milwaukee.

When it enters the state of Illinois, it very quickly enters Grass Lake, which historically was a large wetland lake and the home of many lotus beds. The chain, if you continue around to the northeast, consists of channels that connect a number of lakes, the northern lakes being deep glacier lakes that historically had wetlands between them that the state had dredged in roughly the '30s and '40s to connect and create the change.

These northern lakes are well-known fishing lakes. In fact, we'll be hosting a DNR fishing tournament at the end of May.

Q. Those are Channel Marie and --

A. Catherine.

Q. -- Catherine Lake?

A. And to some extent Bluff also.

When you continue to the south, once you're to the northern lakes you'll note that the channel system goes through Petite Lake and then to Fox Lake.

Fox Lake historically was the home of many recreation activities around the 20th century. There's a lot of historic structures in the area, a lot of old fishing clubs, old sportsmen's clubs, a lot of old resort areas that now are turned into year-round structures and also the home of historic boat racing.

Continuing along to Nippersink Lake, Nippersink Lake was actually historically a much larger wetland area. Continuing south under Route 12 bridge, there's two channels that go into Pistakee Lake; one was a man-made channel, one was a historic channel.

Our boating system also includes some of the adjacent channels you've seen marked on the map. You'll note a lot of blue areas coming into different lakes. Some of these are man-made

channels that were excavated from wetlands. Others were channels that may have existed historically. These also are the number of areas that they can reach by boat that we do maintain.

Continuing south of Pistakee Lake, again, Pistakee Lake is a fairly deep lake. In the very southern portion, you'll see a very deep corner. It's also the home of the Pistakee Yacht Club and other yacht clubs in the Chicagoland areas.

We also see then the Fox River system coming off to the southwest corner. That continues on south for approximately 30 miles, a number of communities.

If you turn the map over, it goes through McHenry, which has long-known historical features in McHenry. It continues south to lock and dam system by Moraine Hill State Park. Continuing further south, the Holiday Hills, Highland Lake, Fox River, Valley Gardens, Lake Barrington area, there's now a Lake County Forest Preserve Park allowing public access and across the lake from that is a McHenry County Conservation District Park.

Continuing south to Fox River Grove there's a historic town built along the waterway, which was

a well-known vacation spot in the 1920s and '30s for folks from primarily the Cicero area.

Continuing further south, it goes down into the Algonquin. There, again, was a historical feature of Algonquin.

Q. Do I understand it that essentially Fox River, Chain O'Lakes area that you've just referred to, is an interconnected waterway that has essentially the flow from the Fox River as it comes into Illinois from Wisconsin as well as the surface run off from this area?

A. Yes.

Q. And conveys it down to the river down to Algonquin?

A. Correct. And the waterway drains about 800 square miles when it reaches the Wisconsin/Illinois water boarder and then over 1,400 square miles when it reaches the Algonquin dam.

Q. So a total of 1,400?

A. Just over 1,400 square miles.

Q. And you were charged by statute to maintain that waterway?

A. Yes.

Q. And in addition to establishing channels and putting the markers out and doing all the safety regulation features, are you also charged with dredging this waterway?

A. Yes.

Q. And why is it that you have to dredge?

A. Well, historically, the state did dredge the waterway to create many of the navigational channels. The lake river system historically always carried some kind of a sediment load into the area that would deposit into the low line portions of the lake and sometimes the dredge channels.

And so it's been historically the nature that those channels need to be maintained by dredging to allow for boat access and also to improve the water quality. We find that boats that go through the shallow areas tend to stir up the bottom sediments, and put those bottom sediments in resuspension and the water is much clearer where the lakes are deeper.

Q. When was the agency created?

A. The agency was created in the mid-1980s.

Q. Since the creation of the agency in the 1980s, are you the only public body that dredges in this area?

A. Yes.

Q. So the historic role of dredging and maintaining channels has been passed on to your agency?

A. Correct. Prior to the agency, Fox Waterway Agency, doing the dredging, it was performed by the state of Illinois through its Division of Water Resources.

Q. I show you what has been marked and accepted into evidence as Petitioner's Exhibit 9.

Will you describe this?

A. Sure. This is a map that was drawn from an aerial photograph in the early 1940s of the Fox Chain O'Lakes system, and it was prepared by the state of Illinois, Department of Public Works and Building Waterways Division, which is the predecessor of the current Department of Natural Resources, Division of Water Resources. And it does depict the waterway.

In fact, it also depicts the channels that the state had created and were maintaining, and at

this particular plan, note some of the proposed channels that they were looking to go ahead and dredge at that period in time.

Q. And is there a difference in the appearance of Exhibit 9 from Exhibit 8 in terms of wetland areas?

A. Yes. We've used this 1940 state map as a good record of historical wetland areas that existed in the Chain O'Lakes.

When you compare the two maps, Petitioner's Exhibit 8 and 9, you'll note that particularly in Grass Lake, the northeastern portion of Grass Lake is considerably different. There's a lot of wetland areas in the western portion that are no longer visible, no longer there.

The same thing with Nippersink Lake. Again, in the northwest corner, you'll see a big wetland mass that historically was there that is no longer.

And continuing south of Pistakee Lake, there's a whole big wetland complex that almost looks like an arrow coming out at the northern portion of Pistakee Lake that no longer exists.

Q. What happened to those wetlands?

A. They have disappeared over time due to erosion. There may be a number of causes, wind, boat wake, ice, the water drawn down that the state enacts with the damn system, but they have disappeared due to erosion over time.

Q. Is sedimentation the number one problem that your agency faces in maintaining the lakes?

A. Yes.

Q. And would you describe the extent of sedimentation?

A. Studies prepared and presented and noted in reports such as the Corps of Engineers Recreational Boating impact study and other reports note that we were receiving approximately 40 to 60,000 cubic yards a year of sediment coming into our system every year from the watershed of Wisconsin and the western portion of Lake County and the eastern portion of McHenry County.

With those kind of sediment loads coming in every year, we need to keep dredging our channels because we find that channels do become filled in very quickly in some locations, and they become filled in. The boat traffic that passes through those areas will go ahead and resuspend the boating

bottom sediments.

We have tried a number of different measures to deal with it by redirecting boating traffic in some areas trying to contain boating traffic in other areas, to minimize the dredging needs, but we just can't get around the fact that we have sediment coming into our system, and we do have to keep our channels open.

We want to keep our water quality at acceptable levels according to fishers and duck hunting that people enjoy in that area.

Q. Do you have any estimation of the amount of sediment that has accumulated in the Waterway Agency?

A. Yes. In 1988, a report was prepared for the Fox Waterway Agency by Kudrna & Associates that stated over 600,000 cubic yards needed to be dredged at that point to maintain 100 foot-wide channel throughout the system, and we at this point assume that we're looking at a decade later and in cases 100 foot-wide channel is not wide enough for boating safety issues. So we assume that the dredging needs are even greater at this point.

Q. Do you have an estimation of that

number?

A. At this point we have not gone ahead with any further estimates. Additionally, we've looked at the issue of side channels and the fact that when this report was prepared it was just looking at the main channels. There was no report prepared looking at side channels that access the waterway.

Historically, the agency has not gotten involved in those, but in the early 1990s the agency's position changed, and the recognition was that these were truly public channels. We have over 100 side channels that we've also picked up some responsibility for with additional dredging needs, and those side channels, for example, may need on the average of 3,000 cubic yards dredged.

MS. HOWARD: Excuse me. I'm sorry. What study are you referring to?

MS. KABBES: The Kudrna Report, Comprehensive Dredging and Disposal Plan.

MS. HOWARD: Is that something that was entered as an exhibit?

MR. HARSCH: No.

MS. HOWARD: Okay.

MS. EDVENSON: Mr. Harsh, we may wish to see a copy of that. Let's discuss that.

MS. HOWARD: The agency -- the Illinois EPA has never -- we've not seen this in connection to this case. Bruce apparently is familiar with it, but this is the first time we've seen it.

MS. EDVENSON: Let's go off the record for just a moment.

(Discussion had off the record.)

MS. EDVENSON: All right. Let's go back on the record now.

All right we had a question about a reference that Miss Kabbes made to a report.

Mr. Harsch, would you like to make a comment?

MR. HARSCH: Yes.

BY MR. HARSCH:

Q. When you referred to the report that had been prepared by K-u-d-r-n-a & Associates, Limited, dated June 30, 1988, Comprehensive Dredging and Disposal Plan, Volume 1, report tables and exhibits, we have included, have we not, certain tables from that report as attachment three to the

variance petition?

A. Yes.

Q. In your reference to that report, it was the conclusion that in 1988, 600,000 cubic yards of sediment were there to be dredged to maintain 100 foot channel?

A. That's correct.

MS. HOWARD: Madam Hearing Officer, I would object to introduction of that conclusion. We do have the attachment three that was attached to the petition, which are portions of that report, but we were not -- we have not been given any other portion of that report to review prior to hearing, nor will we be prepared today to testify to anything else other than what's included in attachment three of the petition.

So we would object to the use of that exhibit at this time -- the use of that report at this time other than what's included in attachment three.

MS. EDVENSON: Mr. Harsh?

MR. HARSCH: Well, I have no requirement to provide the agency ahead of time with copies of my exhibits. I think the agency is aware of that

report and familiar with it, at least your technical people are, and it is, obviously, a document that -- historical reference document that is available for any of the agencies in Illinois to utilize whether it's the Waterway Agency or the Illinois EPA.

MS. EDVENSON: Thank you.

MR. HARSCH: We will gladly make available copies and provide for the record, if you'd like, Madam Hearing Officer, Table III-1, estimated sediment volumes in main navigation channels, lakes and rivers, which lists the various lakes and channels and comes up with the conclusion of 604,000 cubic yards.

MS. EDVENSON: Thank you, Mr. Harsh.

MR. HARSCH: And that would be as Petitioner's Exhibit 17, and I'll gladly provide the board and the agency with a copy of that after the conclusion of today's hearing.

MS. EDVENSON: Thank you, Mr. Harsh.

Your objection is overruled. I would like to see that report come into evidence.

MR. HARSCH: The report in its entirety?

MS. EDVENSON: Yes. I'd like to ask --

MR. HARSCH: We'll gladly make a copy of it --

MS. EDVENSON: Excuse me. Mr. Harsh, please don't speak while I'm speaking.

MR. HARSCH: I'm sorry.

MS. EDVENSON: I would like to ask petitioner to provide a copy of that report to the board following this hearing.

Will that be possible, sir?

MR. HARSCH: Sure. Since the agency --

MS. EDVENSON: I would like to --

MR. HARSCH: Excuse me. I'm sorry.

MS. EDVENSON: I would like to number that as Exhibit No. 17, Petitioner's Exhibit No. 17.

(Petitioner's Exhibit No. 17 marked for identification 5/6/97.)

MS. EDVENSON: And if there's going to be an objection to the introduction of that report into evidence in this case, then let's hear that now.

MS. HOWARD: Yeah. We have no objection.

MS. EDVENSON: All right. Then the Petitioner's Exhibit 17 is entered into evidence, and it will be received by the board at a later date prior to the closing of the record date based on the current case schedule or the case schedule as we revise it.

MR. HARSCH: Thank you.
MS. EDVENSON: You may proceed.
MR. HARSCH: A point of clarification if I might, the agency does have a copy of this report; is that --
MS. HOWARD: We're going to have to -- we'll have to check. If we do, we'll let you know.
MR. HARSCH: Thank you.
MS. McFAWN: You can always get a copy from the board.
MS. HOWARD: Okay. Thank you.
BY MR. HARSCH:
Q. Miss Kabbes, in your earlier statement, you also referred to a report that has been prepared by the Army Corps of Engineers. I believe that report is found as attachment two to the variance petition?
A. Yes.
Q. Is that correct?
A. That's correct.
Q. In addition to what has now been marked and accepted as Petitioner's Exhibit 17 and Exhibit attachment two to the variance petition, which is Petitioner's Exhibit 1, have there been any other

studies regarding the impact of sedimentation and a need for dredging?

A. There may have been historical studies. I don't have them available to me at this point.

Q. So these are the two documents then that would most apply -- describe the sedimentation problem?

A. Yes.

Q. Can you summarize again what the sedimentation problem is in the channel lake system?

A. Yes. The fact that sediment washing in from the watershed enters the lakes and river system, falls out of suspension from the waterway, and drops into the low line portions of the lakes and river system reducing the depth.

When it's in suspension, it also reduces the water clarity which affects the aquatic plant growth in some areas and also may affect the waterway in its abilities to support the fishing, duck hunting.

Q. What does the agency do to counteract the sediment deposition and -- excuse me, the sediment that is deposited in the system?

A. The agency has looked at a number of different ways of dealing with that concern, and, in fact, we'll hopefully be shortly looking at a watershed study to try to reduce the sediment coming into the system and has been also working on Nippersink Creek with the Stream Committee through the National Resources Conservation Services to reduce the sediment load in the sense that sediment load from Nippersink Creek has such a significant amount of the sediment reaching our waterway based on historic studies.

So we are looking to take watershed measures, but, additionally, we have to remove material that's already accumulated in the waterway, and, therefore, we are dredging waterway to move accumulated sediment in the boating lanes.

Q. The waterway watershed management activity you're referring to, that requires the cooperation of any of the other units of local government that have jurisdiction; is that correct?

A. A number of organizations including the state of Wisconsin.

Q. Can you describe what type of dredging operations you currently carry out?

A. Yes. We have several pieces of equipment at our disposal to use for dredging. One is amphibious backhoe that we can use to mechanically reach into the waterway and excavate material and put it into trucks (indicating) and drive it away from the waterway system.

We also have a hydraulic dredge which is much like a big wet vacuum that uses a cutterhead to cut the bottom sediments, put in suspension with water, and then pump it to a containment sight where it's contained, and the dirt settles out, and the water is allowed back into the lake/river system in a clean setting.

Q. When does your dredging season begin?

A. The hydraulic dredging is generally done when there's no ice on the system, which is roughly April through October. The mechanical dredging can be done year round based on the conditions for each site.

Q. Have you commended hydraulic dredging this year?

A. We have done just a little bit of hydraulic dredging to test our equipment out and to demonstrate some attributes to the Department of

Natural Resources.

Q. And does the use of hydraulic dredging require a confined dredge disposal sight?

A. For the fine grain sediments we're judging, yes. We had to build a confined disposal facility.

Q. And is that what you refer to as the Ackerman facility?

A. Yes. That's the site that we currently are pumping fine grain sediment into.

Q. Would you describe briefly what this confined dredge disposal area consists of?

A. Sure. It historically was an island that was burned, I think, by the state prior to the agency's creation. And these high burns were constructed to allow for settling ponds, a series of three ponds, that the dredge material can pass through to allow the sediment to pass and to drop out. We're talking, like, roughly a seven-acre site.

Q. Do you currently have a permit for that facility?

A. Yes.

Q. And is that permit set forth as

attachment seven to the variance petition, which is Petitioner's Exhibit 1?

A. Yes.

Q. Does this permit limit total suspended solids, TSS, to 15 milligrams per liter?

A. Yes.

Q. Has the Fox Waterway Agency been able to consistently comply with this permit limitation?

A. No.

Q. Would you briefly describe what levels of total suspended solids you have been able to meet?

A. The total suspended solids collect a very -- and we have met it at times though it's been only probably I think two or three samples that we've collected over a period of time.

Generally, the total suspended solids released have gone as high as 100 parts per million, and, I believe, prior to my being with the Fox Waterway Agency they may even had higher discharges.

Q. And you're referring to attachment one to the variance petition?

A. Correct.

Q. And attachment one is a listing of the sample results from 1993 and 1994?

A. Correct.

Q. Why are there none in 1995?

A. We did not use that Ackerman Island facility in 1995.

Q. And why is that?

A. We had filled it out, and, generally, the routine has been once the site is filled, we allow it to sit for a year so it has additional drainage and then come in the following year and clean it out.

Q. Is there a cost associated with that?

A. Oh, definitely. We've been getting the cost on each time we've cleaned it out. We're looking at generally about a quarter million dollars to clean out the containment site.

Q. Has the agency had to take any steps in terms of limitation of its dredging in an attempt to meet 15 milligrams per liter?

A. Yes. The permit that was submitted suggested we be only dredging six hours a day. In general, when someone looks to dredge particularly if they're going to hire consultants, the consultant

generally wants to dredge 20 to 24 hours a day, get in and get out.

So that's made it difficult for the agency to perform dredging except by its own resources.

Q. So you've had to -- why do you have to limit the hours of operation?

A. In order to meet the 15 parts per million.

Q. Simply put, is that to put less material in so you're introducing less water into the system so it has a longer retention plan?

A. Right. A longer retention time. In fact, we often get down to the point of only dredging several days a week after a while just to allow enough settling time of material. So we end up actually not even dredging it a full week.

Q. I think earlier you said that you can pump from hydraulic dredges a total distance of -- how far to Ackerman Island?

A. Well, it depends on the number of booster pumps you have, but we currently have one booster pump. And we can pump with our current equipment about two miles.

Q. Do you have under consideration the

potential construction of additional confined dredged disposal sites?

A. Yes. The state who has been working with us on this concern of dredging the waterway through the Department of Natural Resources Office of Water Resources has acquired two other sites that could be used as containment sites; one on Grass Lake, which is known as the L10 site, and one along the Fox River known as the R15 site.

Q. What is the current status of those sites?

A. The R15 site has been permitted but not yet constructed. The L10 site has only had primarily feasibility work completed. There are some permits that haven't been applied for yet.

Q. When you talk about permits, are you talking about Army Corps of Engineer permits, or are you talking about Illinois Environmental Protection Agency permits?

A. All permits, the Corps of Engineers, Illinois EPA permits, and DNR permits such that, you know, for example, it's considered a damn by building dredge containment safety permit.

