

ORIGINAL

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

October 25th, 2004

IN THE MATTER OF:

INTERIM PHOSPHORUS EFFLUENT

STANDARD, PROPOSED ILL. ADM.

CODE 304.123 (G-K)

R04-26

(Rulemaking - Water)

Proceedings held on October 25th, 2002, at 10 a.m., at the Illinois Department of Natural Resources, Lakeview A, B, and C, One Natural Resources Way, Springfield, Illinois, before John Knittle, Chief Hearing Officer.

Reported by: Beverly S. Hopkins, CSR, RPR

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A P P E A R A N C E S

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One Natural Resources Way, Springfield, Illinois  
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MS. ALISA LIU, P.E, Board Member

-AND-

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**A P P E A R A N C E S**  
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1 HEARING OFFICER KNITTLE: My name is John Knittle. I'm the  
2 hearing officer to this rulemaking proceeding. I am an attorney  
3 assisting Board Member Johnson who is the assigned board member.  
4 This is R04-26, In the Matter of Interim Phosphorus Effluent  
5 Standard, Proposed 35 Ill. Admin. Code 304.123 (G-K). With me  
6 today are Board Member Tom Johnson, who is coordinating this  
7 rulemaking, Board Member Tanner Girard to his right, to your  
8 left; we have a technical staff, Anand Rao and Alisa Lui. Also  
9 in the back row we have Marie Tipsord and Erin Conley also with  
10 the Board.

11 You're all familiar with the background in this proposal.  
12 Just in case there isn't anybody that isn't, I'll give a really  
13 brief summary. Essentially the Agency is asserting in the  
14 process of developing the State's Numeric Nutrient Standard  
15 pursuant to its Triennial Water Quality Standards Review, they  
16 expect to file a Nutrient Standard Petition with the Board in  
17 early 2007. However, they're proposing this effluent standard  
18 for phosphorus limit hard concentrations of phosphorus that may  
19 result in detrimental levels of plant and algae growth on the  
20 interim basis. They want this to apply until the Board adopts a  
21 Numeric Quality Standard for Phosphorus.

22 We held a rulemaking hearing on this matter back on August  
23 30th in Chicago. In addition to building a record in this  
24 rulemaking, that hearing was also held to fulfill the

1 requirements of Section 27(d) of the Act at the Department of  
2 Commerce and Economic Opportunity. The requirements conducted an  
3 economic impact study. Nobody had any comments or questions  
4 regarding the DCO's decision not submit that study and the  
5 hearing reflects that. The transcript of that hearing is at the  
6 Board's website at [www.ipcb.state.il.us](http://www.ipcb.state.il.us).

7 This hearing today was noticed pursuant to the Act and  
8 Board's regulations and was published on September 30th.

9 One note, we have some of the pre-filed testimony, and  
10 actually all of the pre-filed testimony, since the last hearing  
11 available over there if somebody needs a copy. We also have a  
12 sign-up sheet for the notice and service list. If you want to be  
13 on those, you need to sign up. Those on the notice list will  
14 only receive Board opinions and orders and hearing officer  
15 orders. Those on the service list will receive these documents  
16 plus other filings such as public comments. Aside from the  
17 witnesses who have filed pre-filed testimony, if anybody wants to  
18 testify today, let me know, and time permitting, we will proceed  
19 with the testimony of those people. We'll do that after the  
20 scheduled people so I don't think it should be a problem. We  
21 don't have a shortage of time here today. After the hearing  
22 we're going to set a written public comment period. If anybody  
23 here doesn't wish to testify today, they can also file a public  
24 comment.

1           Part 102 of the Board's procedural rules govern this  
2 hearing. All information that is relevant will be admitted. All  
3 witnesses will be sworn and subject to cross-examination. After  
4 all the testimony is complete, we will allow parties to provide  
5 closing arguments or a closing statement -- more a closing  
6 statement in a rulemaking hearing. Anyone can ask a question of  
7 any witness. Ask it in an orderly fashion, and that's all I  
8 have. I want to introduce Board Member Johnson, ask him if he  
9 has any comments he would like to have at this point.

10           MR. JOHNSON: Thank you all for coming. We have been  
11 spending a lot of time together lately. And I want to assure you  
12 we will continue to do so and also assure you that this  
13 rulemaking will get all due consideration. Thank you.

14           HEARING OFFICER KNITTLE: We've also talked before the  
15 hearing about the order of witnesses here today and we agreed to  
16 put Mr. Scheaffer on first. But before we do that, I wanted to  
17 allow the parties, and those interested, a chance to introduce  
18 themselves starting with the Agency. I'm Tony Frevert,  
19 F-R-E-V-E-R-T, I'm the manager of Water Pollution Control  
20 Division.

21           MR. SOFAT: Sanjay Sofat, attorney with the Agency.

22           MR. HARSCH: Roy Harsch with the law firm of Gardner,  
23 Carton and Douglas on behalf of the Illinois Association of  
24 Wastewater Agency.

1           MR. DAUGHERTY: Jim Daugherty on behalf of the Illinois  
2 Association of Wastewater Agency.

3           MR. ETTINGER: Albert Ettinger. My clients today are  
4 Sierra Club, Environmental Law & Policy Center and Prairie Rivers  
5 Network.

6           MS. WENTZEL: Beth Wentzel with Prairie Rivers Network.

7           MR. LEMKE: Mike Lemke with the University of Illinois in  
8 Springfield.

9           HEARING OFFICER KNITTLE: Okay. Mr. Sofat, do you have  
10 anything you want to say before we get started?

11          MR. SOFAT: The Agency will have questions for the  
12 testimony that will be read today and also we have Agency  
13 comments at the end of the day and also the Agency will file  
14 written comments. Other than that, we don't have any witness or  
15 any information that we would like file at this point.

16          HEARING OFFICER KNITTLE: Great. Move up here so the court  
17 reporter can hear him, please.

18          MR. ETTINGER: First of all, I want to make clear, I'm not  
19 really presenting Dr. Scheaffer. I did file his testimony as a  
20 favor, so to speak, but we have talked early but I don't  
21 represent Scheaffer International in any sense. I went on tour  
22 of Scheaffer plants and mentioned this proceeding to Scheaffer  
23 and urged him to make his views known. If he had any at that  
24 time, I submitted them to him, but I have had nothing to do with

1 his testimony nor am I representing Scheaffer International or  
2 Dr. Scheaffer today.

3 HEARING OFFICER KNITTLE: Thank you for that clarification.  
4 Mr. Scheaffer, you want to come on up and have a seat and we'll  
5 swear you in. You can pick and choose between the two available  
6 seats.

7 MR. ETTINGER: I want to point out it may be -- it may be  
8 reasonable in this case if Dr. Scheaffer were to read his  
9 testimony, if that's desired by the Board. As to the other  
10 witnesses, I do want to point out I think we would really save a  
11 lot of time and paper if we didn't read the testimony complete  
12 with footnotes and references, just to give a summary, would that  
13 be okay?

14 HEARING OFFICER KNITTLE: Okay. That's acceptable to me as  
15 long as none of the other parties object. We can take that  
16 evidence as read into the record. But, Mr. Scheaffer, are you  
17 going to read that?

18 (The witness was sworn.)

19 MR. SCHEAFFER: It's a pleasure to meet with the Board and  
20 -- and my written testimony, I mention something that very few  
21 people are aware of, and that is the Illinois General Assembly in  
22 the late '60s passed or created what they called the Lake  
23 Michigan, an Adjoining Land Study Commission. And the purpose of  
24 the commission was to create a Bill of Rights for Lake Michigan.



1 It was concerned about the quality of Lake Michigan. And they  
2 came to me at this staff of the University of Chicago and asked  
3 me would I be their executive director. Well, I agreed to do  
4 that, so we put an old battery of graduate students working on  
5 their Ph.D.s to come up with a Bill of Rights for Lake Michigan.  
6 And at that time, as we were finishing, the Secretary of the Army  
7 asked me if I would be his science advisor. And so in 1970 I  
8 went there and I took my Bill of Rights for Lake Michigan with  
9 me, and that, in essence, is the Clean Water Act.

10 You've read the Clean Water Act. What does it say? The  
11 first goal says it's a goal of the nation to eliminate the  
12 discharge of pollutants into the navigable waters by 1985, and  
13 people say, well, what does that mean. I said, well, it means  
14 that we missed it but it's still the goal, to eliminate the  
15 discharges. And some people say discharges are anything above  
16 the standards. But if you read the congressional record, when  
17 the law was passed, Senator Muskie says this law means one simple  
18 thing: That rivers and streams are no longer a part of the  
19 sewage treatment process. In other words, as simulative capacity  
20 was to be reserved for other things rather than treating sewage.  
21 So as I reviewed your standards, I felt they were very good  
22 standards moving towards the objective of no discharge. Now some  
23 people say that's not logical or feasible but people call it  
24 Scheaffer's Systems.

1           But in 1980, that's 24 years ago, the Trammell Crow Company  
2 built a Scheaffer System at what was called the Hamilton Lakes  
3 Development. There's five million square feet of office/hotel  
4 space on 274 acres and all the wastewater is reclaimed and reused  
5 on that site. No discharge of anything. The sprinkler system, I  
6 think we've got sprinklers in there, is charged with the  
7 reclaimed water, multiple use of the water, and it was done  
8 because it was cost effective. And so the point is Illinois,  
9 where the Clean Water Act really was born, which I've never  
10 mentioned to a public body, now you got to take credit for some  
11 of it. It was done in Illinois and the first system that showed  
12 you could eliminate odors, you could eliminate sludge, and you  
13 could eliminate discharges into the waterways. So it's been  
14 demonstrated to be cost effective.

15           And one thing I would like to read is the Illinois  
16 Association of Waste -- Wastewater Agencies on page 54. After  
17 saying to eliminate or to reduce the discharges to the proposed  
18 USEPA standards would cause five billion in capital and  
19 approximately one million to operate --

20           MR. ETTINGER: Excuse me, Dr. Schaeffer, I think you're  
21 referring to a report, a dense report, that was alluded to or  
22 perhaps in the record that the Agency put in as part of its  
23 testimony?

24           MR. SCHAEFFER: Yeah. What it says, based upon review of

1 information available for so called natural systems, the IAWA  
2 believes that the following natural systems may offer the  
3 potential to meet low total nitrogen and total phosphorus levels  
4 at aerated and facultative lagoons, constructed wetlands, land  
5 application systems and overland flow. And then they say,  
6 however, additional studies of these systems is needed to  
7 determine if it is possible to rely on the harmony of natural  
8 processes in such systems to meet low total nitrogen, total  
9 phosphorus effluent standards.

10 Well, the Hamilton Lake Project started operating in 1980.  
11 It's still operating. So there's 24 years of records shows no  
12 discharges and a very highly developed site. There are very few  
13 places where you would have that much development in the state of  
14 Illinois, and it's still in operation. And there are more than  
15 20 other ones operating. And some communities are now saying we  
16 want to reclaim and reuse all of our wastewater. So there's an  
17 illustration and there are illustrations in Illinois where that's  
18 being done.