Q. And if I show you again Petitioner's

Exhibit 8, if you located on this map the locations of these confined dredged disposal sites, will you describe for the record where they are?

A. Sure. B is the L10 site, that's been proposed; E is the Ackerman Island site that's currently operated and permitted; and on the back side of the map, Site L is the R15 site, that's been permitted but not constructed.

Q. Do you have any estimation on the cost of constructing these two additional sites?

A. The R15 site has been estimated at roughly one and a half million dollars per construction after land acquisition, and that's been part of the reason the agency has asked the state not to proceed because we want to look at alternative methods to see if we could figure out ways to dredge without having to build a containment site that we have to clean out for considerable dollars every year or every other year.

Q. Are you generally familiar with the other dredging activities that are carried out in the state of Illinois?

A. I tried to keep abreast of some of that work, yes.

Q. Do you personally know of any dredging that's being conducted in Illinois that complies with 15 milligrams per liter total suspended solids in actual operation?

A. No. I think at times they might, but I think as a general course of practice they don't. Lake Springfield would have to be the closest.

Q. Have you had any discussions with other agencies or public bodies that carry out dredging operations in Illinois?

A. Yes. I've talked to some other groups involved in dredging particularly consulting firms, a consulting firm and a public entity that was involved, too, in dredging.

Q. Were these discussions principally concerned with the problem associated with the 15 milligram per liter limitation that had been imposed by the agency?

A. Yes. We had some discussions regarding that concern.

Q. Can you describe those discussions and who participated in them?

A. Yes. I've talked to Bob Kursher from Northeastern Illinois Planning Commission. He was a

study manager from the Skokie Lagoon dredging project and with Gary Wilken of Cochran and Wilken Engineers in Springfield who's been involved as a design engineer in many projects in the state of Illinois.

They have both had described to me that --

MS. HOWARD: Objection, hearsay. I think also the fact that the study is in evidence would also provide the board as well as the Illinois EPA to make conclusions based on that study, and I don't think we should allow a witness to testify as to what other people said in conversations that we didn't have any -- the witness isn't here to be cross-examined, and I think the evidence that's in the record will be adequate. If not, then the Fox Waterway Agency should have produced those witnesses here for the hearing so that I would have an opportunity to cross-examine them as to their statements.

MS. EDVENSON: Mr. Harsch?

MR. HARSCH: I might point out that the board's rules do allow a reasonable -- essentially do allow hearsay as long as it's relevant and a reasonable person would rely on it.

I think what I'm trying to establish by these questions are the general nature of the 15 milligram per liter compliance problem that the agency is well aware of since the agency's own witness today has been a party to some of those discussions. We were going to get into, to set the tone of what gave rise as what was prepared by Northeastern Illinois Planning Commission, a review of water quality regulations pertaining to dredging activities.

So if you'll bear with me, I'll connect it up very quickly.

MS. EDVENSON: The objection is sustained. Perhaps you can pursue this line of questioning in another way.

BY MR. HARSCH:

Q. Miss Kabbes, have you ever had a meeting with representatives of the Illinois Environmental Protection Agency prior to the filing of this present variance petition?

A. Yes, plenty of meetings.

Q. And who participated in those meetings?

A. I had a meeting in particular regarding the concern of the 15 parts per million issue, and

at that meeting, Jim Parks was there, Bruce Yurdin, Representative Cal Skinner and Gary Wilkens.

Q. What did you believe to be the purpose of that meeting?

A. That meeting was to discuss the 15 parts per million total suspended solid requirement that was generally enforced in the state of Illinois on dredging operations, hydraulic dredging operations, and the concern that that may not be the appropriate standard and how that standard could be modified to be more appropriate for dredging operations, particularly dredging operations that are looking to improve water quality.

Q. Approximately when was this meeting?

A. 1994, '93, '94.

Q. Were there any recommended activities that or conclusions that were reached in that meeting?

MS. HOWARD: Objection, your Honor. I'd like to know whose conclusions they are.

BY MR. HARSCH:

Q. Are there any general conclusions that you understood to be reached as the course of action that should be followed following that meeting?

MS. EDVENSON: That's a yes or no question.
BY THE WITNESS:
A. Yes.
BY MR. HARSCH:
Q. And what is your understanding of that course of action that was agreed to?
A. That EPA would look for an organization such as NIPC to contract with to prepare a report on the dredging standards commonly used across the country with a goal towards looking to modify or enact appropriate dredging regulations within the state of Illinois.
Q. In fact, did the Northeastern Illinois Planning Commission carry out such a review?
A. Yes.
Q. And did they prepare a report entitled The Review of Water Quality Regulations Pertaining to Dredging Activities dated June 1996 which is found at attachment five to the variance petition?
A. Yes.
Q. Is that a true and accurate copy of that report?
A. Yes.
Q. Can you briefly describe what has

occurred in terms of the utilization of this report since its publication last June?

A. Yes. The report has been made available. There were several meetings held with various staff, at least one meeting with staff from the IEPA to discuss the report.

Q. Is that staff member Mr. Yurdin along with others?

A. Mr. Yurdin was at that meeting regarding the report, and it became clear to me at least -- and also in casual conversations with staff that the agency's workload would probably not permit the agency to move rapidly towards incorporating this report in any kind of statewide change to the current standards used for dredging operations.

Q. When you refer to the "agency," you're referring to the Illinois Environmental Protection Agency?

A. Right.

Q. So, essentially, it's your understanding that following the preparation of this report, the Illinois Environmental Protection Agency was not prepared --

MS. HOWARD: Objection to the question. I

believe the attorney summarizing what the witness just testified to is not appropriate in the direct examination of a witness.

MS. EDVENSON: Can you rephrase your question, Mr. Harsh, so that it's not a leading question?

MR. HARSCH: Sure.

BY MR. HARSCH:

Q. During your meetings with the staff of the Illinois Environmental Protection Agency, did you discuss the possibility that the state proceeding to file -- the Illinois Environmental Protection Agency's filing and proposed amendment to the Pollution Control Board's rules and regulations?

A. Yes. And that was really the goal the agency had sought -- Fox Waterway Agency had sought in having this report prepared was to see the state rules changed.

MS. McFAWN: When you say the "agency," did you mean the Illinois Environmental Protection Agency?

MS. KABBES: The Fox Waterway Agency. Thank you.

MS. McFAWN: Thank you.

BY MR. HARSCH:

Q. And, again, what is your understanding

as to whether the Illinois Environmental Protection Agency will, in fact, be filing such a rule change?

A. It was my understanding that the Illinois EPA was not prepared in the next few years to be filing a rule change based on this report for dredging operations.

Q. In light of that understanding, did you recommend to your board that they proceed to seek an adjusted standard and ultimately a variance petition to apply just to your agency?

A. Yes.

Q. And that was the -- remember why we proceeded to draft this variance petition?

A. Yes.

Q. Shifting from hydraulic dredging, I think you briefly hit upon the alternatives -- that you were looking at alternatives to hydraulic dredging using the fixed confined disposal site that you have at Ackerman Island and the two that are under potential consideration.

Will you describe the geotube project briefly to the board?

A. Sure. When the agency had started looking at dredging needs, they have identified a

number of sites, potential containment sites, up and down the waterway recognizing we needed to probably have sites every three to six miles to accommodate our dredging operation to truly maintain the entire waterway. That started about the late '80s.

Well, the increase in property values, the exodus from the city continuing further west really took a lot of the sites we had initially considered out of consideration as they often became grabbed for housing developments.

Therefore, we looked at the issue that we have to find some other alternative way of meeting our agency's charge to dredge -- to be able to dredge the entire waterway if needed and started looking at alternatives to containment sites.

Two things we looked at, one was the fact that there had been a loss of wetlands, significant loss of wetlands, in our waterway historically, particularly in the lake system, and we had visited with the Corps of Engineers experimental station folks in Virgin Lake, Mississippi based on the Chicago Corps of Engineers' district engineers' recommendation to talk about some of our needs since they are the dredging experts for the Corps of

Engineers for the nation.

At that point, they were just starting to look at some innovative ways of reusing dredge material to build wetland islands that had been lost, and the way they were looking to do this was using technology that had been tried in Europe of actually filling a fabric tube with dredged material and using that as a containment dike that dredged material could be placed behind to create a wetland.

They're fairly innovative ideas since we have, obviously, a lot of dredged material, and a lot of wetlands have been lost, and a waterway that depends on wetlands for the recreational activities that our users enjoy.

So we started working with the Corps of Engineers' waterways experimental station folks back in about 1993 to look at trying to use that technology to, in fact, rebuild wetlands loss particularly in the shallow lakes that historically had wetlands which would be Grass Lake, Nippersink Lake, and Pistakee Lake.

And that's why the 1940s map that we showed you was so important because it really gave us a

good idea where wetlands used to be and what may be good candidate areas to rebuild those wetlands.

Additionally, we also looked at problems with the river system particularly and realized there were not large areas of wetlands had been lost on there that we could use this geotube technology or geotextile technology rebuilding wetlands.

So in that location or those areas, both locations, we said is there some other way we can have a traveling dredging operation, and, therefore, we looked at other technologies that we've started to become aware of that would process dredged material without having to require construction containment sites, and that would potentially be portable.

And that's why we started to look at the Solomon Liquids proposal to have essentially a traveling treatment facility that we could locate up and down the waterway to dredge and then clean the water and allow the effluent water to go back into the system.

Q. Turning back to the project you're working with with the Army Corps, is that what you referred to as the geotube?

A. Right.

Q. And can you briefly describe how you -- where you are on your development plans conceptually to build these wetland islands?

A. Yes. We had a number of technical questions to be answered. One problem I found nationally is that the Corps had not used this technology with fine grain sediment like we have in Illinois.

They had tried it several places Chestwood Bay, Houston Ship Canal, but in those cases, you use sand to fill the bags, and there was concern some people had regarding fine grain sediment to fill the bags.

What we did then last year is build, last summer, a test section of the back to see if we could, in fact, fill it with fine grain sediment and that that bag could stay up and achieve an elevation and last over the winter and our icy conditions we have in our state and the extreme boat action we have and survive throughout those harsh conditions. And, in fact, we did go ahead and build that system last year, and it has survived.

Q. If you turn to Petitioner's Group

Exhibit 10, the photograph marked 10-D, is this a photograph of this section with Linda Huff standing on it (indicating)?

A. Yes. This is a picture we took of that section of tube that we built in Pistakee Lake at the mouth of one of the channels, and its function is breakwater.

MS. EDVENSON: I thought that face looked familiar.

BY THE WITNESS:

A. This was built essentially July of '96.

BY MR. HARSCH:

Q. How do you construct an island out of these linear tubes?

A. Well, the idea would be to connect the tubes up, so they would perform the function of a perimeter dike and, therefore, create the outer limits of the island, and then we would use those perimeter dikes essentially as the dikes were a confined disposal facility so we can pump dredge material.

And in that case, it would be much like the Ackerman Island facility then.

Q. And there would be an overflow weir that would regulate that --

A. Correct, some kind of an overflow system that will go ahead and allow the effluent water discharge back into the lake system.

Q. When you pump the dredged materials into the geotube, is there a point source effluent from the geotube?

A. No. The way -- well, the way we constructed this, there was no point source. The only water being returned back to the lake system was through the weave of the bag.

Q. Are you comfortable in the amount of time that it takes to fill a tube and whether that's --

A. No. It took us a great deal of time to fill that bag, off and on for about four weeks to fill 140-foot section. You know, granted we were learning, and there was new ideas to be tried, and no one had done this in the nation before, so. . .

Q. How will you get around this problem?

A. We have been looking at going ahead and seeing if we could keep one of the portals. If you see in that photo, there's essentially little types

of fabric behind Linda coming on top of the bag that are tied. Those are actually portals which dredge pipes can be put into to pump the bag full.

In other applications across the country, they've just allowed the effluent water to come out those portals at the end. We couldn't do that in this case, so we didn't. But we're wondering if, in fact, we could in the future to allow that water to go back in, particularly into the interior system.

Q. During the creation of the dike, where will that water go?

A. The issue right now is -- right now is having us just go through the reef. If we could figure out a way to fill the dike -- fill the bag more quickly and allow it to come out through the portals, that would be excellent, and it will allow us to fill it much more quickly than the weave.

Q. That may be a requirement when you construct the dike to be able to construct it in an economical manner?

A. Yes.

Q. As long as we're at Petitioner's Exhibit 10, if I show you what has been marked as 10-A, 10-B, and 10-C, will you describe these

photographs?

A. Sure. 10-A is a picture of the Ackerman Island facility showing the narrow cells we currently have. It's a picture of the weir that is from the eastern -- sorry, western cells into the eastern cells from the final cell before it discharges back into the lake system.

Petitioner 10-B shows the channel in which the outfall from Ackerman Island discharges into. We thought it was interesting to note when the picture was taken that there was a pretty good flow that day.

MS. McFAWN: What do you mean a "pretty good flow"?

THE WITNESS: Well, instead of just being a quiet channel-like lake system, there's actually water flowing past the outlet for the containment site. So it's not a quiescent area, but there is water movement.

BY THE WITNESS:

A. And 10-C is a picture of that channel looking towards the east. The channel effluent is discharged from Ackerman Island.

BY MR. HARSCH:

Q. And then, finally, while we haven't described much of it, can you tell me what Petitioner's Exhibit 10-E is?

A. We have been looking at sites to try the Solomon Liquids method particularly channels that are dead-end channels that we could work on to use Solomon Liquids mechanical dewatering system, and this is Holly Channel, which is probably a channel that we'll use this technique on.

We had tried to come in and dredge this channel mechanically with our amphibious backhoe in, I think, '92, '91, before I came to the agency. Apparently, the material was so soft that as soon as we came into the channel, the neighbor's pier popped up, and it was so watery that the bucket really could not be very easily handled.

So it's something that we can't very readily address by mechanical means.

Q. Have you marked the locations that you would consider using the geotube technology?

A. We.

Q. As well as the Holly Channel, et cetera, on Petitioner's Exhibit 8?

A. Right. I've got a list of those and

describing what each one is in the lower right-hand corner of the map. It refers to both sides.

A, as I described earlier, refers to the proposed Grass Island geotube island site. B was the site for the L10 proposed containment state that the states acquired. C has proposed Jackson Bay geotube site -- geotube island site. D is State Park Boat Ramp, a potential mechanical dewatering site, a channel that may be an appropriate site to try.

E is the existing Ackerman Island containment site. F is another channel we potentially could try the mechanical dewatering system on. G is the site of the proposed geotube that could be constructed. H is another potential site for mechanical dewatering system. I is another proposed geotube island site. J is another potential mechanical dewatering site.

K is the site where we did install the geotube bag that you saw Linda standing on. And turning the map over, L is the R15 proposed containment site we've described earlier. M is the Holly Channel that you just saw the picture of. And N is an adjacent channel that both M and N use for

mechanical dewatering system.

Q. Are these other potential locations of the mechanical dewatering system similar to the conditions depicted in Petitioner's photograph 10-E?

A. Yes. In some areas, they're not entirely a backwater channel, but they could be closed off.

Q. And how would you close them up?

A. You could use a silk curtain or other methods.

MR. RAO: Could you describe Exhibit 10 with the geotube?

MS. EDVENSON: 10-D.

MR. RAO: 10-D. I'm sorry.

THE WITNESS: Yes. That is a fabric bag. It's 30 feet in circumference. The outer material of the bag is a woven polyester, interior to it is a nonwoven liner that was placed there so as to allow the bag when we suspended it not to allow more than 15 parts per million to pass through the weave after about ten minutes of time.

That bag was rolled out in site, and we pumped the dredge material into it. We took effluent water. We essentially had a closed system

where we had a hopper barge, kind of a big trash can, that we dumped dirt into that we had excavated in the waterway.

We also had water in there. We had a pump at the end of this big trash, pumped it into the tube, and we had a pipe at the end, and we returned the water back to our big trash can so the effluent water kept recirculating and kept adding more dredged material to it to pump that tube up.

It's approximately five feet high.

MR. RAO: Okay. And it sits on the bed of the lake?

THE WITNESS: On the channel bottom, right, on the bed of the lake. There's a scour blanket underneath it to hopefully help it from being damaged by the undercutting of the bag, the bottom sediments.

MS. McFAWN: A scour blanket?

THE WITNESS: A scour blanket, just a blanket on the bottom so in case there's any severe wave action so that it won't erode the bottom out and cause the bag to sink in one location as opposed to another location.

MR. RAO: Thanks.

BY MR. HARSCH:

Q. You mentioned that there was an impervious liner?

A. A nonwoven liner.

Q. A nonwoven liner.

You have to utilize the liner, do you not, to keep the fines within the bag?

A. Yes.

Q. Did the Army Corps projects use a liner?

A. No, they did not.

Q. If it were -- if it proves to be technically feasible to fill the bag with your fine silk materials, would you choose not to use a liner if you could?

A. Yes. If we could keep the fines within the bag without a liner, we prefer not to because what happens is we found in this case is the liner became very quickly clogged with sediment, and for all intentions and purposes very little water was passed through the weave of the bag. So most of it was recirculating.

It would be more efficient in filling the bag certainly if there was no liner in the bag, and

the water could just pass through the weave.

Q. And have you also observed that tree roots cannot penetrate the inner big?

A. Yeah, that was a problem. We hoped that these bags could vegetate in the future once the containment island is established, wetland islands established, because this was a recreational area. We certainly wanted it to look attractive.

And when I visited a site in Houston to see where the bags had been built, they, in fact, did have trees growing out of the bags. Cottonwoods started to establish themselves on the bag because it was that time of year we were doing the work, but they very quickly died as we found out when we pulled the seedlings out. As you can see, the seedling roots had basically not penetrated the nonwoven area between the outer woven liner and the nonwoven liner. They couldn't get through the nonwoven liner.