19 And then the final thing I think you've got to keep in  
20 mind, there's a significant event that occurs every year. We  
21 find it every month. Every month we add six million people to  
22 the world population. But we've got the same amount of land and  
23 water. So the way we manage land and water, this last month  
24 isn't good enough for this month, and so since we have no more

1 land and water, we've got to make multiple use of our land and  
2 water. And in my testimony I show that there are only a little  
3 over one percent of the farmland in Illinois you could reclaim  
4 and reuse all the wastewater.

5 Now maybe it's not properly located but it's a goal towards  
6 which we should move. And if we took flood plain lands, well, it  
7 stores the flood waters when it occurs, but that occurs very few  
8 days in a year. The rest of the days we could use it to recycle  
9 the nutrients in our wastewater, the nitrogen and phosphorus that  
10 you're talking about and then you could say, well, that would  
11 increase agricultural productivity, and that's right. And if you  
12 select the right crops, you can sequester carbon, so you would --  
13 one acre of land you would be mitigating floods, improving water  
14 quality and improving air quality and improving farmer income.

15 And I believe you have heard people testifying that  
16 theoretically an acre of land could be managed to sequester 300  
17 tons of carbon a year. And carbon futures are selling at six to  
18 \$12 a ton, so I think we've got to look in not a simple, single  
19 focus that, hey, we treat sewage, we truck the sludge away and we  
20 put the effluent and nutrients in the river and that's the way  
21 it's intended.

22 But as you all know, there's 7,800 square miles of dead  
23 water in the Gulf of Mexico from these nutrients we're throwing  
24 away. So at some point in time we've got to start thinking in a

1 more synthesized way and realize that waterways are important  
2 things, and we've got to manage them and all of us are taught the  
3 hydrologic cycle. Unfortunately we're not taught the nutrient  
4 cycle. The plants grow. The animals eat the plants. I eat the  
5 animals and nutrients are now in me. They leave the body and I  
6 want to put them in the Gulf of Mexico. Instead of saying why  
7 don't we use them to grow more plants instead of creating  
8 anhydrous ammonia out of imported oil and take the flex, let's  
9 recycle the nutrients.

10 So I feel of all places Illinois, where the no discharge of  
11 pollutants was born and where the first moderate recycling system  
12 was put into place, ought to see to reclaim and reuse our  
13 wastewater. And then to give you the practicality of it, a  
14 million gallons of wastewater can be reclaimed and reused on less  
15 than 300 acres of land. So the land is all here. And I think  
16 there's a basis for moving towards clean water. And to do that  
17 we've got to reclaim and reuse our nutrients, so that's it.

18 HEARING OFFICER KNITTLE: Thank you, sir. Could you -- Are  
19 you going to offer your testimony, your pre-filed testimony --

20 MR. SCHAEFFER: Yes.

21 HEARING OFFICER KNITTLE: -- as it is read? Any objection  
22 of putting that into the record?

23 MR. SOFAT: No.

24 HEARING OFFICER KNITTLE: We'll admit that as Exhibit 1.

1 Any questions of Mr. Scheaffer? Mr. Ettinger?

2 MR. ETTINGER: I have just one. Are there other  
3 organizations or companies which make land treatment systems in  
4 the United States in addition to Schaeffer International?

5 MR. SCHAEFFER: Well, there certainly are, and many people  
6 can obviously reclaim and reuse the wastewater so it's not a  
7 monopoly or anything. And I would like to submit two -- two  
8 additional papers that show examples. One is a -- there's a  
9 project in Barrington at Jack Nicholas's Golf Course incidentally  
10 where there are multi-million dollar houses looking into the  
11 Scheaffer Systems and the lawns are irrigated right next door to  
12 them and obviously there aren't any odor or problems. But could  
13 I submit these? Here's two.

14 HEARING OFFICER KNITTLE: All right. I got one entitled  
15 Wynstone Modular Reclamation and Reuse System, we'll mark that as  
16 Exhibit No. 2; and the one entitled North Fork Cleanwater Project  
17 in Timberville, Virginia, we'll mark as Exhibit 3. Does anyone  
18 want to take a look at those before we accept them into evidence?  
19 Any objections? Seeing none, we'll admit those as Exhibit 2 and  
20 3. Thank you, sir.

21 MS. LIU: I do have one question for Mr. Scheaffer.

22 HEARING OFFICER KNITTLE: I'm sorry. Would you mind having  
23 a seat again. I was premature. Ms. Liu.

24 MS. LIU: Sir, you speak of a world with the vision for the

1 future and it almost seems larger in perspective than this  
2 rulemaking itself. I was just wondering what other avenues you  
3 were exploring, whether you had talked to perhaps the  
4 agricultural community into getting them interested in using this  
5 as a resource?

6 MR. SCHAEFFER: Two weeks ago Dr. Harrary (phonetic), who  
7 is one of the leading scientists, engineers in Morocco, spent 10  
8 days in Illinois looking at these systems. We've already built  
9 one in Agadir, Morocco, at the Premier Agricultural College and  
10 we wanted to do it, not only in Morocco, but across the North  
11 Africa going into Algeria, Libia, and Egypt. And while we're  
12 sitting here, they're building one in Mongolia and the Indian  
13 government is talking about doing systems at New Delhi, so people  
14 are catching on because it's simple. Because when you look at  
15 waste, irrespective, there are a lot of books you can write on it  
16 but it comes down to two simple questions: You either reclaim or  
17 reuse it or you relocate it. You don't make anything disappear.  
18 So I'm saying reclaiming and reusing it is a much more logical  
19 decision than assuming that we can relocate it when we see the  
20 effects of relocating.