Q. You would like to have flexibility to utilize whatever liner system is technically necessary but some flexibility as you carry out your --

A. Yes. We'd like to be able to make sure

that the fines keep inside the bag, but we'd like to be able to drain the water more efficiently if possible.

MR. RAO: Are you aware of any instances where a geotube failed, maybe in this case like an island was not completed yet and washed out the sediments inside the tube?

THE WITNESS: One site I visited in Houston they had it in the public fishing dock area so you've got people with knives, and that bag, in fact, had been cut by fishermen with their knives, and what they found they could just do is take Marine glue and fabric and patch it.

MS. EDVENSON: Let's go off the record for a second.

(Brief pause.)

MS. EDVENSON: We're back on the record.

BY MR. HARSCH:

Q. Earlier you mentioned that you've utilized a mechanical dredging system where you pick up the material and put it in a barge.

Are there any drawbacks associated with that system?

A. Yes. It then requires us to empty the

bags, so it requires us to essentially double handle the material. So it often ends up being a very expensive method. The barge has to then also be brought to shore to be excavated or to be cleaned out and can be a very time-consulting process.

Because of the size of our system, we can't or don't have barges that are like the ones you see on the Mississippi River that are maybe 160 feet long and, you know, 90 feet wide. Our barges have to be small enough to generally fit between our lock system which means they're 20 feet wide and maybe 40 feet long. So it's a very time-consuming way to dredge.

Q. Do you have to dredge in an area that has -- where you can take the barge to an area where there's a roadway?

A. Yes. We need to have access or at least near an access for trucks. Unfortunately, many of the shoreline areas were historically wet soils. So it is sometimes difficult to find a good site where we can bring a large trucking operation in and have heavy equipment and load those trucks.

Q. Is, in your opinion, that system feasible to be used up and down your waterway

system --

A. No.

Q. -- in all of your channels?

A. No, it's not a reasonable way for us to dredge in terms of time or cost.

Q. Even if the -- will you assume that the confined dredged disposal sites that you construct the ones that you have under consideration, and you even construct a number of the geotextile tube sites, will it still be necessary to carry out some type of dredging operation in the channels and other areas away from these confined dredged disposal sites?

A. Yes.

Q. And in those areas they're not all feasible to serve by your backhoe; is that correct?

A. Correct.

Q. And is it this problem which led you to look for other alternative dredging means?

A. Yes.

Q. And I think earlier you said that the most promising dredging method would be the one you have under consideration with Solomon Liquids?

A. Yes, Solomon Liquids' method.

Q. I noticed you've just reached for an exhibit. Which exhibit is that? Is that Petitioner's Exhibit --

A. This is not marked.

Q. -- 15?

A. This particular one is not marked.

Q. Petitioner's Exhibit 15?

A. Yes.

Q. And can you describe briefly in your own words what this system is and why its promised to your agency?

A. This system takes dredged material that's excavated from a hydraulic dredge. It pumps it into a system where a flocculent is added after larger grain materials are first removed. Material then that is flocculated goes through a screen system to help remove those flocculated solids and to divert them off into one area and allow those to dewater so they could be separated and trucked away from the site, and that allows the effluent water to then be returned back to the stream.

So it becomes a traveling system that we can take anywhere to separate the solids from the liquids in the water in a relatively quick period of

time and allows us to truck those solids away.

Q. And you would pump the -- as in your hydraulic dredging, you would pump the cut material and water to that system?

A. That's correct. It would be basically designed to hook up to our existing dredge. We'd use our existing dredge to go ahead and excavate a channel area and then, again, pump to this equipment where the flocculent is added and set the sediments separated from the water.

Q. What is the status of your negotiations with the vendor?

A. We are hoping to have them demo this project this month for us as they're in the area doing another site. That's not going to be feasible at this point. So we're hoping at the end of the summer to work out a contract with them to have them come back to our area and demo that site -- demo that technology, excuse me, for that site.

Q. Assuming that it turns out to be technically feasible once you've conducted the test and, again, assuming that the economics can be worked out, does your agency have any plans for purchasing the system?

A. Yes. Our hope would be that we could, therefore, go ahead and actually purchase the unit that we could be using.

MR. HARSCH: Can we go off the record for a second?

MS. EDVENSON: Yes.

(Discussion had off the record.)

MS. EDVENSON: Back on the record.

BY MR. HARSCH:

Q. Miss Kabbes, do you have any intention to use this technology at locations other than just channels?

A. Yes. If this technology is feasible for us, we probably would end up using it in the main river itself in lieu of building the R15 containment site.

Q. And would that involve using the channels that need to be dredged as essentially the repository of the dredge water return water?

A. That may be one way of making that system work for us.

Q. And if you used it in that manner, you physically isolate the channel from the river?

A. Correct.
Q. And then when you finished the dredging project in the river, you would go in then and dredge the channel?
A. Correct.
Q. I guess in summary, are you aware of any means by which Fox Waterway Agency can, in fact, carry out its mandate to dredge -- maintain the waterway system by dredging and comply with 15 milligrams per liter suspended solids?
A. It's not practical.
MR. HARSCH: That will conclude my direct questioning of Karen Kabbes.
MS. EDVENSON: All right. We'll now take a five-minute recess, and then we will do cross-examination.
Off the record.
(Break taken.)
MS. EDVENSON: And we will now have the cross-examination of petitioner's first witness.
Miss Howard?
MS. HOWARD: Thank you.

CROSS-EXAMINATION

by Ms. Howard

Q. Miss Kabbes, do you plan on dredging on the weekends?

A. We have in the past, and we may well again in the future.

Q. Would that include the confined disposal sites?

A. Potentially any site.

Q. And the geotubes?

A. Yes.

Q. Okay. Isn't it true that at this point, there isn't any evidence that has been entered on the record which demonstrates how much money the Fox Waterway Agency will save between if you were to get 100 milligrams per liter total suspended solids limit and an 80 milligrams per liter total suspended solids limit as that would apply to Fox Lake and Pistakee Lake?

A. There's been some information that's in the Cochran and Wilken report that talks about a difference, but you're right. As far as applications of the Fox Waterway Agency, there has been no evidence to date.

Q. And the same would be true on the Nippersink Lake in terms of the difference, the cost savings and the difference between getting a TSS limit between 100 milligrams per liter versus 70 milligrams per liter; isn't that true also?

A. That's correct.

Q. And also for the Fox River, the difference between the cost savings between 100 milligrams per liter and 58 milligrams per liter?

A. Correct.

Q. Then directing your attention to Petitioner's Exhibit No. 4, under the title FWA Response to Proposed Limits, the third bullet point which states achieving less than 100 milligrams per liter costs money, isn't it true that there isn't any evidence that specifically shows exactly how much money you save with achieving less than 100 milligrams per liter?

A. We have not provided information to date that indicates the amount saved.

Q. In terms of the dewatering system, would you be responsible -- would it be best to ask another witness about the best management practices that might be employed at the mechanical dewatering

system if you were to be able to do that?

A. It's probably going to be a joint effort to decide the best measured practices that would be employed.

MS. McFAWN: Let the record reflect that I think you were including yourself with working with the representative from Solomon?

THE WITNESS: Yes, that's correct.

MS. McFAWN: Thank you.

BY MS. HOWARD:

Q. Also directing your attention to attachment one to the variance petition which is the 1993 to 1994 effluent result from the Ackerman Island for total suspended solids --

A. Yes.

Q. -- isn't it true that that chart shows that there was only three -- well, let's take it one at a time.

On August 30th of 1993, you achieved a total suspended solids limit of 90 milligrams per liter; isn't that true?

A. That's correct.

Q. And on September 7th of 1993, you achieved a total suspended solids limit of 100.7

milligrams per liter?

A. That's correct.

Q. And then on June 17, 1994, you achieved a total suspended solids limit of 82.0 milligrams per liter?

A. Correct.

Q. Although it says PPM at the top of that chart, it's interchangeable with milligrams per liter, correct?

A. Correct.

Q. So looking at this chart, there really would be only three times during 1993 or 1994 that you would have surpassed the limit of 80 milligrams per liter; isn't that correct?

A. That's correct, but we were trying very, very hard to try and meet 15 parts per million or as close as we can to 15 parts per million.

Q. Correct.

MS. HOWARD: Okay. That's all the questions I have.

MS. EDVENSON: All right. Will there be any redirect?

MR. HARSCH: Yes.

MS. EDVENSON: Okay. Proceed, Mr. Harsh.

REDIRECT EXAMINATION

by Mr. Harsch

Q. Miss Howard asked if there was any direct testimony into the record as to the specific costs differential from meeting 100 milligrams per liter versus an 80 standard or any of the other numbers that are presented in Petitioner's Exhibit 4.

What are the indirect costs of trying to meet such a number?

A. Of meeting 100 versus 80?

Q. Yes, if you had to meet 80 versus 100?

A. The concern is, obviously, just looking at the data as in Exhibit No. -- I'm sorry, in the Petitioner's -- I want to refer to this as --

Q. Attachment one to Petitioner's Exhibit 1.

A. Thank you.

You can see that even with trying very hard to meet 15 parts per million, there are at least several times we exceeded that. And this was from just a weekday dredging operation where we weren't dredging full time and in some cases not every day.

The concern we have is trying to dredge

efficiently. In a dredging operation, it's best to run that equipment more than six to eight hours a day, if at all possible 12 to 20 hours a day or 24 hours a day. Trying to meet 100 versus 80 can be a significant difference in how effectively we can run that equipment with the relatively small containment sites we're talking about.

Q. How many people make up a dredge crew?

A. We generally have three people in our dredge group. If we don't have a booster pump in operation, the booster pump generally adds at least one other person.

Q. These are full-time employees?

A. Yes. The agency uses full-time employees.

Q. Is there increased costs associated with only dredging for a few hours a day versus dredging longer periods?

A. Yes. There's certainly time in ramping up, getting the equipment started, and we generally find that we probably have a half hour to an hour of downtime in the morning and in the evening from beginning in closing our operation.

So we generally want to work ten-hour days

or longer, if possible, in our dredging operation, and we have for mechanical operations scheduled our crews to work ten-hour days in the summertime.

Q. In order to -- I think you testified earlier in order to try to meet 15, you actually limited your dredging to four to six hours?

A. Right. And, in fact, the permit application that was submitted to receive the permit for the Ackerman site was based on six hours of dredging per day.

Q. While they're not quantified or necessarily quantifiable, are these very real savings to the agency in terms of being able to have a higher limitation?

A. Yes, very much so. And, again, the issue comes about if we could also look at contracting out some of our dredging work.

We have our own staff that we keep year round to do work. We have hired temporary staff at times, but dredging equipment is very, very expensive. Looking at dredging needs in Grass Lake, it may be economical for us to basically dredge by using a consultant to do that work for us or using a contractor to do that work for us.

And a contractor would bring in larger equipment and would most likely be able to dredge at a cheaper cost per cubic yard than we can based on the equipment we have to use. We can't use those kind of opportunities to use consultants or contractors unless we've got large enough containment sites or containment sites that have enough discharge standards -- a high enough discharge standard to make it economical for a consultant or a contractor to come in.

Q. And would the same apply to any confined dredged disposal site that was -- the same concerns for limitations under hours of operation that you would expect at L10 and R15?

A. Yes.

Q. And would the same concerns also apply to the confined dredged disposal sites that you hope to build geotubes at, the Grass, Nippersink, Pistakee, and Fox Lakes?

A. Right. Now, the L10 site and the R15 site are a little bit larger than the Ackerman site, but we still have to consider the limitation of hours.

Q. I just recalled -- and with the hearing

officer's leniency and Miss Howard's lack of objection -- one exhibit I have not discussed that I should discuss, Miss Kabbes, and it's the permit application for the mechanical dewatering system which is Exhibit 11.

MR. HARSCH: If I might ask a foundation question on that?

MS. HOWARD: I have no objection.

MS. EDVENSON: Proceed.

BY MR. HARSCH:

Q. I show you what has been marked and accepted into evidence as Petitioner's Exhibit 11. Can you describe what this is?

A. Yes. It's an application for a permit for construction and operation of a mechanical dewatering system, and it notes several sites that the system could be tried on.

Q. And this -- does your current Army Corps of Engineers permit allow you to carry out this mechanical dewatering system?

A. In our discussions of the Corps, we can go ahead and request by letter to be able to use the hydraulic dredging system and the mechanical -- previously authorized mechanical dredging sites.

Q. So this is the only permit that you would need then to use?

A. The only additional permit we have to obtain, yes.

MR. HARSCH: I have no further follow-up questions.

MS. HOWARD: I don't have any further questions either.

MS. EDVENSON: No other cross? Okay.

Mr. Rao, would you like to ask some questions?

MR. RAO: Yeah, I have a few questions.

Regarding this confined disposal facility that you are planning to build at site L10 and R15, could those facilities be designed to achieve the recommended suspended solids concentration effluent limitation?

THE WITNESS: Well, anytime a permit application is submitted to the EPA --

MR. HARSCH: I would like to -- a point of clarification, when you say a recommended effluent limitation, are you talking about the 15 milligrams per liter or the agency's --

MR. RAO: The agency's recommendation.

MR. HARSCH: Thank you.
THE WITNESS: So you're asking if they could be designed to meet the 80 to 100 parts per million?
MR. RAO: Um-hum.
MS. McFAWN: Well, actually, they recommend the R15 at 58.
MR. RAO: At 58 and the L10 at 100.
THE WITNESS: The Corps design manuals suggest that because of considerations of wind and other issues that it may be very hard to meet those numbers. All I can go on is they're historical numbers, and with limited dredging, we've been able to meet those numbers with Ackerman.

Now, Ackerman is also smaller, so the wind effects are not as great. The larger facility on a more windy day can resuspend sediments and cause higher total suspended solids and discharge.

So to answer your question, could they be designed --
MR. RAO: Maybe later on Miss Huff may answer this question because, you know, usually the settling facilities are generally designed to have certain concentrations into effluent water reducing retention time or increasing the site of the

facility.

So I was just curious since these are certain plant facilities that that would be a probability to meet the recommendation.

THE WITNESS: And the reason I'm hesitating to answer your question is when I go to the Corps and ask for design assistance, they don't go down to these low numbers. So they really can't give me good advice. All I can go on is historically what we've been able to achieve.

MR. RAO: With regard to the geotubes, are there any concerns regarding the dredged materials being contaminated especially where you want to use these geotubes to construct wetlands? Do you have any comments on that?

MR. HARSCH: We'll get into the actual data which is attached to the petition as part of Miss Huff's testimony, but I'll be more than happy to have the witness answer your question as well.

THE WITNESS: We're lucky that the watershed for the Fox River and the Chain O'Lakes system is historically a big agricultural and recreational facility. So it isn't the historic nature of heavy industry or industry that would have had discharges

that would have most likely resulted in contaminated sediments, and the sediment analyses that have been taken generally don't show anything to be significantly excited about.

MR. RAO: And the data that's being submitted as part of your petitioner, that was collected from the Fox Waterway, you know, the Chain O'Lakes and the Fox Waterway system?

THE WITNESS: Yes. There's a lot of data on our waterway system from our sediments.

MR. RAO: Yeah. Currently with your confines facility at Ackerman Island, what happens to the dewatered dredged material when you clean up, you know, the site?

THE WITNESS: The last couple of cleanups, the person who has won the bid has taken that material and has used it and mixed it with sand or other material and used it for topsoil.

In fact, I think now that person is operating a facility and finds that dredged material is very useful to use in mixing with this compose material for resale.

MR. RAO: Okay. And you stated that the relief that you're requesting should not be limited to a

specific location, and it should be granted on a nonsite-specific basis.

In terms of TSS limitations, would site specific water quality conditions have any bearing on whether you can meet those requirements? Because if we grant you nonsite-specific relief say, you know, for example, for 80 milligrams per liter -- and maybe for now we'd say 80 may be okay for Fox Lake -- and in the future you want to have -- you know, want to dredge at some other location, would water quality in that location have any bearing on whether you can meet the TSS limitations?

THE WITNESS: I'm not sure I understood the question. So the question is whether or not you gave us an area-wide --

MR. RAO: Yeah.

THE WITNESS: -- restriction, could we -- what was that?

MR. RAO: You know, would the water quality in that particular area wherever you want to dredge, will that have any bearing on whether you can meet the standard or not?

THE WITNESS: Will the existing water quality have any standard on whether or not we can meet

that?

MR. RAO: Yeah.

MR. HARSCH: A point of clarification, the solids that result in total suspended solids don't come from the solids in the water necessarily. They come from a resuspension of the sediments.

THE WITNESS: Right.

MR. HARSCH: So it's not really the water quality.

MR. RAO: Because I think in the agency's recommendation, they do talk about the background water quality conditions, and they use that as one of the factors to base their recommendations on.

So I assume that the background water quality changes from location to location. So what I was asking was whether that has any bearing in terms of granting you blanket relief.

THE WITNESS: See, from our perspective, and I think Miss Huff will probably testify more on this, it's a flowing system. The water from Grass Lake flows downstream into Nippersink and Fox and Pistakee Lakes and out of the Fox River.

So why there is better water quality in various locations, a lot of this fine grain sediment

stays in suspension for a couple days and with that, it will travel through the system. So that's why we're looking more in an area-wide limitation.

MR. RAO: Okay. I may ask Miss Huff some questions later on this.

Thank you. That's all I have.

MR. HARSCH: I have one follow-up clarification question.

FURTHER REDIRECT EXAMINATION

by Mr. Harsch

Q. I think Mr. Rao referred to the sediment analysis that had been provided as part of the petition. I direct you to Petitioner's Exhibit 1, attachment three, is that a listing of inorganic analyses -- of organic analyses and volatiles that were preformed on the sediment in the system?

A. Yes.

Q. And there's a map at the end, I believe, of -- Miss Huff has pointed out to me that there is a map available which is not included in that attachment which gives the site locations.