21 Take all the pharmaceuticals, most of them go right through  
22 an aggravated sludge plain, go down the river. I've always said  
23 the best way to reduce the cost of prescription drugs, find out  
24 who has high blood pressure, move them downstream. Let them get

1 it, you know, free, right? So there are a lot of things going  
2 on. And many of these people here have heard me talking about  
3 this for decades and feel it's not practical but more and more  
4 people are doing it, especially the big homebuilders. They're  
5 saying we don't like liability, etc., we'll just reclaim and  
6 reuse all the wastewater on our golf course or on our parks.

7 MS. LIU: Thank you very much.

8 HEARING OFFICER KNITTLE: Thank you, Dr. Schaeffer. Mr.  
9 Ettinger, I notice that Mr. Lemke is here now.

10 MR. ETTINGER: Yes, I guess we could go now if you like.

11 HEARING OFFICER KNITTLE: Mr. Harsch --

12 MR. ETTINGER: Okay. I put together this package and  
13 there's an introduction which sort of says we're going. And then  
14 there is a pre-filed testimony of Albert Ettinger. That's  
15 actually the nature of a legal brief and I am pleased at some  
16 point to answer questions about that if anybody has any, but I  
17 don't propose to read the testimony here. And actually if you do  
18 have questions to me, I would rather hold those to the end too  
19 because Professor Lemke is here. I would rather get Beth Wentzel  
20 and Professor Lemke done instead of questioning of me since I'm  
21 going to be here all the time any way. The same goes with part  
22 four of the testimony which is the suggested part four, the  
23 package, which is the suggested reworking of the Agency language  
24 to address some of the drafting problems that were raised at the



1 last hearing. That also I'm probably the best person to answer  
2 questions about that proposed alternative language but I suggest  
3 we hold that until later too.

4 Having said that then, I think Dr. Lemke would probably be  
5 the logical person to go next. I think it would be -- with your  
6 permission, I think it would be satisfactory for him to read the  
7 introduction to his testimony and then take questions.

8 HEARING OFFICER KNITTLE: That's fine with me. Why don't  
9 you have a seat up there. What date was his pre-filed testimony  
10 from?

11 MR. ETTINGER: October 15th. It's in the package. It's  
12 part of the -- unfortunately, I should have made more clear when  
13 I filed this, in retrospect it's one big package that consisted  
14 of the pre-filed testimony of exhibits and then the pre-filed  
15 testimony of Dr. Lemke and then there's the pre-filed testimony  
16 of Beth Wentzel which has excerpts, and then a part four which is  
17 the alternative or proposed alternative language and just two  
18 sheets explaining what was attempted to do with the draft  
19 language.

20 HEARING OFFICER KNITTLE: Okay. You want to offer his part  
21 of the package as read as a separate exhibit or what?

22 MR. ETTINGER: Yes, we can offer, I guess, the pre-filed  
23 testimony. I'm not sure what we called it.

24 HEARING OFFICER KNITTLE: Exhibit 4. Any objections to

1 entering the pre-filed testimony of Professor Lemke as is read as  
2 Exhibit 4? Seeing none, we'll admit that. Mr. Ettinger, do you  
3 want to have him --

4 MR. ETTINGER: Yes. Dr. Lemke, would you please read just  
5 the part of your testimony from -- going from introduction down  
6 to qualifications and I think that will --

7 MR. LEMKE: Including qualifications?

8 MR. ETTINGER: No, skip qualifications. We'll let people  
9 read that. And I think just the introduction is sufficient for  
10 the people who didn't bother to read their package in advance.

11 MR. LEMKE: Ready?

12 HEARING OFFICER KNITTLE: Yes, sir. Please swear him in.

13 (The witness was sworn.)

14 MR. LEMKE: Introduction: Eutrophication is the most  
15 wide-spread water quality problem in the U.S., and say Carpenter,  
16 et al., 1998, and accounts for over one half of impaired river  
17 reaches in the United States, cited USEPA report in 1996.

18 On the basis of my experience as a biologist who has worked  
19 in Illinois aquatic systems, I think it is important that  
20 Illinois strictly limit increase discharges of phosphorus going  
21 into Illinois rivers and streams. I would like to stress three  
22 major points in this introduction which I describe in greater  
23 detail in the body of this testimony.

24 First, it is important that rivers and streams be protected

1 from a natural level of phosphorus just as it is important that  
2 lakes be protected from such pollutions. While early research  
3 described the relationship between excessive phosphorus and  
4 harmful environmental effects of lakes, it is now well known that  
5 excess phosphorus harms riverine systems. Both extensive  
6 research documented in the scientific literature and my own  
7 experience working in Illinois rivers and stream support this  
8 observation.

9       Second, the addition of naturally high amounts of  
10 phosphorus to a river or lake almost always has some  
11 environmental effect. In Illinois phosphorus most often ends up  
12 in the algal and bacterial growth and where phosphorus is  
13 limiting, further addition of phosphorus will lead to a natural  
14 growth of algae and bacteria. Phosphorus enriched systems often  
15 support algal and bacterial growth at levels that are considered  
16 offensive and harmful to the environment. Further, even when a  
17 natural phosphorus loadings do not immediately affect the stream  
18 segment they initially entered, they may affect the downstream  
19 waters.