Is this a copy of that map --

MS. HUFF: Yes, it is.

BY MR. HARSCH:

Q. -- from the same report (indicating)?

A. Yes.

MS. EDVENSON: Okay. Let the record reflect that the site identification numbers are shown on the map which counsel is holding.

And can we have that entered into evidence?

MR. HARSCH: Yes. I'd like to introduce that into evidence as Petitioner's Exhibit 18.

MS. EDVENSON: Is there any objection?

MS. HOWARD: No.

MR. HARSCH: We'll provide copies of that along with Petitioner's Exhibit 17.

MS. EDVENSON: Exhibit 18 is entered into evidence.

(Petitioner's Exhibit No. 18 marked for identification, 5/6/97.)

BY MR. HARSCH:

Q. And if you look at also attachment four to Petitioner's Exhibit 1, is this analysis on ammonia and PH phosphorus -- strike that. Strike that question.

MR. HARSCH: I have no further follow-up questions.

MS. EDVENSON: Miss Kabbes, I have a couple questions.

THE WITNESS: Sure.

MS. EDVENSON: Could you get out the large map with the alpha letters on it?

I'm going to be working from respondent's opening statement the items that Miss Howard indicated were the items on which there is a disagreement for purposes of the limitation on total suspended solids.

The first mention was made of a reference that said from Nippersink Lake to geotubes. Would that be I on the map?

THE WITNESS: And your question again is?

MS. EDVENSON: Would that be I on the map, the reference --

THE WITNESS: Oh. You're referring to Petitioner's --

MS. EDVENSON: -- of disagreements with geotubes?

THE WITNESS: Okay. So I'm looking at Document No. 4, and you're asking about?

MS. EDVENSON: No. We're looking at Petitioner's Exhibit No. 8.

THE WITNESS: Okay.

MS. EDVENSON: And we're looking for the location of the points which Miss Howard identified as being the points of disagreement with the petitioner.

THE WITNESS: Okay.

MS. EDVENSON: One point of disagreement on TSS, the first one she mentioned, was from Nippersink Lake to tubes, is that I on the map?

THE WITNESS: Yes. That's proposed Nippersink Lake, geotube site, that's correct.

MS. EDVENSON: Okay. The next one she mentioned was from Pistakee Lake to tubes, is that K on the map?

THE WITNESS: The Pistakee Lake geotube site is not located on it, but that would be near K.

MS. EDVENSON: Okay. But it is not K?

THE WITNESS: That's correct. It's not K.

MS. EDVENSON: All right. The next one she mentioned was from Fox to Ackerman, would that be E?

THE WITNESS: The Ackerman Island discharge,

yes, E.

MS. EDVENSON: And the next one she mentioned was from Fox to tubes, is that located on this map?

THE WITNESS: G.

MS. EDVENSON: That is G?

THE WITNESS: Um-hum.

MS. EDVENSON: Okay. And the next one was from the Fox River to R15?

THE WITNESS: Yes, and that's on the other side.

MS. EDVENSON: Is that L?

THE WITNESS: That's L, correct.

MS. EDVENSON: Okay. Good. And then regarding the mechanical dewatering system disagreement, I'm wondering if all of those sites are located on the map by alpha letter, and I identify those as D, F, H, J, M, and N. Those are all the sites that are listed as referencing mechanical dewatering.

Are there any mechanical dewatering proposed sites that are not identified by alpha letter on the map?

THE WITNESS: No, there are not.

MS. EDVENSON: Okay. And, again, that's sites -- we're talking about D, F, H, J, M, and N.

MS. EDVENSON: Okay. Good. Thanks very much.

FURTHER REDIRECT EXAMINATION

by Mr. Harsch

Q. A follow-up question, those mechanical dewatering sites that you've just answered a question about, those are the sites that are currently under consideration with Holly Channel being the leading candidate for the initial test; is that correct?

A. That's correct.

Q. You hope to use this technology up and down the Fox River and throughout the channel; is that correct?

A. That's correct.

(Ms. McFawn exited the proceedings.)

(Brief pause.)

MR. HARSCH: I'm ready to call, when we reconvene, Linda Huff. I think we're through with Miss Kabbes.

MR. RAO: I have one more question for Miss Kabbes.

Regarding the geotubes, you said the material is designed so that the discharge from the

tube will meet 15 milligrams per liter TSS?

THE WITNESS: The non-point discharge, right.

MR. RAO: And it's non-point discharge, right?

THE WITNESS: Correct. It's non-point discharge, correct.

MR. RAO: So this limitation that we see in Petitioner's Exhibit 4 when they talk about, I think, ranges from 100 to 80 depending on the site, does that relate to the, you know, old flow suspension?

THE WITNESS: I have them -- we relate to both because if you remember we talked about potentially relining that inner lining of the tube to make it more efficient by having higher total suspended solids.

MR. RAO: So with the modification then the discharge will be at a higher total suspended solids level?

THE WITNESS: That's my understanding.

MR. RAO: Okay. Thank you.

THE WITNESS: As well as the overflow from the containment site that would be created by tubing the outer rim.

MR. RAO: And is it your understanding that this

tube cannot be measured to meet the recommended levels?

THE WITNESS: The tubes themselves have been measured to date to meet the 15 parts per million. The problem is in filling the tubes, the fine grain sediment, in an efficient fashion. It was a very, very inefficient and very costly method to fill them. And so our hope is that if we have some leniency on that total parts we can use to fill those tubes, total suspended solids, we can go ahead and fill them more effectively and more efficiently and less costly.

MR. RAO: Instead of 15, you think if it's raised to 100 milligrams per liter then you'll be able to meet your operation and limitation?

THE WITNESS: That's a step in the right direction. And, again, we're going to have to check data. I think we actually tried doing that that way to, I believe, make it easier for them to construct a dam that will drain better.

MR. RAO: For instance, I think the agency has specified 70 milligrams per liter, do you think that will have any imposing problems in terms of how you rate your geotubes?

THE WITNESS: It could. Once again, we're trying to figure out a way to build these so effectively that we won't have to.

MR. RAO: So are you saying that at this point in time you still don't know whether you will be able to achieve that level?

THE WITNESS: We can achieve the level, but the question is the cost in filling the tube effectively, and that's why using 100 parts per million should give us the ability to fill that -- more flexibility to fill the tube more effectively.

MR. RAO: Okay. Thanks.

MS. EDVENSON: Mr. Harsh, we're going to have additional testimony from experts related to the geotubes today, are we not?

MR. HARSCH: No.

MS. EDVENSON: Oh, okay. Then I do have a question about the geotubes myself.

I believe we heard testimony that indicated that the Army Corps of Engineers was using a permeable fabric with a nonpermeable liner and that your use was with a nonpermeable liner, correct?

THE WITNESS: Let me clarify, the liner was not described as permeable. It's just a nonwoven

liner. In all practicality, it becomes nonpermeable after a while. It was designed to allow the water to pass through it.

MS. EDVENSON: Is the nonwoven liner -- what kind of a material is the nonwoven liner?

THE WITNESS: It looks like, if you can, a thick felt. I did not bring the fabric samples with me. If I remember, I think it may be a polyester-propylene type of fabric.

MS. EDVENSON: So it's maybe a polyester product, but it appears to be fabric?

THE WITNESS: Right. It's clearly fabric.

MS. EDVENSON: I have another question about the geotubes.

Would it be possible to use a geotube perimeter to create an island that could not be characterized as a wetland?

THE WITNESS: It may be possible to do that with our fine grain sediment and our peak bottom lake. That's probably not practical. The Army Corps of Engineers looked at that, and they felt it was not appropriate to do that. I don't think they felt they could create a solid piece of land.

MS. EDVENSON: I was going to say if it was

possible, what would prevent the Fox Waterway Agency from doing that after having reached the arrangement that they're interested in wetland sediment?

THE WITNESS: Our partner in this is the Illinois Department of Natural Resources. They're actually at this point funding the Corps' work, and they are going to be funding the cost of the first fabric bag. They also have entered into an agreement with us that they will be the owners of the created islands.

MS. EDVENSON: Okay. Then I had a question about petitioner's exhibit -- rather, excuse me, attachment three and the references that were made to what I will call full sediment analysis that's been done on the lakes in the past, and that is, can you tell me something about these studies, and can you also tell me whether there have been any other studies that have been conducted since 1987 or before 1987?

THE WITNESS: We have taken sediment samples at various times for various projects and done various types of sediment analyses.

MS. EDVENSON: Okay. Is that something you do on a regular basis?

THE WITNESS: Because we haven't found too many hot spots, we probably don't do that that regularly.

MS. EDVENSON: Okay. When you say "too many hot spots," does that information include data from what you characterize as hot spots?

THE WITNESS: This data characterizes what was found during the Kudrna report.

MR. HARSCH: It's contained in petitioner's attachment two.

MS. EDVENSON: As contained in what? I can't hear you.

THE WITNESS: In the attachment, I guess, two.

MR. HARSCH: Attachment two to Petitioner's Exhibit 1 has some of that information in it as well.

MS. EDVENSON: Good. All right. Thank you very much.

MR. HARSCH: One clarification before we go.

MS. EDVENSON: Off the record, please.

(Discussion had off the record.)

MS. EDVENSON: Okay. I believe we have a clarification from Miss Kabbes about the remarks that we were just discussing.

THE WITNESS: Right. When I'm referring to hot spots, I'm just talking about areas that maybe have certain items that we don't want in our dredge material generally, referring to areas, for example, of high lead that we would normally not be dredging, those are areas that often marinas may have been used for boat refilling areas.

We're generally not dredging those locations.

MS. EDVENSON: Okay. Thanks very much. We'll go off the record now, and we'll take a lunch.

(Whereupon, a lunch recess was taken reconvening at 1:40 p.m.)

MS. EDVENSON: We can go back on the record, and we can continue at this time with petitioner's case in chief.

Would petitioner's counsel like to call the next witness?

MR. HARSCH: Yes. At this point in time, I'd like to call Linda Huff.

MS. EDVENSON: And will the witness please be sworn?

(Witness sworn.)

WHEREUPON:

LINDA HUFF,

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

DIRECT EXAMINATION

by Mr. Harsch

Q. Mrs. Huff, will you state your full name for the record?

A. Linda L. Huff.

Q. And who are you employed with?

A. Huff & Huff, Incorporated.

Q. And what's your position at Huff & Huff, Incorporated?

A. I'm president.

Q. I show you a copy of what has been marked and received into evidence as Petitioner's Exhibit 12, is that a true and accurate copy of your resume?

A. Yes, it is.

Q. Will you briefly summarize your education and professional qualifications?

A. I'm a chemical engineer, and I also have an MBA from the University of Chicago. I've had approximately 25 years in the environmental area

working first with the U.S. Environmental Protection Agency and then as an independent consultant and then, finally, as president of Huff & Huff for the last 17 years.

I've been involved in numerous evaluations of water quality regulations when they were first promulgated in Illinois pertaining specifically to economic impacts of those regulations, looking at cost and benefits of various pollutants.

In addition, in the last 17 years, I've had experience in looking at specific waste waterway impacts and other kinds of water quality analyses that have been necessary to identify impacts related to point source discharges.

Q. And, in addition, has Huff & Huff, your company, been involved in similar-type projects?

A. Yes, we have.

Q. Attached to your resume are a list of various articles that you have authored and co-authored?

A. That's correct.

Q. Based on your understanding of the Pollution Control Board's water quality regulations from your involvement initially in the water quality

standard portion plus the 20-some odd years of experience, do you have an opinion as to whether or not the 15 milligram per liter effluent limitation for total suspended solids is appropriate for dredging operations?

A. Yes, I have an opinion.

Q. And what is that opinion?

A. My opinion is that it is not an appropriate limit.

Q. Why is that?

A. First of all, the standard that was initially developed for the 15 milligrams per liter was based on work that had been done by Dr. Patterson evaluating industrial discharge control technology that specifically used control source technology such as clarifiers to maintain that kind of limit for environmental wastewater.

That was the primary focus at that time, and there were other numbers that were developed for municipal types of discharges as well, but the sole source was really the industrial discharge.

Those kinds of discharges also have different types of sediment that they would be involved with removing in terms of particle sizes,

constituents that you would be involved with handling, and that's really the sense of the information that was presented in those early hearings when that number was being derived.

Q. Is it theoretically technically possible to meet 15 milligrams per liter from dredged effluent?

A. I would say that it's not possible on a consistent basis.

Q. Why is that?

A. There are other factors that enter into achieving that number. When we're talking about dredged material, we're talking about a distribution of particles that come from, in this case, sediments where you have sands and materials that are going to readily set out as well as very fine grained silk and clays.

Those materials have very small particle sizes, and by their very nature are very difficult, require long, quiescent times in order to settle, and can be resuspended at very low scouring velocities.

Q. If we were using a hydraulic dredge to dredge a waterway, is the water portion that is sent

to a confined dredged disposal operation the water that is normally found in that waterway?

A. Yes, it is.

Q. And what effect would the total suspended solids level in that water have on the effluent from the confined dredged disposal site?

A. That existing water quality concentration would also have to be removed if you were trying to achieve a 15 milligrams per liter value if the lake water itself is about 15 milligrams per liter.

So it would require settling even beyond what the lake itself has been able to provide.

Q. Are you aware of any other studies or any studies that are in this record to date concerning appropriate -- more appropriate -- strike the question.

Are you aware of any studies in this record as it exists concerning what other states do in terms of regulating dredging operations?

A. Yes.

Q. And what studies are those?

A. I would refer to attachment five of the NIPC study that was prepared by Cochran and Wilken

where they looked at a variety of states and inquired as to how they handle dredged materials from a permitting point of view as well as from an effluent point of view.

There were a variety of techniques that have been used by various states to try to handle this issue, and I would say that there's a combination of suspended solids and turbidity limits used in combination of effluent numbers or looking at incremental values above background, looking at points downstream.

So there really is a variety of techniques that people have tried to use to set limits for dredging activities.

Q. Have you had occasion at Huff & Huff to contact some of the states that are discussed in attachment five to Petitioner's Exhibit 1 as a follow up to this report?

A. Yes, I have.

Q. And what were the results of that follow up?

A. We were interested in some of the states that had listed a 30 milligram per liter value with a 45 dealing max value since that was the

lowest other value that had been disclosed in that particular document, and in talking with the state of South Dakota specifically, they have a variance procedure --

MS. HOWARD: Objection, hearsay. And we don't know the identification of who they talked to.

MS. EDVENSON: Mr. Harsh?

MR. HARSCH: I think it's routine for an environmental professional -- it's in the same manner in which the report itself was prepared -- to contact environmental regulatory agencies and discuss their standards and whether or not they have alternative means by relief from those standards, and that's what Mrs. Huff is talking about.

If not, the agency is going to have a great amount of difficulty in any other regulatory proceeding where they're proposing effluent limitations or modifications and relying in part on other state standards. It's routine in this profession to conduct business in that manner, and a reasonable person would rely on that sort of an inquiry.

MS. EDVENSON: Thank you. The objection is overruled. I believe the board would find it

interesting for the witness to continue the statement.

You were referring to South Dakota.

THE WITNESS: That's right.

BY THE WITNESS:

A. In conversation with representatives from the state of South Dakota regarding their limits, they did say that there's a variance procedure that they can utilize to grant numbers between 90 to 100 milligrams per liter depending on the site-specific conditions because, again, they have a flat number for their state.

MS. McFAWN: Excuse me. That flat number being the 30 milligrams?

THE WITNESS: The 30 milligrams per liter.

MS. McFAWN: And is this variance procedure a statutory or regulatory procedure or just an internal South Dakota regulatory agency?

THE WITNESS: They did call it a variance procedure, but I'm not sure how formal that process is.

MS. McFAWN: Thank you.

BY THE WITNESS:

A. I think that there were other states

that were listed also within that Cochran and Wilken document, and you can see that they have a variety of procedures.

But there's also something referred to as best professional judgment, and, actually, we queried some of the states where that term had been used just to try to find out what it was they actually meant by that term. And the representatives of the two states that we contacted suggested that that term would not be as correct as if they looked at the overall benefit of the project compared to the impact that is going on.

They did not actually endorse that kind of best professional judgment terminology but would rather say that they, of course, are concerned about certain factors such as the quality of the stream that's being discharged into the relative ratios of discharge to the stream, other factors that they would look at.

But the most important point to them was what was the benefit to this project and making sure that the dredging operation was warranted based on that kind of operation. I thought that was a little different kind of information than what was actually

in Cochran and Wilken study because it has a little bit different focus. And I thought that that was important in terms of trying to come to grasp with this particular situation that we have.

BY MR. HARSCH:

Q. I think Miss Kabbes briefly hit upon the nature of the sediment, but have you had an opportunity to review attachment four to Petitioner's Exhibit 1 and other information regarding the sediments in question in this proceeding?

A. Yes, I have.

Q. Can you briefly describe those sediments for the board?

A. In attachment three, there are some values that were given in the Kudrna study and also the map that was attached that presents a key basically for those site numbers one through ten that they used --

Q. That would now be something that's been marked as Petitioner's Exhibit 18?

A. That's correct.

Q. The map that you handed me earlier today?

A. That's correct.

Because that represents the main boat channel, which is the area that the Fox Waterway Agency is also interested in dredging in the future. So that is a -- even though it's older data, it should be representative of one of the primary areas where dredging is going to be continued.

So an analysis was prepared for a wide variety of parameters including heavy metals, polynuclear aromatics, and pesticides.

Q. Did that data you reviewed flag any problems in that sediment that might result from the dredging of those sediments?

A. No. I would say the results are very supportive of the fact that this material is generated from agricultural uses in soiled erosion.