20       Finally, while excessive levels of phosphorus in any form  
21 can be a problem, inorganic, soluble phosphorus is immediately  
22 biologically available as a nutrient for algae and bacteria  
23 growth. Other factors such as suspended particles and amounts of  
24 sunlight and flow rate are all factors affecting the particulars

1 of the outcome of the phosphorus enrichment. Even phosphorus  
2 that is in particulate form seemingly unavailable can be  
3 subsequently released in the benthos and affect the water in  
4 which it was stored or contribute to problems downstream. These  
5 factors must be considered in the development of the management  
6 plan.

7 HEARING OFFICER KNITTLE: Thank you, sir. We've admitted  
8 his pre-filed testimony as it is read. At this time it's  
9 appropriate to see if anyone has any questions. Dr. Scheaffer,  
10 does anyone have any questions?

11 MR. SCHAEFFER: No.

12 HEARING OFFICER KNITTLE: Mr. Harsch?

13 MR. HARSCH: Dr. Lemke, you're still researching, studying  
14 the issue of the impacts of phosphorus on river systems are you  
15 not?

16 MR. LEMKE: I didn't hear the last part.

17 MR. HARSCH: On river systems?

18 MR. LEMKE: Yes.

19 MR. HARSCH: You don't mean to leave the impression that  
20 everything is known about that problem?

21 MR. LEMKE: I do not want to leave that impression.

22 MR. HARSCH: Do you have an opinion if you eliminated all  
23 of the publically owned treatment works effluent discharging up  
24 stream how long it would take for the drain pool of the Illinois

1 river to recover?

2 MR. LEMKE: I have an opinion that it would be a  
3 considerable amount of time. And due to that, I mentioned like  
4 flow rate, the way water is pumping through the systems and just  
5 the amount of reservoir of phosphorus that has accumulated in  
6 some of these systems, it's a very diverse reach of river.

7 MR. HARSCH: In page -- in figure five of your pre-filed  
8 testimony is photographs of fish kill that occurred --

9 MR. LEMKE: Uh-huh.

10 MR. HARSCH: -- in South Pigley in July of 2003?

11 MR. LEMKE: True.

12 MR. HARSCH: The Pollution Control Board currently has the  
13 phosphorus limitations that would apply to discharge upstream of  
14 Pigley; isn't that correct?

15 MR. LEMKE: I'm not aware of that.

16 MR. HARSCH: Give an opinion as to the relative magnitudes  
17 of the phosphorus loading that is attributable to public  
18 treatment works versus that is attributable to agricultural  
19 practices in the state of Illinois?

20 MR. LEMKE: Do I have an opinion?

21 MR. HARSCH: On the relative magnitude on those?

22 MR. LEMKE: Not a quantitative sense, only a concentration  
23 sense.

24 MR. HARSCH: Are you aware that the State of Illinois

1 Environmental Protection Agency is currently evaluating the whole  
2 issue of nutrient loadings in the development of proposed final  
3 nutrient regulations?

4 MR. LEMKE: I'm aware of the issue but not the particulars.

5 MR. HARSCH: Are you participating in -- So you're not  
6 participating in the Illinois EPA Stakeholder Group?

7 MR. LEMKE: I was approached by somebody at a recent  
8 conference but, no, I've not attended any of the hearings or of  
9 briefings of the Illinois EPA.

10 MR. HARSCH: Like your research, you're aware that's an  
11 ongoing effort?

12 MR. LEMKE: I'm aware of that.

13 MR. HARSCH: Are you aware that the Illinois Pollution  
14 Control Board used to have a phosphorus limitation that would be  
15 applicable to discharges in the Fox River and repealed or removed  
16 that limitation because phosphorus was in essence not the  
17 limiting nutrient?

18 MR. ETTINGER: I object to the characterization of the  
19 question but Mr. Lemke can answer it to the extent that he knows  
20 what the Pollution Control Board rules are.

21 MR. LEMKE: I wasn't aware of the overturning of that. I'm  
22 kind of interested in finding out how they did that.

23 MR. HARSCH: I don't have anything further.

24 MR. ETTINGER: I have one. Is Big Lake typologically

1 connected to any river or stream?

2 MR. LEMKE: Yes, South Big Lake and occasionally North Big  
3 Lake is seasonally connected, especially during flooding times,  
4 but South Big Lake even during the traditional spring flood.

5 MR. ETTINGER: Connected to what?

6 MR. LEMKE: The Illinois river.

7 MR. ETTINGER: Thank you. I think that's all my questions.

8 MR. RAO: Dr. Lemke, the part of your research on Illinois  
9 rivers, you know, do you have any idea about what the point  
10 source loading is and non-point source loading? Have you made  
11 any estimate of what kind of loads you're getting from the  
12 non-point source?

13 MR. LEMKE: It's a big system. I haven't gone into the --  
14 into looking at all the sources, point versus non-point. What  
15 we're trying to do is characterize some of these flood plain  
16 systems even in, you know, in a scientific manner, get baseline  
17 information at this point.

18 MR. RAO: And in response to Mr. Harsch's question about if  
19 phosphorus loading from point source were eliminated or  
20 controlled, you said it would take a while for it to recover.  
21 Does that response also presume that non-point phosphorus loading  
22 will also be controlled or --

23 MR. LEMKE: Non-point should be controlled you said?

24 MR. RAO: No. Does your response assume that non-point

1 loading are controlled or it's just based on control of point of  
2 loading?

3 MR. LEMKE: You're asking me if non-point -- Sir, I'm not  
4 sure I'm understanding.

5 MR. RAO: Is the point source loading was controlled or  
6 eliminate, you said if you take a while for it to recover. I'm  
7 asking you whether that answer assumes the point -- non-point  
8 source of loading will continue?

9 MR. LEMKE: Well, I mean, if you keep loading it no matter  
10 what the source, that will prolong any kind of recovery, whether  
11 it's a source not even phosphorus. So am I answering -- am I  
12 still missing it?

13 MR. RAO: So I just wanted to know whether both point and  
14 non-point source control needs to be in put into place for the  
15 river to recover?

16 MR. LEMKE: In my opinion, yes. I mean, if you are  
17 interested in recovery of the Illinois river and it's -- I guess  
18 it's still alleged contribution to the developed hypoxia, yeah,  
19 you're going to have to consider all sources, sure.

20 MR. RAO: Okay.

21 HEARING OFFICER KNITTLE: Anything further down there?  
22 Anybody else?

23 MR. HARSCH: One follow-up clarification question. In your  
24 introduction in your pre-filed testimony you have a reference to



1 Carpenter, et al., 1998?

2 MR. LEMKE: Yes.

3 MR. HARSCH: I don't find that in your reference list. Is  
4 that an oversight?

5 MR. LEMKE: That is definitely an oversight. That is  
6 Steven Carpenter's work.

7 MR. HARSCH: Can you provide me that?

8 MR. LEMKE: Yes, I would be happy to. I apologize.

9 BOARD MEMBER JOHNSON: Just briefly I'm curious, maybe  
10 you're not the right guy to ask, maybe you are. You know the  
11 Board's currently -- that's why we've been together lately  
12 considering the proposed amendment to the dissolved oxygen  
13 standards and Roy alluded to the stakeholder group discussing  
14 nutrients as a whole. Do you have an opinion as to the value, or  
15 the lack thereof, addressing each of these issues in the  
16 piecemeal basis as opposed to a larger and broader -- broader  
17 rulemaking that would address each of -- each of them together?

18 MR. LEMKE: If I'm understanding, is it better to look at  
19 each individual parameter and put regulations on it rather than  
20 as a whole --

21 BOARD MEMBER JOHNSON: Right.

22 MR. LEMKE: -- study? Measurements like dissolved oxygen  
23 like many measures, there's many reasons why you get different  
24 levels of dissolved oxygen. And I think you need to put them in

1 perspective with other measurements like chlorophyl A and your  
2 nutrients. Once -- Depending upon the time of day when you take  
3 dissolved oxygen readings, you could have vast different  
4 measurements even if the system is highly productive or not very  
5 productive. So I think any tip of comprehensive plan you want to  
6 put in, you want to have some definite indicators. You can't  
7 measure everything but you want to be pretty careful and select  
8 your indicators and get someone who knows how to interpret those  
9 also.

10 MR. JOHNSON: Thank you.

11 HEARING OFFICER KNITTLE: Anybody else have any further  
12 questions of this witness?

13 BOARD MEMBER GIRARD: I have a question. On that section  
14 of Illinois River I have some historical data going back quite a  
15 ways with the historical survey. Is there any phosphorus data  
16 going back, you know, several decades or even 100 years  
17 comparable to the kind of data you're collecting now to say  
18 whether or not things are changing on that stretch of the river  
19 in terms of phosphorus levels?

20 MR. LEMKE: There is. The Illinois National History Survey  
21 in conjunction with the Long-term River Monitoring Program keeps  
22 a lot of data. And to answer one part of your question, some of  
23 the data goes back about 100 years ago to the time of Forbes and  
24 Richardson especially with, you know, readings of some of the

1 different algal and fish life. But we are in the process of  
2 looking at the last -- or I shouldn't say not the last, nine  
3 years of long-term data to see the trends that have occurred not  
4 only due to air culture but due to, you know, due to the change  
5 in hygograph when the locks and dams and changed the hygograph  
6 amazingly and also the amount of trench districts creating very  
7 severe pulses and divorcing the levies that divorce the historic  
8 flip from the channel, so, yes, there are data.

9 BOARD MEMBER GIRARD: Have you -- have you been able to  
10 make any, you know, any sort of reasonable conclusions about  
11 changes in phosphorus levels over the past several decades not  
12 going back nine or 10 years but --

13 MR. LEMKE: No, the current data that we've been analyzing  
14 is nine years. I haven't simply just gone back to comparing that  
15 to like pre-levy time or something like that. I -- Some day I  
16 hope to.

17 MR. GIRARD: Thank you.

18 HEARING OFFICER KNITTLE: Anything further? Thank you,  
19 sir. You can step down. Can we go off the record for a second.

20 (A discussion was held off the record.)

21 MR. ETTINGER: I just want to again -- we would prefer not  
22 to read the Wentzel testimony instead as opposed to the  
23 introduction. We'd like Beth to read her conclusion which  
24 summarizes to some extent and then we will have questions to go

1 from there if that's okay with you.

2 HEARING OFFICER KNITTLE: That's perfectly okay with me.  
3 You want to offer her testimony, her pre-filed testimony, as  
4 Exhibit No. 5?

5 MR. ETTINGER: Actually I can do the lawyer thing and ask  
6 her questions here after you have sworn her in.

7 HEARING OFFICER KNITTLE: Swear her in.

8 (The witness was sworn.)

9 HEARING OFFICER KNITTLE: Mr. Ettinger.

10 MR. ETTINGER: Okay. Ms. Wentzel, did you draft the  
11 testimony that is the pre-filed testimony of Beth Wentzel that  
12 was filed in this matter?