Q. Had you had an opportunity to visit the chain with Miss Kabbes?

A. Yes, I have.

Q. Are you otherwise generally familiar with the chain?

A. Yes.

Q. Do you agree that conclusions in the

report prepared by the Army Corps of Engineers, which are attachment two in Petitioner's Exhibit 1, and the testimony from Miss Kabbes that sedimentation is a significant problem in this area?

A. Yes.

Q. Okay. And why do you think that it's a problem?

A. There have been studies since the 1970s talking about problems in the Chain O'Lakes that relate to sedimentation. Just knowing the system itself and the importance that it has as a recreational source to maintain an active recreational water body that sedimentation -- given the size of the watershed that's coming in and the fact that you're going from a river to a lake system back to a river is it's a perfect condition to allow settling of materials that normally would be carried by the Fox River further downstream.

Q. What types of changes, if any, have occurred as a result of that sedimentation?

A. As the Corps of Engineers discussed that there has been a loss of rooted vegetation in the lake system, and there has been a change in the types of fish -- the predominant fish species in the

lake.

Now, this would be associated with a combination of factors, not just the suspended solids, but water level changes and other factors, but certainly suspended solids would be one of the factors that could be affecting that change in species.

Q. What change in the fish species have been observed to have occurred?

A. For example, northern pike used to be in this lake in a much greater extent, and stocking had been done. That's one fish species they feel has been effected by water levels. In addition, even bluegills and the pumpkin seed fish have declined in overall numbers, and what they've seen is a predominance of yellow bass in the last ten years has become a much more predominant fish species. Now, that's the change that's occurred.

Q. Do you have an opinion as to whether or not you believe that the dredging to increase the depths of channels will have an impact on water quality?

A. Yes.

Q. And what is that opinion?

A. I think that it was most graphically answered in the Corps of Engineers' study. In there attachment two on Page 87, they had prepared -- it's Figure 11.

They had prepared a figure that would show the difference between a three foot -- if you had a three-foot depth and the boats were passing over what would happen to the suspended solids versus a six-foot depth and an eight-foot depth, and clearly you can see based, you know, on their analysis that --

Q. Excuse me a second, Linda. You're referring to attachment two to Petitioner's Exhibit 1 and where in that record?

A. Page 87, which is Figure 11.

Q. Thank you.

A. (Continuing.) -- in looking at the daily cycle of suspended solids, you can see that the depth in the lake would have an important effect on the peak suspended solids levels that would occur.

Q. And what is your understanding for that change?

A. Is that with greater depth, you avoid

the resuspension of the sediment that's on the bottom of the lake, and that's what contributing to those peaks of up to 200 milligrams per liter when you have a very shallow depth as you're resuspending material that's fine grained.

Q. And that would be resuspended by both boat traffic and wind?

A. Correct.

Q. If I look at those tables, it almost looks like there's, what, a 50-percent reduction potentially?

A. I think that you can look at the figure, first, where a depth is three feet and the depth is six feet, and if you just looked at the maximum concentrations, you would see a three-feet maximum concentration go up to 200 milligrams per liter; whereas with the second figure at a depth of six feet, you can see that the maximum was less than 100.

Q. What impact does total suspended solids in general have on the natural system?

A. I think that there's two places in our variance position that we discussed that. One, the Corps of Engineers has some information but also

attachment six which is a study that was prepared by the state of Maryland talks about turbidity and suspended solids. And, of course, the chronic effects that they're talking about really -- I mean that they're relating to for water quality purposes deal with either smothering of benthic organisms, b-e-n-t-h-i-c, or as far as fish are concerned, either gill damage, possible changes in reproduction or feeding habits and then submerged vegetation.

And in the conclusions of that study, they provide citations for different water quality concentrations that affect these different systems. I think it's really important to note that those are water quality concentrations, not effluent concentrations, and that generally the range of 100 to 500 milligrams per liter is what they established in their conclusion as far as talking about levels where chronic adverse effects occur.

Q. And those would be effects when the water quality of the water body itself is that level?

A. That's correct.

Q. Not a discharge into that waterway?

A. That's correct.

Q. Is there a difference between turbidity and total suspended solids?

A. Yes, there is.

Q. Can you explain what those two terms really are? I think some of these reports refer to both turbidity and total suspended solids.

A. There are -- one, they really provide a different measurement. A suspended solid is really a measurement of weight. You're in essence measuring the weight of the solids that are remaining in a water sample; whereas turbidity, you're really looking at light penetration.

And there are no direct correlations between the two, but sometimes the terms become -- are used interchangeably. But turbidity is much more related to the light effects, and it's really a function of particle size to a greater extent. That's the key parameter for a turbidity measurement.

Q. Is there a difference -- first of all, is there any known correlation between turbidity and total suspended solids?

A. Not that I'm aware of.

Q. Are you familiar with the Illinois

Environmental Protection Agency's recommended variance limitations that are set forth in Petitioner's Exhibit 4?

A. Yes, I am.

Q. What is your understanding of the basis of those limitations?

A. I believe those numbers are based on factors that would include the existing water quality of those particular water bodies into which dredging overflows or effluence would be occurring.

Q. Are you aware of data such as Respondent's Exhibit 1 and other data which would show that there are test results from sampling in those waterways with numbers higher than what they recommended that have been sampled?

A. There would be -- I'm just trying to see if I reviewed all those water bodies.

I think it's possible that there are maximum values that are higher.

Q. That would have been a much better question. I apologize. Thank you for answering that question correctly.

Have you had an opportunity to examine the impact of the difference between, for example, a

limitation of 80 milligrams per liter at Ackerman Island versus 100 milligrams per liter that the Fox Waterway Agency prepares to accept?

A. Yes. I tried to evaluate that in a couple different ways just to provide some additional information to the board, and one of those ways was to basically look at the difference between the solids that would be removed and then the solids that would be discharged based on those two different effluent limits.

Q. Is that analysis set forth in Petitioner's Exhibit 13?

A. Yes, it is.

Q. Can you describe that analysis, what led to the preparation of Petitioner's Exhibit 13?

A. This particular exhibit was based on some of the information that was also provided in attachment five which is the Cochran and Wilken study, and in there they had provided some information regarding typical suspended solids levels that could be taken up during a dredging activity. So that if you had 100,000 cubic yard dredging activity, they developed a table that would show depending on the size of the dredge that in

terms of gallons per minute, how many hours you would operate. Then that would lead to a certain level of solids that you would be taking in.

So, for example, in the first row, I took Ackerman Island at 100 milligrams per liter TSS. I show that 85,068 tons of solids would be removed, and that would be for 100,000 cubic yard operation that would be conducted, which in essence would be over the lifetime of the variance period.

But that's the amount of solids that could be removed from the Fox Waterway system, and that assumes 150,000 milligrams per liter. That's the concentration of solids that can be actually taken out from the system.

The next column which talks about total solids discharge, in that one I footnoted it at the bottom with an A just to give you the calculation, but 136 million gallons in essence represents the cubic yardage that you would be removing during the dredging period of 100,000 cubic yards. So it's just a conversion. 8.34 is the unit conversion factor, and then the 100 milligrams per liter would be the discharge that we'd be talking about and then, again, converting from pounds and tons.

So over 100,000 cubic yard project, we'd be removing approximately 85,000 tons and then 56 tons would be coming back into the river system as the discharge. If you look at the 80, that would be basically 45 tons versus the 56.7 tons.

We're still talking about a percentage removal of 99.93 versus 99.95 percent removal over the project.

Also for the geotubes --

Q. Before we move to that, you also looked at the proposed site for confined dredged disposal on a river, did you not, where the agency has proposed 58 milligrams per liter effluent limitation?

A. Yes, I did, and that's the bottom row where it says new CDF at 58 milligrams per liter. I assumed in that case that it would just be 100,000 cubic yards coming from -- going to that location, and that's why you see the same total solids removed. I didn't divide them up among facilities. I just made a simplified assumption.

And then the 32.9 would be the total solids that would be discharged out of that system which would be at 99.96 removal.

Q. So if I understand this for your calculation, you're assuming that approximately 85,000 tons of bottom sediment that has settled out in this area would be dredged, and what we're talking about here is how much total suspended solids would be discharged back into the receiving stream from the confined dredged disposal activity assuming all, and that number is the 56.7 tons or the 45.4 or the 32.9; is that correct?

A. Correct.

MR. RAO: Is it total solids or total suspended solids?

THE WITNESS: Those would be solids, total solids.

MR. RAO: Total solids.

BY MR. HARSCH:

Q. So if all of those solids that were in the discharge were to settle out back into the lake system, then the dredging activities -- that's where the 99.93, 99.95, and 9.96 is pretty relevant? That's how many -- what percentage of the tons of solids that they, in fact, would be taking out of the lake system?

A. That's correct. And just for further

clarification regarding the geotube numbers, those total solids removed are based on assuming a 7,000-foot tube which is the perimeter tube that I'm talking about and assuming that we would have two and a half cubic yards per foot of material that would basically yield about 15,000 cubic yards of solids of material in the geotube itself.

So that is just representing that tube portion. But, again, it was just to try to give kind of an order of magnitude of what would be happening there. And in that particular case, because these solids are more compact or a more dense material, that's going actually into the geotube. We tried to estimate what the percent solids would be in that geotube itself, and we used 400,000 milligrams per liter.

And that's just an estimate. We didn't have any analytical data for that, but that gives us then for one geotube, if we just look at that, that's basically 5,000 tons. And, again, assuming what is coming out of it, we're looking at just eight million gallons, basically, of material at 100 milligrams per liter would give us 3.3 tons that would be returning to the water system.

Q. And, again, depending upon what location the agency has recommended more restrictive limitations, 80 and 70, et cetera?

A. That's correct. So it's basically to show the incremental differences in the effluent standards -- that the effluent standards create in terms of the total solids that are being discharged back to the system.

Q. And then did you do the same for the mechanical dredging dewatering project we're talking about?

A. Yes, I did. And this, again, was just based on the test study of 10,000 cubic yards because that's what the request was. And in this case, the total solids generated is 32.9 tons, and that was based on a 90-percent removal.

Q. Earlier I think you referred to South Dakota looking at what the benefit of the dredging project was. Do you see a benefit to the system dredging occurring?

A. Do I see a benefit to the system?

Q. Yes, the Fox River chain system.

A. Yes, I do.

Q. Do you see any difference based on your

analysis as set forth in Petitioner's Exhibit 15 on the short-term, long-term impacts if you regulate something at 100 milligrams per liter or 80 milligrams per liter or 70 or 58 depending upon what site we're talking about?

A. I think that those numbers -- I mean, we're very close on these numbers, I think, in terms of 80 versus 100 milligrams per liter, and in looking at those numbers, I go back to look at -- what we have is a discharge that's maybe from the Ackerman Island system to CFS.

We have a lake system or a water system that is much larger, and, in fact, the Ackerman Island system specifically as you can see that is a channel. The materials that are overflowing are -- it's the nature of those materials that I think are important for us to consider.

For example, even though Fox Waterway has tried to meet 15, they're meeting about 50, 40 to 50, on average, and that's because they have very fine grain material that is being resuspended due to wave action, wind action on their basis. And, if fact, the lake system is -- you could characterize as 30 or 40 milligrams per liter on average itself.

It is that these materials when they are discharged -- if we discharged the 80 versus the 100, it's going to be about the same kind of material, which is this finer grain material that is going to have a very low scouring velocity. So that if there is movement in the channel or in the lake, those materials are going to stay in suspension longer because if they would have settled out, they would be in the confined disposal area already.

So I think that it's having a flexibility though to evaluate what is the real effect of going up to 100 milligrams per liter. We're talking an incremental number, and we don't want to have an adverse effect, environmental effect, but we really need to know how are those particles being transported and how are they being handled in the channel or in the lake. If we get that level for our variance proceeding, it will allow us a time to do some studies to see if, indeed, we should be at that level, and part of the variance proceeding is to evaluate data.

Looking at the quality of it, I don't see that the incremental difference between those two numbers would cause a significant difference in the

environmental effect given the kinds of materials that we think is going to be coming out of these bases. It's very fine grain material that's going to stay suspended.

And that's why we can ask for that number because we don't think that there will be a large or maybe not even an immeasurable difference in the ultimate water quality that goes back to the lake from this area once some mixing has occurred.

I think that mixing with water that's already at 40 milligrams per liter that we're going to be coming into that kind of number and how long is it going to take to -- you know, if we don't have deposition, then we're going to have mixing. And I think that's where the issue comes from, from the environmental point of view. Are we going to have deposition, or are we going to have mixing? Because if we have mixing, then truly it will mix within the lake river system and --

MS. EDVENSON: Miss Huff, are we going to have what or mixing?

THE WITNESS: Deposition.

MS. EDVENSON: Deposition?

THE WITNESS: In other words, if the solids

settle. You know, that's a concern. You don't want those settling because then you run into some of the effects like they talk about benthic smothering or having over effects. But if it is staying in suspension, then it would be like another kind of chemical that you would allow a mixing because it will be mixing within the aquatic environment.

And we do have -- and if we can think about that, then we can say okay, Ackerman Island has a two CFS discharge. We had an exhibit that just showed the flow rates of some of the different lakes, and summer low flow based --

BY MR. HARSCH:

Q. You're referring to Petitioner's Exhibit 14?

A. Correct. (Continuing.) -- which was data that had been prepared, I believe, by the Illinois State Water Survey.

It shows flow rates actually for all of those lakes, and even though we might be in a specific channel for our discharge, there is going to be mixing that occurs within that channel, and then the lake itself is really part of a riverine system where flow is going to continue. So it seems

likely to me that mixing will occur in the lake environment.

Q. You've observed the channel to which Ackerman Island disposal site discharges; is that correct?

A. Yes, I have.

Q. Did you notice sediment buildup or sediments developed in that channel?

A. No, I didn't.

Q. And that channel then leads to the lake to which Ackerman Island is said to discharge?

A. Right, to Fox Lake.

Q. So is it your -- do you have an opinion as to whether or not deposition will occur, the solids will settle out, within what would be a normal mixing zone for that discharge?

A. My opinion would be that the channel itself has very good flow in it, and it also has a wetland on the other side, but it's a -- that particular flow continues and then basically goes back into the Fox Lake, but there would be mixing within that area, and I don't believe that those solids would settle until they reached back into the lake system or much further downstream.

Q. Have you looked at what would potentially be a mixing zone?

A. I started on that pursuit until I realized that especially for Ackerman Island, it's a more channel system that a river system. So I haven't completed analysis of what a mixing zone would look like. But just looking at the -- if the agency's goal would be to have a water quality value of 80, and, of course, we're at 100, it obviously would not take very long for us to be able to achieve that from a mixing point of view.

It wouldn't require -- a mixing zone would be sufficient to achieve that kind of number.

Q. Would that be one of the things you might look at during the study that we're going to conduct during a life of the variance?

A. Yes, it would be.

Q. And would the same types of observations apply to the other points that you've -- of the discharge locations that we've talked about that you have personally observed?

A. Yes.

Q. While we're referring to lakes, these are really part of an inner connective refer system;

is that not correct?

A. That's correct.

Q. And you do see that in Exhibit 14 the summer flow rates from those various lakes?

A. That's correct.

Q. I think in my opening statement I said that we stipulated or agreed that dredging had a temporary adverse effect on water quality.

Do you agree with that characterization?

A. That dredging has a temporary adverse effect?

Q. Yes.

A. Yes.

Q. Can you compare that temporary adverse effect with the beneficial effects that you previously talked about?

A. I think that you're going to have a disturbance in the short run in a dredging area where by its very nature it collects the solids that are on the bottom which would include anything on the bottom, just benthic organisms in that short area, and also would probably increase turbidity in the short run.

But those are temporal effects, and when

you look at the magnitude of what you can remove, that will have a much more positive effect on a long-range basis for the overall lake quality.

So you have a trade-off between a short-term impact and a more large-term maintenance that would lead to reduction of suspended solids in the whole system. So you have this trade-off between a short-term area and provided a more long-term benefit.

Q. You're familiar with the test that Fox Waterway Agency wants to conduct with Solomon Liquids, are you not?

A. Yes, I am.

Q. And you understand that they're proposing to conduct that test now on Holly Channel?

A. Yes.

Q. And you physically have observed Holly Channel?

A. Yes.

Q. And do you believe that Holly Channel can be isolated from the main waterway?

A. Yes.

Q. If Holly Channel is isolated, do you think that it will be -- what will be the

environmental impact of discharging the return water from Solomon Liquids treatment system into Holly Channel?

A. Well, there will be additional solids that will be discharged back into that channel. Currently, it's a very silted area that probably has very limited use.

I think that by using management practices to ensure that, such as a silk curtain or a silk barrier, at the end of that channel that you can minimize materials that are not -- to me what the unknown is how far are the solids going to carry that out of this system.

They're at a higher concentration, and it's very likely that they should deposit within a short distance, and I think another person will address that in greater detail. But if they don't, then you just need to have a precaution at the end of that channel that you can cut it off and make sure that you don't have deposition going into the main river.

I think with that procedure, then at least you can observe -- I don't think there will be any environmental impact in terms of organisms or the

river itself. It will just be in that very limited area where the test is going on.

Q. You understand --

MS. EDVENSON: Excuse me, Counsel. May I interrupt us for a moment? Is the Holly Channel in your petition?

MR. HARSCH: It's described -- the agency wanted us to be specific as to where we would propose doing the test, and in our response to the agency's variance recommendation, we told you that we intended to do this in a channel, and Karen has testified that we intend to carry that out on any one of a number of locations that are included in a permit application that's also an exhibit, and then you went through with Karen on the locations of those, and I think there was a clarification question that Holly Channel is the leading candidate right now to do this testing.

MS. EDVENSON: Thank you.

MR. HARSCH: And if you look at Petitioner's Exhibit 8, Holly Channel is M on the back side.

MS. EDVENSON: Well, I knew it was on the map, but I didn't find it in the petition.

MR. HARSCH: The reason why it's not is we were

talking about variances from the system wide to allow us to use these technologies throughout the system, and the agency has objected to that, and that's why we've come back on our response to that to clarify where the points are for active consideration for both the geotube technology as well as the other tube confined disposal sites and the numerous locations for the potential test for the mechanical dewatering system.

MS. EDVENSON: Okay. Thank you. Let's go off the record for just a moment. Why don't we take five minutes?

(Ms. McFawn exited the proceedings.)

(Break taken.)

MS. EDVENSON: Back on the record.

BY MR. HARSCH:

Q. Mrs. Huff, assuming that Holly Channel is the location for the mechanical dewatering test, is it your understanding that the agency would be dredging from the end of the channel which is in the foreground of the photograph, side to side to down to the mouth of the channel?

A. That's my understanding.

Q. Then would there be -- what concern on bottom deposits would exist if you're going to dredge the entire bottom?

A. There would be no concern as far as remaining benthic organisms within that stretch. The question is you would not want material to go beyond Holly Channel.

Q. So as long as they isolated it then that didn't occur, and there wouldn't be any concern of deposition of sediments in that channel as they dredge it?

A. Correct.

Q. Would you expect -- is there a difference in the settling rates between the solids that are expected to be discharged from the mechanical system and the solids that are discharged from the Ackerman Island or from the geotube system?

A. There could be differences based on the fact that they would be coming from different locations. So there will be variability in the particles.

Q. Would the addition of a flocculent to the mechanical dewatering system have an impact on the settleability of those solids?

A. Yes. It would be -- it would enhance the settling of those solids.

Q. Have you had a chance to review the material safety data sheet for Photafloc 1126-S, which is Petitioner's Exhibit 16?

A. Yes.

Q. Do you think that the normal utilization of this flocculent aid would result in any concerns over water quality impact of that flocculent being discharged?

A. No.

MR. HARSCH: I have no further direct questions of Mrs. Huff.

MS. EDVENSON: Thank you, Counsel.

We now have the cross-examination of the witness.

CROSS-EXAMINATION

by Ms. Howard

Q. Mrs. Huff, isn't it true that you have requested -- the FWA has requested 100 milligrams per liter as the effluent limits for total suspended solids across the board for all of the water bodies that we've talked about today?

A. Yes.

Q. And could you tell me, is that recommend -- that request based on ambient water quality?

A. No.

Q. Is it based on technology?

A. I would say it's based on to a certain extent technology with the idea that we would like to have the flexibility to maximize the operations for removing solids. So it's given some flexibility, and it's also looking at levels that we feel would not cause environmental effects.

Q. Is it also possible that this is also based on an economic type of concern?

A. Yes.

Q. I believe in the petition on page -- let's see.

Attachment one, Page 5, of the petition, isn't it true -- I'll wait until you get there.

A. Okay.

MR. HARSCH: Attachment?

MS. HOWARD: One. It's actually the petition, Page 5 of the petition.

BY THE WITNESS:

A. Oh, Page 5.

BY MS. HOWARD:

Q. In the first full paragraph in the fourth sentence, isn't it true that it states in there that in 1993, 1994 the effluent TSS for the existing confined disposal sites average 42 milligrams per liter with the range of ten to 101 milligrams per liter? Is that correct?

A. Yes.

Q. And also that this average limit and range is comparable to the results of the Chicago Corps of Engineers report which was submitted as attachment two which petitioner also shows?

A. Yes.

Q. Those are comparable?

MR. HARSCH: Well, the petition speaks for itself. They don't differ in numbers.

BY MS. HOWARD:

Q. But you do agree that that is the range and that is the average that the Ackerman Island site is able to achieve, correct?

A. Yes.

Q. There isn't any data on record that shows actual sampling results to determine the dilution ratios from the Ackerman Island discharge;

is that correct?

A. That's correct.

Q. And there isn't anything in the record right now, there isn't any sampling data that would show, what the dilution ratios from any other of the proposed or the present existing geotube site on the Chain O'Lakes, correct?

A. I think when you talk about dilution ratios, you're actually saying has there been a study done to look at the change in, let's say, suspended solids, for example, in that area into the lake and --

Q. How quickly the solids would dilute and dissipate, what's the discharge? There isn't any studies on the record right now that show what that dissolution ratio or results would be from any of the sites or any of the lakes within the Chain O'Lakes at this time?

A. That's correct.

Q. And with respect to the Maryland turbidity study, you've testified that 100 milligrams per liter is a safe limit as far as you're concerned for aquatic life, correct?

A. What I said is that they recognize that

adverse chronic effects occur at 100 to 500 milligrams per liter for a water quality number. I think what I may have said 100 was -- I just want to clarify that when I talked about 100 at different times when we were talking about the effluent standard that we didn't believe that that would have adverse effects.

Q. Okay. But you're saying that the 100 milligrams per liter as an effluent limit you believe is a safe limit for aquatic life?

A. Yes, for these applications, very specific.

Q. And you've based that assessment -- and your conclusion is based on the Maryland turbidity study and the NIPC study, correct, that's what you testified to?

A. On both of those documents and the site-specific characteristics that we're talking about.

Q. Okay. Then in the conclusion on the Maryland turbidity study on Page 10 doesn't it state that turbidity at levels between 100 and 500 milligrams per liter had been found harmful to aquatic biota?

A. Yes.

Q. And it also states on Page 10 that the preferred range of turbidity for fisheries' management is between 25 and 80 milligrams per liter; isn't that true?

A. Yes.

MS. EDVENSON: Is that an example of the use of the word turbidity as being synonymous with suspended solids, yes?

THE WITNESS: Yes.

MS. EDVENSON: Okay. Thank you.

BY MS. HOWARD:

Q. You just testified according -- that you had reviewed the flocculent data sheet which has been marked as Petitioner's Exhibit No. 16.

Can you tell me where -- isn't it true that this information in here is more with respect to what effect -- contact with human body this flocculent could have?

A. Yes, it is. And we contacted the manufacturer to try to obtain information that would basically be specific to aquatic toxicity, and this is a similar product to one that they have developed aquatic information on, and our understanding is

that they said the LD 50 would be about 500 parts per million, but we would be looking at dosage rate that would be lower than that.

So my opinion is based on that information plus the usage.

Q. Isn't it true that LD 50 is a term that's used for mammal testing rather than aquatic?

A. Fish. It can be used for fish.

Q. If this toxicity information is available, is it something that you would consider entering into the record?

A. Yes. I don't have a written copy of it yet, but we would like to have that too.

Q. Okay.

MS. EDVENSON: When would you have a written copy of it?

THE WITNESS: It would probably take three to four days for them to mail us, you know, the additional material and safety data sheets.

MS. HOWARD: I am finished with my cross-examination.

MS. EDVENSON: All right. Thank you, Miss Howard.

Will there be any redirect?

MR. HARSCH: Yes, there is.

REDIRECT EXAMINATION

by Mr. Harsch

Q. It's your understanding that the Maryland study refers to the adverse effects beginning to occur in a range between 100 to 500 milligrams per liter total suspended solids.

As a water quality number of the body that would be indicative of the water quality of the body as a whole?

A. Yes.

Q. In your opinion, is that a different impact than discharging an effluent under these specific conditions with 100 milligrams per liter total suspended solids?

A. Yes.

Q. That's because you would expect the number then to drop out to -- drop lower than that as that effluent is assimilated into the water body?

A. Correct.

Q. In response to the questions concerning the dilution ratios not being specifically prepared in this record, is that the type of information we'd be looking for during the study program to develop

the appropriate long-term relief?

A. Absolutely.

Q. And does Petitioner's Exhibit 14 show that there is a flow available in receiving streams to dilute or allow mixture to occur?

A. Yes.

Q. It's just not specific dilution ratios; is that correct?

A. That's correct.

Q. So in your opinion dissolution, in fact, will occur at all the locations we've discussed?

A. Yes.

MR. HARSCH: I have no further questions.

MS. HOWARD: I have one follow-up question.

MS. EDVENSON: Go on.

RECROSS-EXAMINATION

by Ms. Howard

Q. On Page 4 of your response to the agency recommendation in the middle paragraph, if there isn't any data to demonstrate the dilution ratios which you just testified to, then isn't it true that the statement in the sixth or seventh line down in that full paragraph, however, the proposed

limit at issue is an effluent limit, and the TSS and the effluent will be quickly diluted after discharge, has no support in the record at this time?

A. Oh, I think that information that's been provided that talks about the fact that this is a two CFS discharge volume that we're talking about flow rate from the Ackerman Island one --

Q. Correct?

A. -- and then in looking at the lakes as we talked about in Exhibit 14 and the size of those water bodies and the fact that they have flow rates does provide some information. It's not as specific as you would like it to be, but I think it's a start. I mean, it provides a basis to work for.

MS. HOWARD: That's all I have.

MS. EDVENSON: All right. Thank you very much, Miss Huff.

MR. HARSCH: At this time, I would like -- unless there are any additional follow-up questions from the board --

MS. EDVENSON: Well, let's go off the record for just a minute to discuss how we're going to deal with questions that we have for the witness.

Off the record.

MS. EDVENSON: All right. We have concluded the testimony of Miff Huff, and we will have the introduction of an additional exhibit, and counsels, I believe, agreeing that this exhibit will be entered into evidence, and it will be Exhibit 19, Petitioner's Exhibit 19.

(Petitioner's Exhibit No. 19 marked for identification, 5/6/97.)

MS. EDVENSON: The first part of it 19-A will be Neutron Floc additional data, and the second part of it, 19-B, will be will in the nature of a comparison document. And the respondent agrees to entering these into evidence with the understanding that they will be receiving a copy as soon as possible which will be in the next two or three days.

Okay. And we've also discussed questions that I and Mr. Rao have for the witness, and we may have for other witnesses that we hear later today, and we will be putting those questions into writing and sharing those with both parties.

Both parties will have an opportunity to respond in writing that writing being received by

the board no later than May 19th. We will do that in order to provide the parties with time that they need to, if possible, complete their testimonial case today before we are required to leave the building.

All right. Let's proceed then with our petitioner's third witness.

MR. HARSCH: At this point, I'd like to call Michael Hodges.

MS. EDVENSON: Mr. Hodges, will you please be sworn?

(Witness sworn.)

WHEREUPON:

MICHAEL HODGES,

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

DIRECT EXAMINATION

by Mr. Harsch

Q. Mr. Hodges, will you please state your name and who you're employed by?

A. My name is Michael Hodges. I'm employed by Solomon Liquids/TIC, The Industrial Company.

Q. If I show you what has been marked as

Petitioner's Exhibit 15, is it a true and accurate copy of a product brochure information document that Solomon Liquids has put together?

A. Yes.

Q. Miss Kabbes has testified of the Fox Waterway Agency's desire to use your system.

Will you briefly describe your system and how you would intend to see it utilized in her application?

A. This technology is a combination of a mechanical process essentially a chemical or flocculation process. The mechanical process represents the very latest in technologies related to liquid solids separations especially of the course nature.

The material is taken out mechanically through linear vibrating shaking screen systems and particle cut down to nominally 100 microns.

From there, the slurry is moved through a process that's in the display or in the photographs of it that looks like large solar panel units. There's actually a very fine engineering screening system utilizing dredged water screening technologies.

The flocculated material is caught up on the surface of the grid, and water is allowed to fall through the grid service into catch pans. The solids accumulate. They start slowly sliding down the screen or rolling down the grid service. They're displaced by solids that come after them.

So the case essentially is accumulated again on the surface, the water falls through as opposed to a clarifier process where the flocculated material would fall through a water medium, and the water would be decantured or taken off the top, and the solids would be covered from the bottom.

This inverted reasoning or this inverted logic towards the approach means that we're not waiting for the flocculated material to fall through a water medium. Because we don't have that wait period, we get a very high solids removal capability or capacity, and we also usually have a drier solids cake.

Now, that's all dependent upon the nature of the material itself. We're dealing with organic material that tends to be of a wetter nature, but we've taken steps so that we've got overlapping capabilities. So the course material, where course

material is present and removed, is removed at whatever rate is being pumped.

A medium grade material, which would be a fine sand, for instance, which is prevalent in a lot of waterways can be removed gravitationally, and then ultrafines that may be categorized as organics can be flocculated and removed in this flocculated form.

It is, in the industry, a breakthrough as far as high process rates and across-the-board capabilities.

Q. Has this system been employed anywhere in Illinois?

A. Yes.

Q. Where?

A. Humboldt Park for the Chicago Parks Department.

Q. And it's the same system that your proposing to use as a test run at Fox Waterway?

A. There are few modifications to it, but basically it's the same system.

Q. And where else has this technology been used in similar applications?

A. In the Rocky Mountain region, we've

done a total of about five jobs; five different lakes, golf courses, municipal parks, home owners associations. Doing Humboldt Park for Chicago Parks Department was the first application in the upper midwest.

Q. Do you use a flocculent aid in your system?

A. Yes.

Q. How do you determine what flocculent to use?

A. We do a very thorough exhaustive flocculation study of the samples submitted by the client and then confirm by our own field testing, our own sampling gathering that our field people do. It's sent back to a laboratory.

That lab independently confirms the type of flocculent that needs to be used in any kind of natural waterway as opposed to applications that we have in mining-type operations.

We have a high degree of sensitivity for using flocculents that are harmless to fish so we use anionic flocculent on that chain.

Q. Have you taken samples from the Fox Waterway?

A. Yes, we have.
Q. And what does those results show?
A. The results show that it's an excellent candidate for the technologies, good performance rates, fairly high case quality, and, relatively speaking, low turbidity rates.
Q. You've seen the photographs of Holly Channel?
A. Today I have, yes.
Q. And you've discussed the appropriate channels with Karen which has given rise to the identification of other potential sites, correct?
A. That's correct.
Q. One of those considerations was the ability to isolate the channel from the waterway?
A. Yes.
Q. Why is that a concern?
A. From our perspective the concern is relative to a political end and sensitive issues and discharge. We want to make sure that we're considered to be good clients with any government agency we're dealing with and sensitive to whatever the discharge requirements or the cake quality would be.

Q. You return approximately ten percent of the solids that you dredge back to the waterway?
A. No, one percent.
Q. Excuse me. One percent. I'm sorry.
A. Yeah.
Q. Your approximate concentration?
A. 10,000 parts per million.
Q. I knew there was a ten in there someplace.
And that's the normal means by which you operate this system?
A. That's correct.
Q. Has that operation been successfully carried out in other locations you just testified to?
A. Yes.
Q. What normally occurs in terms of impact with that discharge?
A. Normally, because the material is gone through at process -- a flocculation process, the thing that we don't capture with our technology are the occasional broken flocculus, but they're flocculents.
So by their very nature they seek

settlement very quickly. So we work with a client to let them know ahead of time what to anticipate, and then we discharge into an area where the settling can occur so we can go back in with a dredge and clean it up, and the job -- it usually takes about a day so or we can settle it behind a silk fence so that the water doesn't escape, doesn't carry very much of any of the broken flocculus back into the water.

Q. Do you expect that the solids, these broken flocculus, from the test to be discharged -- the discharged would be back into Holly Channel?

A. That's correct.

Q. You would expect those solids to settle out?

A. Almost immediately.

Q. What do you base that on?

A. Settling rates are relative to flocculation. It's exactly the same premises as the clarifier. Essentially, Holly Channel would be a very large natural clarifier or one end of it would be, and utilizing -- the taking advantage of the fact that the flocculated material has a propensity to settle wherever the discharge is in the Holly

Channel is where the preponderance of settling is going to be.

Q. If you use a silk curtain, then you'd expect that material to accumulate behind the silk curtain?

A. There's two things. One, if you go to silk curtain, you definitely create a boundary there, a wall, to keep the flocculated solids given an area of quiescence, and also because flocculated solids tend to be by their very nature much larger than the fine particulars that we would originally see that enables that barrier to be more effective.

Q. And then it would be your plan then to dredge that accumulation of solids in the last couple of days of the operation?

A. That's correct. That's what we've done before.

Q. And that's what you would expect to do here?

A. With the approval of the agency.

Q. You've sat through the testimony today of Karen Kabbes and Linda Huff and heard the concerns the agency has with the appropriate effluent limit put in a variance petition for

suspended solids.

Do you have experience on which to form an opinion as to what the size range of total suspended solids that would be overflowing out of Ackerman Island, for example?

A. Typically, this material that could be represented -- I mean, if you're asking me to quantify what the size would be, I would say that it is seven to 14 -- it's as small as a typical clay particle size would be. To define that, I would say the human hair is about 75 micron in diameter. This would be roughly 200,000 -- I don't have a calculator. It's comparable to that of human hair.

Q. Would you expect solid material of that size to settle out before the before mixing would occur?

A. I don't understand the question.

Q. Would you expect that material if it were discharged to settle out in the immediate vicinity of its discharge point?

A. Not in a nonflocculated condition. I would expect it to be very well suspended. There are naturally occurring material that is very fine. It also has a very high specific gravity. It would

tend to settle out, but nothing that we've seen from the sample submitted by Fox that are similar to the material that we see in Fox which suggest a quick settling rate.

It should be carried by any kind of current.

MS. EDVENSON: Okay. Excuse me. Counsel, do we have Mr. Hodges' vitae or resume in evidence?

MR. HARSCH: No.

THE WITNESS: I'd be glad to fill you in verbally if you'd like.

MS. EDVENSON: Do you have one that you can provide to us?

THE WITNESS: Sure. I don't have it with me.

MS. EDVENSON: That's all right. We can get it later. I would appreciate it. I would like to have that entered into evidence because Mr. Hodges is being asked technical questions and he is being asked to express an opinion, which is related to a technical aspect.

So if we could have that come in, I will call that Petitioner's Exhibit No. 20, and is there any objection to the introduction of that into evidence?

MS. HOWARD: No.

MS. EDVENSON: All right. Thank you very much.