13 MS. WENTZEL: Yes.

14 MR. ETTINGER: I would therefore like to offer as Exhibit 5  
15 the pre-filed testimony.

16 HEARING OFFICER KNITTLE: Any objections?

17 MR. HARSCH: With its two attachments?

18 MR. ETTINGER: Yes, with its two exhibits. The two  
19 exhibits are Highest Levels of Phosphorus in Low Trench for  
20 Municipal Wastewater Treatment Plants and the second exhibit  
21 here, the Ultimate Challenge For Technology .02 milligrams per  
22 liter effluent total phosphorus.

23 HEARING OFFICER KNITTLE: Okay. With both exhibits are  
24 there any objections to admitting that pre-filed testimony?

1 MR. SOFAT: No.

2 HEARING OFFICER KNITTLE: It will be admitted as Exhibit  
3 No. 5. Ms. Wentzel.

4 MS. WENTZEL: In conclusion, the literature on nutrient  
5 removal technology suggested that one milligram per liter is  
6 reliability met, well-established and reasonable technology.  
7 Several states have applied the similar limit broadly and have  
8 applied considerably more stringent limits for many permits.  
9 Several facilities in Illinois have demonstrated the ability to  
10 comply with this limit. Based on these reasons, I believe that  
11 the effluent limit of 1.0 milligrams per liter as a monthly  
12 average for total phosphorus that the Illinois EPA has proposed  
13 is technically and economically reasonable.

14 HEARING OFFICER KNITTLE: Thank you. I'm assuming -- Do  
15 you have any questions for Ms. Wentzel before we open her up for  
16 questions for anybody else?

17 MR. ETTINGER: I would just like to get one more thing in  
18 the record. What exhibit are we up to?

19 HEARING OFFICER KNITTLE: 6.

20 MR. ETTINGER: Ms. Wentzel, on page -- the attachment, in  
21 your testimony you make reference to a Northeast Illinois  
22 Planning Commission Water Review of the City of Elgin, and I just  
23 wanted to ask you whether this document on the City of --  
24 prepared by Robinson Engineering Limited is the document that's

1 being referred to there?

2 MS. WENTZEL: This is the document that is referred to in  
3 the Northeastern Illinois Planning Commission Water Quality  
4 Review, so the report that I dated -- or I referenced is a report  
5 that includes excerpts from this report and that is dated May  
6 27th, 2004. But this is the original document that includes that  
7 information.

8 MR. ETTINGER: Okay. I would like to offer it as Exhibit  
9 6, the City of Elgin Responses, Revisions and Supplemental  
10 Material for NIPC reviewed by Robinson Engineering Limited.

11 MR. HARSCH: Do you have a copy of that document?

12 HEARING OFFICER KNITTLE: Here, you can have this.

13 MR. ETTINGER: Beth, did you bring any?

14 MS. WENTZEL: I have my copy. It's not complete.

15 MR. ETTINGER: He can have that one.

16 MR. HARSCH: Thanks.

17 HEARING OFFICER KNITTLE: Any objection to that being  
18 admitted as Exhibit 6? Seeing none, we will admit that as  
19 Exhibit 6.

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

21 HEARING OFFICER KNITTLE: Anybody else have any questions?

22 MR. HARSCH: I have a few. Ms. Wentzel, have you ever  
23 designed a wastewater treatment plant?

24 MS. WENTZEL: My course work in graduate school involved

1 several design courses in which we did do a lot of design work.

2 MR. HARSCH: Since graduating, have you ever designed a  
3 wastewater treatment plant?

4 MS. WENTZEL: No.

5 MR. HARSCH: Have you ever operated a wastewater treatment  
6 plant?

7 MS. WENTZEL: No.

8 MR. HARSCH: You don't hold yourself out to be an expert in  
9 this area, do you?

10 MS. WENTZEL: I'm not sure how you define expert. In your  
11 response to your earlier questions, no, I do not design nor  
12 operate a facility. I do regularly review some of the designs  
13 for several wastewater facilities. I've also been involved in  
14 discussions with designing engineers about those designs.

15 MR. HARSCH: Can you please explain your understanding of  
16 what constitutes a process of biological nutrient removal?

17 MS. WENTZEL: Yes, the most straight forward design for  
18 biologically removing phosphorus is the -- you know, essentially  
19 including an anaerobic stage in your activated sludge system  
20 prior to the wastewater moving to an aerobic stage. Essentially  
21 what happens is in the anaerobic tank, there are microorganisms  
22 that are commonly referred to as phosphate accumulating organisms  
23 that are able to use energy that they've used to store as  
24 phosphate to take up organic material, and then when we move into

1 the aerobic phase, they then accumulate more of that phosphate  
2 than most typical microorganisms. So it's the procedure that  
3 allows for the selection of these organisms that we accumulate  
4 more phosphate.

5 MR. HARSCH: So you would need both the tank for anaerobic  
6 and almost a tank for aerobic?

7 MS. WENTZEL: Or one tank with a baffle.

8 MR. HARSCH: Your pre-filed testimony on page two, you  
9 reference an expansion project of Minooka, how large a treatment  
10 plant was it before the expansion project?

11 MS. WENTZEL: Let me see. I don't remember off the top of  
12 my head but I can certainly find that.

13 HEARING OFFICER KNITTLE: Offer the record.

14 (A discussion was held off the record.)

15 MS. WENTZEL: The existing facility is a 1.092 MGD plant.  
16 The expanded facility will be -- have a design average flow of  
17 2.2 MGDs.