BY MR. HARSCH:

Q. Along those lines, how long -- we'd be happy to provide that.

How long have you been working in this industry?

A. About 25 years.

Q. And you mentioned that this was a breakthrough. When did this breakthrough occur?

A. Well, the technology was successfully demonstrated on a pilot basis about three years ago. The patent was issued this past year.

Q. Okay.

A. This is one of several patents that either I hold or I'm waiting on or I'm trying to get confirmed on the liquid side.

Q. You are the patent holder here?

A. Yes. I'm one of -- actually, there are two other compatriots that hold this patent.

Q. And Karen's description of the status of the business negotiations is correct; you hope to demonstrate this technology and then be in a position to negotiate the sale of this technology to

the agency?

A. That's correct.

MS. EDVENSON: Counsel, in the interest of time, I'm going to have to ask you to close up.

MR. HARSCH: I'm just about done.

BY MR. HARSCH:

Q. With the flocculent added, the particle size that you've described, you would expect that material to settle out in the immediate vicinity of your district?

A. That's correct.

MR. HARSCH: No further questions.

MS. EDVENSON: Will there being any cross-examination?

MS. HOWARD: Yes, very brief.

MS. EDVENSON: Proceed.

CROSS-EXAMINATION

by Ms. Howard

Q. You've mentioned that you used this technology in the Humboldt Park Project in Illinois.

Could you tell me what your solids limits were for that project?

A. We didn't have a restriction on the

discharge levels on that project.

Q. And why weren't there any restrictions?

A. The client didn't require us to have discharge levels on it.

Q. Did the client -- well, who's the client?

A. Chicago Fire Department.

Q. Are you aware of whether the park received the proper permits for that project?

A. They represented to us that they've gone through numerous agencies to require the proper permitting for the job that they've handled. We made it incumbent upon them to make sure that the permits were taken care of.

Q. But the Illinois EPA never imposed any solids limits on that project that you're aware of?

A. I don't know. I'm not aware of it. Since we've been out there, we've had probably in the neighborhood of seven or eight different agencies that have been out there to do testing.

MS. EDVENSON: Mr. Hodges, you need only to answer the question to the best of your ability and as specifically as indicated.

THE WITNESS: I'm just trying to be as clear as

I could.

MS. EDVENSON: I know.

BY MS. HOWARD:

Q. Did you take any samples at Humboldt Park in terms of the discharge and maybe measure what the solids -- the amount of solids being discharged?

A. No.

Q. Did you take any samples at any of the other states' locations that you've mentioned that you've done these other projects?

A. Yes.

Q. Could you give us some idea of what the results were?

What kind of solids you were discharging?

A. Generally, the ceiling was about one percent or roughly 10,000 parts per million on those jobs that where flocculation was loose, not very robust.

On jobs where we didn't have robust flocculation, it was below 5,000 parts per million. That's off the corps unit. That's without a secondary step that acts as a polishing unit which suggests dissolved air flotation possibly or

settling time.

Q. Could you give us some idea of what types of management practices would be employed at this site?

A. From our perspective, management practices occur very early on. In the testing stage, we develop a system that establishes a setup spot, a return line, everything.

From an aerial photograph, we can determine -- work with a client to determine what the management of the entire project is going to be like, where there are sensitive issues, how the project is going to occur, it establishes volumes.

A lot of clients know something about their waterway, but they frequently don't even know the area size of that waterway. So our GSI package does a lot to help that out. If there's good communication, the job goes on responding to the client's needs, essentially your market rhythm.

MS. EDVENSON: My feeling here at this point in time is that it would be nice if the agency's technical person could be able to ask some questions of the witness that we have here of a technical nature just in conversation, but I'm not sure if

there's a way that we can do that.

MS. HOWARD: I think we're okay. I just wanted to make sure I had covered the general information that he would need. We're fine.

That's all the questions I have.

MS. EDVENSON: All right.

REDIRECT EXAMINATION

by Mr. Harsch

Q. You briefly alluded to a potential for secondary or polishing steps such as dissolved air flotation.

Has this technology ever been utilized with such a polishing?

A. No, except in the lab.

MR. HARSCH: No further questions.

MS. EDVENSON: Okay. Any recross?

MS. HOWARD: No.

MS. EDVENSON: Okay. All right. Thank you very much, Mr. Hodges.

At this point in time, let's go directly to respondent's case in chief.

MS. HOWARD: That's fine.

MS. EDVENSON: And will the respondent please call their first witness?

MS. HOWARD: I would call Bruce Yurdin to the stand.

MS. EDVENSON: Will you swear him?

(Witness sworn.)

WHEREUPON:

BRUCE YURDIN,

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

DIRECT EXAMINATION

by Ms. Howard

Q. Could you please state your full name for the record.

A. Bruce Yurdin, Y-u-r-d-i-n.

Q. Mr. Yurdin, what is your educational background?

A. I have BS in biology from the University of Southern California.

Q. And what is your employment history?

A. I've been with the agency since 1979, essentially in the same work area.

Q. And what is that work area?

What position do you hold?

A. I'm the manager of the watershed unit in the permit section, Bureau of Water Pollution

Control.

Q. And in that position, what are your duties and responsibilities?

A. They're a little varied, but in the interest of time, I can say that over the course of my employment, I've been dealing with permits for dredging fuel activities.

As I said, there are a number of other duties that I'm responsible for, but that's one of the principal activities.

Q. And so for the entire time you've been at the agency, you've been involved with dredging projects?

A. That's correct.

Q. Are NPDS permits necessary for dredging projects?

A. No.

Q. And why is that?

A. The Clean Water Act stipulates that where a Section 402 permit is required, it's a dredging and fuel permit from the Corps of Engineers, and that a Section 402 permit or the NPDS permit is not required. It's an attempt legally to avoid a redundancy in permitting, and, therefore,

only one type of permit is required at one time for a given project or an available discharge.

Q. So when we're referring to permits, what type of permits are we actually talking about?

A. There are permits that are required, again, from the Corps of Engineers under Section 404 of the Clean Water Act, Section 401 water quality certification from our agency.

In addition, there is a separate state permit required under Subtitle C for the construction and operation of treatment facilities which may be involved in certain types of dredging activities.

Q. Could you briefly describe how the dredging program works in that if someone wants to conduct a dredging program, what are the steps that they would take to apply for the necessary permits from the various agencies and how they work together?

A. Generally speaking, there is a working agreement between the various agencies and various regulatory agencies and advisory agencies involved. The process involves an application submitted simultaneously to those regulatory agencies, one of

those being, of course, the Illinois EPA.

As I said before, there's a separate state permit required for the construction and operation of the treatment facilities that go along with that dredging operation, and as a part of that whole process and an all-review process, we require testing sediment that may be dredged.

Again, it depends on the specifics of the individual case, but generally speaking for hydraulic dredging, it does require some sediment testing.

Q. And based on that description, if a dredging project is initiated here in Illinois, in most cases, we're aware of that program because we have to certify it; isn't that correct?

A. That's correct.

Q. What are the effluent limits for solids?

A. Fifteen milligrams per liter.

Q. And are there any water quality standards for solids?

A. No, total suspended solids.

Q. Total suspended solids.

How long has total suspended solids

effluent limits been applied to dredging projects in Illinois?

A. I can state that during my employment there, since 1979, that's the standard that we've used. I've seen records of older dredging projects that we have on file that precede my employment where that seems fairly used. So it goes back before 1979.

Q. So it's unusual to have a 15 milligram group per liter effluent limit in a dredging project permit?

A. For a hydraulic dredging operation, no. That's the standard limit.

Q. Why are limits for total suspended solids during a dredging project important?

A. I think we've heard some testimony on that already by both Karen and Linda discussing various aspects of aquatic toxicity, and I think Linda did a pretty good job of describing what happens when these conditions are at a stream or at a very high level in terms of aquatic fish species problems in regard specifically to problems with gills damage, with fish, aquatic vegetation not being able to be rooted in the sustaining viable

populations in that regard.

Does that answer the question?

Q. That's close enough. Yeah, I know we're -- I apologize even for leading in some of these. I was trying to get through them.

How long have you worked with the Fox Waterway Agency in their dredging program?

A. Since their inception.

Q. Which has been how many years about?

A. (No response.)

MS. KABBES: '85, '86.

THE WITNESS: Thank you.

BY MS. HOWARD:

Q. Are you familiar then with the Chain O'Lakes and the problems that the Fox Water Agency faces?

A. Yes.

Q. In your opinion, is dredging essential to maintaining the Chain O'Lakes Waterway?

A. Yes.

Q. In your opinion, does dredging have an overall benefit to the environment?

A. Overall, yes. It can have short-term detrimental impacts, and, of course, that's one

thing that we're trying to mitigate or offset or at least be aware of at the very minimum.

Q. And I want to make sure that I clarify that to be dredging having an overall benefit to the environment on the Chain O'Lakes.

A. On the Chain O'Lakes, yes. It's much more straightforward. There, we don't have as many contaminants to be concerned about. So the answer is yes.

Q. How familiar are you with the Ackerman Island site?

A. I'm familiar with that site.

Q. Have you been to that site?

A. Yes.

Q. How many times?

A. Two that I can recall at the moment, possibly more than that. I've been by it on boat. I've probably been on the site probably at least twice.

Q. So you're familiar with how the site actually operates?

A. Yes. I did issue the permit for it at least one or two occasions. So, yes, I'm familiar with it.

Q. Based on your experience, why do you think that 15 milligrams per liter is difficult to meet at Ackerman Island?

A. I think it boils down to size. It's a very limited volume -- it has a very limited volume, and it's very difficult to manage from that standpoint unless you're dredging into it -- unless the inflow is so small as compared to that volume. It's a very, very difficult, very, very small facility to use.

Q. Can you tell us about the sand filter cell?

A. The original design and construction involved with sand -- sort of a sand berm. I'm not sure I'd call it a sand filter cell. It was more of buried -- let me back up a second.

The effluent discharged lines from the -- from Ackerman Island to Fox Lake were buried under a sand berm as part of the treatment.

MS. EDVENSON: Mr. Yurdin, can you speak up a little bit more? Thank you.

BY MS. HOWARD:

Q. Is 15 milligrams per liter unachievable at the Ackerman Island site?

A. It's not unachievable. It's very difficult, I think. As stated by the Fox Waterway agency, there are reasons that that is a difficult number to achieve. It is possible to achieve it, but it requires time.

Q. Is knowing the location of the confined disposal sites, the geotubes -- are knowing those locations necessary to the agency -- I should say the Illinois EPA?

A. In terms of permitting, yes, it is necessary to know that.

Q. Why is that?

A. Well, for a number of different reasons. It's necessary for each of the regulatory agencies for different reasons.

From our standpoint, we need to know where the effluent or where the discharge will occur relative to flow considerations, if there are any intakes or other considerations, other factors that we need to be aware of in terms of that effluent discharge.

Those are just some of the things that they'd be concerned about in terms of the permit review, for example, and why one site might be

different than another site.

It also differs from the standpoint that different facilities are by their very nature using or accepting different types of dredged material. You're limited in hydraulic dredging to an affixed radius from that -- a particular radius from that disposal site.

So the type of material that would be coming in would vary from site to site or may vary from site to site.

Q. What about the water quality from site to site?

A. That may vary also.

You're talking about the water quality in the receiving stream too, correct?

Q. Correct.

A. That would vary from site to site.

Q. And are these variabilities from site to site, whether it's in the water quality, in the receiving stream, and the types of dredge material being put into the system, that information can also then affect the effluent limit -- could it affect the effluent limit that we would recommend for total suspended solids?

A. Total suspended solids would remain at 15. What would change would be some other considerations or possibly conditions of the permit itself, but 15 would probably be unaffected by then.

Q. Correct, based on the fact that is the regulation.

But in terms of a variance proceeding in which we want to recommend that the board do grant a variance from the 15 milligrams per liter, all that information and the variable information that we need for each location, is that the type of information that helps us determine what alternative limit we would recommend for the total suspended solids?

A. Yes.

Q. Have you read the Fox Waterway Agency's petition and their response to the recommendation?

A. Yes.

Q. Attachment two to the petitioner was the Army Corps of Engineers report, the recreational boating impact study.

Are you familiar with that study?

A. Yes.

Q. Can you recall what the purpose of the

study was?

A. The purpose was to, among other things, measure the effect that recreational boating traffic had on water quality and what steps could be taken by the Corps or by others to reduce that impact.

Q. Did it have anything to do with assessing the impact of dredging or total suspended solids from dredging on the Chain O'Lakes?

A. No.

Q. Do you know where the samples that are mentioned in the study -- where they were taken, the location?

A. I believe they were taken from various bridge locations that were easily accessible by the Corps' staff.

Q. And what's significant about these bridge locations?

A. These locations, as I said, would be readily accessible. They're near shore. They would be in places that boats or where recreational traffic would frequent from time to time.

Again, the intent of the study was to measure the effect that those -- that that traffic was having on water quality and turbidity. So the

locations were important from the standpoint that the Corps set about in choosing those locations with the ideal being a heavily-used navigation passage rather than, say, somewhere out in the middle of the lake that they just choose at random.

Q. In your opinion, is that study a study in which you find reliable to determine what limits should be for total suspended solids in a dredging project?

A. No.

Q. What type of data does the Illinois EPA have available to help determine reasonable solid limits for dredging projects?

A. The agency has a monitoring network set up around the state, and in this case, we have several locations on the Fox chain in which over time we have accumulated a great deal of data on total suspended solids, among other factors, and that data, I believe, has been submitted for the record.

Q. I believe that is attached to the agency's recommendation, which has been entered as an exhibit in this hearing for clarification.

MS. EDVENSON: Thank you.

BY MS. HOWARD:

Q. Did you read the -- what we refer to as the NIPC study, attachment five, of the petition?

A. Yes.

Q. Did you review -- I'll call your attention to Page 23 of that study.

Did you review the retention times for solids?

A. I've read that, yes.

Q. On Page 23, how many days, according to that chart, does it take for total suspended solids to decrease from 100 milligrams per liter to 15 milligrams per liter?

A. These are representative samples taken from four different projects. So the maximum would be ten days. The minimum is two and a half days.

Q. And how many days does it take, according to that chart, for total suspended solids to decrease from 100 milligrams down to 50 milligrams per liter?

A. It's approximately two days.

Q. Based on this information and in your experience, how many days do you believe it would take for total suspended solids to settle from 100

milligrams per literature to 80 milligrams per liter?

A. Based on this data, we don't know because they didn't measure that particular variable.

It would take to go from 100, you said, to 80 milligrams per liter something like approximately 48 hours or less than 48 hours. It would be less than probably 48 hours in these four cases.

Q. Are you familiar with the Humboldt Park dredging project that they testified to?

A. Just what the testimony has revealed so far.

Q. When did you first learn of the Humboldt Park dredging project?

A. I believe it was in a conference call we had a week or ten days ago. I don't recall the date. I can look it up.

Q. It was a conference call with?

A. A conference call between Mr. Harsh and our agency. It also involved Mr. Hodges.

Q. Are you aware of any entity that has applied for certification from the IEPA on that Humboldt Park dredging project?

A. No.
Q. And is it possible that somebody might have applied for certification, and you might have missed that application?
A. Not likely.
Q. And if one would have applied for certification for that dredging project, would the Illinois EPA have given total suspended solid effluent limits for that project?
A. Yes.
MS. HOWARD: That's all the questions I have.
MS. EDVENSON: Thank you.
MS. HOWARD: Mr. Harsch, will you have any cross-examination?
MR. HARSCH: Yes, I have.

CROSS-EXAMINATION

by Mr. Harsch

Q. Is the Humboldt Park Lagoon connected to any other waterway?
A. I've never been there. I couldn't tell you.
Q. The Army Corps of Engineers data that was collected on bridge sample locations, at least that's how you characterized it, that, nevertheless,

is data that shows total suspended solid levels at that location in the waterway, does it not?

A. Correct.

Q. The data that's attached to your variance petition shows water quality data at your monitoring networks as high as 130 milligrams per liter; is that correct?

A. Correct.

Q. Also values as high as 85 milligrams per liter?

A. I'd have to look at it again, but I'll trust your reading of it.

Q. Well, both values are in excess of, at least the numerical limitations, 80, 70, and 58 that the agency is recommending?

A. Those were one-time samplings, of course. If you're looking at long-term damage --

Q. I understand. One-time samples?

A. One-time samples, yes.

Q. How do you take a water quality sample adjacent to a discharge point without muddying the water, so to speak, and getting an artificial number?

MS. HOWARD: I would object to the question. I

think that's beyond the scope of direct. I don't think we had any testimony in the record that Mr. Yurdin is anybody who would go out to actually take water quality samples.

MR. HARSCH: He testified that their data is the best data to use.

MS. HOWARD: I don't believe he testified as to whether our data is the best data. We're saying this is the data that we have available, and this is what we presented to the board.

MS. EDVENSON: The objection is sustained.

Proceed.

BY MR. HARSCH:

Q. Why do you base your statement that the Corps of Engineers study was done just in bridge sites?

A. That's my recollection of the sampling protocol that they used.

MS. EDVENSON: Off the record.

(Discussion had off the record.)

MS. EDVENSON: Back on the record.

BY MR. HARSCH:

Q. Has anybody ever requested as part of a

permit application credit for background?

A. Yes, I believe we have.

Q. Have you granted that?

A. No.

Q. Why?

A. To my knowledge, it's not allowed under Subtitle C.

Q. Have you ever asked for guidance from the legal department on that point?

A. I don't recall.

Q. Were you involved in the proceeding by the Army Corps of Engineers for a variance --

MS. HOWARD: Objection. It goes beyond the scope of the direct.

MS. EDVENSON: Sustained.

MR. HARSCH: It does not, if you give me a chance to respond to it, Madam Hearing Officer.

The witness has testified he's been at the agency since 1979. He's been involved in all of dredging proceedings, and there's one -- and he's been involved in establishing permitting all of the facilities. There is --

MS. EDVENSON: And what is your offer of proof?

MR. HARSCH: Let me rephrase the question and

see if I get a continued objection.
BY MR. HARSCH:
Q. Does the -- have you been involved with permitting the Army Corps of Engineers dredging operations in the Illinois River?
A. Yes.
Q. Are you aware that the Army Corps of Engineers obtained -- sought relief from the 15 milligrams per liter standard and their effluent limitations for dredged material from the Pollution Control Board?
A. They sought relief from a number of limitations from the Illinois Pollution Control Board, yes.
Q. Have you read that board opinion in PCB 83-25 entered on July 26, 1993?
A. Yes.
Q. Are you familiar with it?
A. It was -- which one was that again, 1985?
Q. 1983, July 26, '83. PCB 83-25.
A. In 1983, I would have, yes.
Q. Are you aware that that opinion makes a statement that, quote, the board has not adopted

effluent limitations that apply to the discharge of dredged materials on Page 5 of that opinion?

A. Yes.

MS. EDVENSON: I'm going to ask that the counsel limit the cross-examination to the testimony that was provided.

MR. HARSCH: Madam Hearing Officer, that testimony is directly -- that question is directly related to the appropriateness of a 15 milligram per liter effluent limitation that he said he's imposed since 1979.

MS. HOWARD: Where was that? I'm sorry.

MR. HARSCH: Page 5 of the opinion.

MS. EDVENSON: I would be happy to see that explored in your brief.

MR. HARSCH: I have no further questions of this witness.

MS. EDVENSON: Thank you.

Will there be any redirect?

MS. HOWARD: Yeah, I'm sorry. I'm having trouble finding -- which paragraph was that?

MR. HARSCH: It's page -- I've got it referenced in the variance petition to Page 5.

MS. HOWARD: July 26th?

MR. HARSCH: Yeah.

REDIRECT EXAMINATION

by Ms. Howard

Q. Isn't it true that the Pollution Control Board's opinion that was referenced in cross-examination it states that the board has not adopted effluent limits that apply to the discharge of dredged material, but it continues to say, however, such discharges are subject to Section 304.105, violation of water quality standards?

A. Yes.

Q. In that Army Corps project, what was the water body that they were requesting a variance for? Where were they going to do their dredging project?

A. There were a number of different locations, but it was primarily within two pools of the Illinois River.

Q. It was in the Illinois River?

A. Illinois River only, yes.

Q. And is there anything significant about the characteristics of the Illinois River as compared to the characteristics of, say, some of the

lakes that we're talking about in the Chain O'Lakes with respect to limits per total suspended solids?

A. The limit would be the same in application. The primary difference though between the two water bodies in terms of dredging would be the time of material that you're dredging within the case.

Q. And that type of information has to be taken into consideration when determining proper total suspended solids limits if you wanted to give a variance beyond the 15 milligrams per liter, correct?

A. Absolutely.

MS. HOWARD: That's all the questions I have.

MS. EDVENSON: Any recross?

RECROSS-EXAMINATION

by Mr. Harsch

Q. Is there a water quality standard for total suspended solids?

A. No.

MS. HOWARD: That was asked and answered, I believe.

MS. EDVENSON: Okay. And you didn't need to answer it again. Thank you very much, Mr. Yurdin.

At this point in time, we'll proceed with the respondent's next witness.

MS. HOWARD: Okay. I would call Mr. Robert Mosher.

MS. EDVENSON: Mr. Mosher, would you please be sworn?

(Witness sworn.)

WHEREUPON:

ROBERT G. MOSHER,

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

DIRECT EXAMINATION

by Ms. Howard

Q. Could you please state your full for the record?

A. Robert G. Mosher.

Q. And could you give us a summary of your educational background?

A. I have a master's degree in zoology from Eastern Illinois University.

Q. And where are you employed?

A. Illinois EPA.

Q. And what is your position there?

A. I'm the supervisor of the standards and

monitoring support unit in the planning section division of --

Q. And how long -- I'm sorry. Go ahead.

A. Division of water pollution control.

Q. And how long have you been in that position?

A. More or less ever since my starting date with the agency, which was in late '85.

Q. And what are your general duties and responsibilities in that position?

A. I review information concerning the adoption of new water quality standards and ways in which the agency should administer water quality standards.

Q. And how are you involved through those responsibilities and duties in dredging operations in the state?

A. Occasionally, water quality standards issues have arisen for different dredging projects, and I've become involved from that aspect.

Q. In this particular case, is that how you became involved?

A. This case was a little different because we started a dialog with the FWA and others

of how to kind of -- getting to the root of the limits put on the dredging operations, and somewhat of my involvement has been from a very basic, what should we do with these rules and regulations type thing rather than a more specific type involvement as I had been in the past.

Q. We have heard testimony about why it's important to limit total suspended solids discharges in the Fox Chain O'Lakes.

Do you have anything to add to the testimony that, I believe, has already been presented by the FWA or Mr. Yurdin?

A. Well, from my vantage point, standards are usually in place to protect aquatic life and protect the quality of aquatic ecosystems, and my involvement isn't from an economic or a technology basis. It's from that ecological basis.

Q. Do you believe that there is, in your opinion, adequate information about the actual economic -- environmental impact from your perspective in the record at this time?

A. Well --

MS. EDVENSON: I'd like to ask that you answer that with some specificity as to the various aspects

of the variances petition.
BY THE WITNESS:
A. Okay. We have quite a bit of data that the agency has collected in the area where these limits would apply. However, that data is collected during weekdays by agency employees, and it does not represent peak usage times for the Chain O'Lakes in the Fox River.
So on one hand, we've got quite a bit of data. On the other hand, I don't believe we have much data that may show specifically what's occurring, lots of boat traffic, et cetera. So I would like to see more data for specific times on the lakes.
BY MS. HOWARD:
Q. Did you read the petition and the response to the IEPA's recommendation?
A. Yes.
Q. And are the limits we're recommending effluent rather than water quality?
A. We're recommending effluent limits.
Q. Would the Illinois EPA settle, for the lake in general and the Chain O'Lakes, to just meet in general on an 80 milligrams per liter water

quality standard?

A. No. I would not want to see that as a limit applying to the lakes themselves, no.

Q. Why do you agree that we should recommend the 100 milligrams per liter for Grass Lake?

A. I am assuming you mean for the terms of this variance -- a temporary limit. I don't believe we have enough data to establish a permanent limit at this time.

So on a temporary basis, we had some discussions about using ambient lake total suspended solids as a guide to setting effluent limits for dredging, and Grass Lake, there is some data at least to indicate that 100 milligrams per liter is encountered in Grass Lake under ambient conditions, in other words, just out there on the lake under normal circumstances, not dredging.

So 100 as an effluent limit as a monthly average would be in the realm of what's already out there at least at times.

Q. The 100 milligrams per liter applies to both the geotubes project and the confined disposal site which is identified as L10?

A. Yes.
Q. There has been a request for 100 milligrams per liter for Nippersink Lake.
Can you tell me what we would -- what limit we would recommend for Nippersink and what you'd base that on?
A. Yes. I'd like to refer to a table of data here to make sure I give you the right answer.
(Witness perusing documents.)
BY THE WITNESS:
A. We're recommending 70 milligrams per liter, and, again, that's based on data that was reported on Page 43 of, I believe, attachment two of the petition.
BY MS. HOWARD:
Q. And could you tell me what is the difference between Nippersink and Grass Lakes? Why would you limit Nippersink, but yet go along with 100 milligrams per liter for Grass Lake?
A. The ambient conditions in Nippersink are -- have lower total suspended solids. It doesn't get as high as Grass Lake; therefore, if we want to use the ambient lake conditions as a guide,

which I feel is a valid way of establishing these temporary limits, 70 for Nippersink is representative roughly of a 90th percentile value, and I feel under the conditions of limited data that we have before us that that's a good way to come up with a number.

Q. Okay. Are you following -- we're in the middle of that chart on Table 7 on Page 43. It's the middle section that's total suspended solids and the range?

A. Yeah, that's the data I'm referring to.

Q. With respect to Pistakee Lake, could you tell us what limit we're recommending?

A. Yes. We're recommending 80 milligrams per liter, and, again, because roughly a 90th percentile of this data collected during periods of high boat traffic activity has been demonstrated.

Q. Did you also use any data collected by the agency for this?

A. I looked at agency data for the Chain O'Lakes, and noted that, again, when our samplers go out during the week when there's less boat traffic, the total suspended solids values are much lower, which would be expected.

So that's what the agency data is telling me that it's usually much lower than the values or at least the upper end of the range given on Page 43 as attachment two.

Q. Just for reference, are you referring -- when you talk about the agency data that's been submitted, is that attachment B to the agency recommendation which has been submitted and labeled as Petitioner's Exhibit No. 2?

A. Yes.

Q. And what about Fox Lake? What limits are we recommending and why?

A. We're recommending 80 milligrams per liter also. There was no data collected by the Corps of Engineers under high boat traffic condition, but a comparison of Fox Lake data collected by the agency to Pistakee Lake data indicated that there is very similar conditions in those two lakes. So we went with 80 as we did with Pistakee Lake.

Q. And you're basing that also on that attachment B to the agency's recommendation?

A. Yes.

Q. With respect to the Fox River -- could

I go off the record for just a second?
MS. EDVENSON: Off the record.
(Discussion had off the record.)
MS. EDVENSON: Back on the record.
BY MS. HOWARD:
Q. With respect to Fox River, can you tell us what recommendation -- what limit we're recommending for that?
A. Fifty-eight milligrams per liter.
Q. And how did we determine that?
A. That was 90th percentile of the data from October 1988 through 1996 that the agency has collected as part of its ambient water quality network monitoring program.
This is data that is collected at stations throughout the state, mostly rivers, roughly nine times per year.
Q. Okay. Do any of our recommendations change whether we're talking about geotubes or confined disposal areas?
A. No.
Q. And do you believe that there should be limits established for the limited testing of the

dewatering -- the mechanical dewatering system that's been described today?

A. Well, as I understand it, there's an experimental stage that must be conducted, and I didn't have a limit prepared for that experiment with the understanding that it was to be run under a confined type of a system.

Q. Okay. By that's not to say that a mechanical dewatering system should not be given possibly in the future depending on what the data shows during the test period; is that right?

A. Depending on the usage and what the testing shows, it may very well have limits in the future, yes.

Q. If you had only referred to Illinois EPA data for recommending these limits without using any of the data supplied on the chart on Page 43, would our recommendations be for more stringent total suspended solids limits?

A. Well, the Fox River station that I mentioned last, the recommendation wouldn't be any different because that was only based on our agency data. But for the lake stations where our agency data shows a much lower total suspended solids

average and range, then using only that data, if I were to recommend discharge limits based on ambient conditions, yes, they would be much lower for the lakes.

Q. Are you familiar with the Maryland turbidity study?

A. Yes.

Q. Did you read that study?

A. Yes.

MS. EDVENSON: Off the record for just a moment.

(Discussion had off the record.)

MS. EDVENSON: Back on the record.

BY MS. HOWARD:

Q. Have you done any further research beyond reading the Maryland turbidity study?

A. Yes, I did. I wondered where they intended to apply the limits they talked about in that study, and it really didn't specifically say that I could see in the paper itself. So I called the state of Maryland. I talked to Andrew Dur who's one of the authors of the paper and asked him that, and he said this applies only to estuaries in the

state, saltwater, freshwater intermingling type environments, and specifically he said that it did not apply to freshwater lakes, and he was quite emphatic that that high of a limit would not be a very good limit for freshwater systems.

Q. Based on your reading of that including the recommendations on Page 11 of the Maryland turbidity study, in your opinion, is Maryland reassessing its use of mixing zones per dredging projects?

A. Yes.

MS. HOWARD: That's all the questions I have.

MS. EDVENSON: Thank you.

Cross-examination?

CROSS-EXAMINATION

by Mr. Harsch

Q. Mr. Mosher, the reason to use Table 7, I think you said, was that the agency's data was collected during the week and was not necessarily indicative of the high boat traffic time period; is that correct?

A. That was one of the reasons for using it, yes.

Q. And wouldn't the high boat traffic

rationale also apply to the Fox River?

A. That, I'm not sure of. I don't know how shallow the depths are, and usually rivers would not accumulate the type of sediments that lakes would and so on, so I --

Q. What's your sampling location?

A. The sampling location is at Burton's Bridge. It's near Island Lake.

Q. The 90th percentile means ten percent values are higher?

A. Yes.

Q. Do you have an opinion as to whether or not the use of credit for background is appropriate?

A. I have no opinion. I have no experience with that portion of the regulations.

Q. There are provisions and the board rules which allow under certain circumstances the use of background materials?

A. But the permits section in our agency deals with background credits, not the planning section.

Q. You've heard the direct testimony of Linda Huff and Mr. Hodges that you would expect that the solids discharged from the tube sites once

they're constructed in the confined dredged disposal areas would assimilate or mix quickly and, therefore, the concentrations would drop off.

Do you agree or disagree with that testimony?

A. Well, in my opinion, the testimony was a little bit light on what quickly means or what a short small distance is. It didn't provide me with really a way to visualize this area of mixing.

MS. EDVENSON: Counsel, was responsive to your question?

MR. HARSCH: Um-hum.

BY MR. HARSCH:

Q. And you understand that part of the dilemma here is that we are talking about a variance while we go out and develop the necessary data to support a proposed long-term standard?

A. Yeah. I tried to make that clear that all my opinions and recommendations are for this variance period because we need more data of several kinds, and the values that we, in the end, find acceptable may be lower than the ones we're proposing -- we're agreeing with today.

MR. HARSCH: I have no further

cross-examination.

MS. EDVENSON: Okay. Any redirect?

MS. HOWARD: One.

REDIRECT EXAMINATION

by Ms. Howard

Q. At the same time that this is test period for these projects, isn't it true that we still have to -- as the Illinois EPA, we do have a duty to protect the aquatic life in the Chain O'Lakes, correct?

A. Yes. That's the whole idea behind gauging these discharge limits to ambient conditions.

MS. HOWARD: That's all.

MS. EDVENSON: Okay. First before I make my closing remarks, I would like to thank very much counsel for expediting especially this afternoon and also the response of the witnesses who took some of the brunt of that. All right. Thanks very much. And we are going to be able to get out of the building before they lock the door on us. All right.

I have identified no issues of witness credibility that is something I need to do and I will identify those issues with respect to witness

credibility.

I will issue the hearing report in this case tomorrow during the short time, and I will fax that hearing report to counsel for the parties. That will include a list of all the exhibits and that means that will include a list of exhibits that we will expect to receive.

To the greatest extent possible, if petitioner could please share the new exhibits with respondent as soon as possible, I would appreciate it, and that is what we have agreed to here today.

By Friday of this week, we at the board will prepare written questions that we would like to be responded to. These are questions that we did not ask here today in the interest of saving time. If those questions were explored here, we would have been asking them of the witnesses. We will now being directing them in writing to counsel for the parties.

Therefore, I want to request that counsel not answer these questions. I'm requiring that these questions be referred to the witness for their answers. Under the circumstances, however, I am noting that the answers may come from either or both

parties. Either party may answer any question and the list will be put out to both parties. Please indicate which witness is responsible for each of the responses that you submit.

Due to the time line for the case, also, the record must close on Monday, May 19th. The petition is not requesting an expedited transcript, therefore, the transcript will be received the prior Friday, which is May 16th.

Responses to the questions that we propose to the parties we be due along with any written briefs on May 19th. Again, because of the time line, we hardly had time to take turns briefing. I am, therefore, asking that both parties cooperate by providing a written document which includes any further comments and clarifications that they seek to be included in the record without taking turns in a traditional briefing format, and that is a question to the parties now.

Do you agree that you will both come in with any written comments and clarifications set by May 19th?

MS. HOWARD: I'm not sure I understand what you mean.

MS. EDVENSON: Well, otherwise, we're in a position where I now get petitioner two days to submit a brief and then I give you two more days to submit your replies --

MR. HARSCH: She's talking about simultaneous filing.

MS. EDVENSON: -- and then I give him two more days to submit -- respond to, rather --

MS. HOWARD: Sure. Okay.

MS. EDVENSON: -- and then I give him two more days to submit his response.

MS. HOWARD: Right.

MS. EDVENSON: Or would we rather just --

MR. HARSCH: We have no objections -- we have no objection to simultaneous filing.

MS. HOWARD: I have no problem with it as long as we know what we're expecting in terms of any additional exhibits, which I believe we've already have on the record.

MS. EDVENSON: Okay.

MS. HOWARD: That's fine.

MS. EDVENSON: All right. Great.

MR. HARSCH: Aunt your hearing officer order will set forth this time frame?

MS. EDVENSON: Yes. And we are still operating under the case schedule then which has already been issued.

This concludes our hearing for today in the case of PCB 97-151. The transcript will be reviewed by all of the members of the board for petitioners rendered in the case including the briefs and the other materials that have been submitted.

Thank you for your attendance and cooperation in our process.

MR. HARSCH: Thank you very much. Thank you, agency.

(Whereupon, the proceedings were adjourned pursuant to agreement to be reconvened sine die.)

STATE OF ILLINOIS)
) SS.
COUNTY OF C O O K)

I, KIM M. HOWELLS, CSR, do hereby state that I am a court reporter doing business in the City of Chicago, County of Cook, and State of Illinois; that I reported by means of machine shorthand the proceedings held in the foregoing cause, and that the foregoing is a true and correct transcript of my shorthand notes so taken as aforesaid.

_____
KIM M. HOWELLS, CSR
Notary Public, Cook County, IL.

SUBSCRIBED AND SWORN TO
before me this_____day
of_____, A.D., 1997.

_____
Notary Public