18 MR. HARSCH: Who is the design engineer that you had your  
19 discussions with?

20 MS. WENTZEL: That was the Hamilton Engineers.

21 MR. HARSCH: Page two of your pre-filed testimony you  
22 reference the Village of Roxana with the high levels of iron  
23 hydroxide, how common is that in Illinois?

24 MS. WENTZEL: I do not know how comon that is.



1 MR. HARSCH: Do you know the source of iron hydroxide that  
2 have discharged to the Roxana plant?

3 MS. WENTZEL: On this particular facility, based on my  
4 understanding of this engineering plant, the high iron hydroxide  
5 was coming from the drinking water treatment plant which was  
6 removing iron from groundwater which was high in iron.

7 MR. HARSCH: Does the City of Elgin treat wastewater?

8 MS. WENTZEL: I believe that the Fox River Water  
9 Reclamation District treats the waste for the City of Elgin.

10 MR. HARSCH: Was Robinson Engineering representing the City  
11 of Elgin or the Fox River Water Reclamation District?

12 MS. WENTZEL: I believe they were representing the City of  
13 Elgin per the report.

14 MR. HARSCH: Do you know if the Fox River Reclamation  
15 District agrees with these figures?

16 MS. WENTZEL: I do not know if they agree or disagree. I  
17 know that there were not objections to the statements made by  
18 NIPC about this report.

19 MR. HARSCH: On page, they're not numbered, one, two,  
20 three, I guess four of your pre-filed testimony where you list a  
21 number of facilities that are achieving phosphorus reduction in  
22 that table --

23 MS. WENTZEL: Yes.

24 MR. HARSCH: -- how many of those POTWs discharge either to

1 a lake or upstream of a lake?

2 MS. WENTZEL: I did not identify all of the locations of  
3 these facilities precisely. I believe that at least most of them  
4 are discharging upstream or to a lake.

5 MR. HARSCH: So they would then be subject to the existing  
6 Pollution Control Board rule?

7 MS. WENTZEL: Right. And just to clarify, you're talking  
8 about those that are identified in this table, correct?

9 MR. HARSCH: The table on page, one, two, three, four of  
10 your pre-filed testimony.

11 MS. WENTZEL: Yeah, I apologize for -- I apologize for  
12 failing to number the pages. That's the table, I believe, is on  
13 the fifth page.

14 MR. ETTINGER: It's on the fourth page for us I think,  
15 Beth.

16 MS. HARSCH: When you reference, again, be the second full  
17 paragraph up there, the end right before your paragraph and your  
18 conclusion, can you draw your attention to that paragraph, starts  
19 out in addition?

20 MS. WENTZEL: Yes.

21 MR. HARSCH: What are the benefits you're referring to?  
22 Benefits simply outweigh the costs?

23 MS. WENTZEL: It's difficult for me to enumerate all of the  
24 benefits that go into this decision. Obviously in this paragraph

1 we're referring to a number of communities and facilities that  
2 have agreed to some type of phosphorus removal process in their  
3 permits, you know, and there are some deliberations that went  
4 into that decision. I was involved in some of the discussions  
5 but I certainly was not in on all of the discussions between the  
6 consultants and the clients.

7 MR. HARSCH: Can you provide any examples of benefits to  
8 these communities?

9 MS. WENTZEL: You know, certainly better treated effluent.  
10 Some of the communities that we have worked with have  
11 acknowledged that there is a value to the community of having the  
12 highest quality that is achievable in their effluent.

13 MR. HARSCH: And when you're referring to the costs, you're  
14 referring to the capital of costs that you're talking about in  
15 the pre-filed testimony?

16 MS. WENTZEL: Again, in that paragraph, you know, when the  
17 consultants in their communities, their clients are discussing  
18 the costs and benefits, you know, there -- many of them are  
19 looking at long-term costs in addition to capital costs.

20 MR. HARSCH: If I go through the list of communities that  
21 you've provided in that paragraph, Plano, Manhattan, Minooka,  
22 DuQuoin, Richmond, and Wauconda, those are rapidly growing areas  
23 in the state of Illinois; is that correct?

24 MS. WENTZEL: I believe so.

1 MR. HARSCH: In fact, all of these permittees were in the  
2 process of expanding a wastewater treatment plant, were they not?

3 MS. WENTZEL: Correct.

4 MR. HARSCH: And in all incidences during your negotiations  
5 that you referred, agreed where you negotiated permit conditions,  
6 one of the principal benefits would be the agreement by your  
7 organization, Sierra Club and others, not to object to those  
8 permits, to request public hearings and delay the issues of those  
9 permits so that the necessary planning could proceed. Wasn't  
10 that the principal benefit to those communities?

11 MS. WENTZEL: I -- I can't say.

12 MR. HARSCH: My characterization of the negotiations  
13 process that led up to those agreements is accurate, is it not?

14 MS. WENTZEL: Can you restate?

15 MR. HARSCH: That your organization and Sierra Club and  
16 others during those negotiations said basically if you agree to  
17 treat nutrients, we won't object to your permit, request a public  
18 hearing and delay the issuance of that permit, request the delay  
19 of that?

20 MR. ETTINGER: That is not a correct statement.

21 MS. WENTZEL: I mean, certainly we discussed permit terms  
22 and conditions that we all could agree would comply with existing  
23 state law.

24 MR. HARSCH: And as long as the fast growing, smaller

1 communities agreed to the nutrient treatments, you didn't object  
2 to the permits?

3 MR. ETTINGER: With the exception of Wauconda.

4 MR. HARSCH: With the exception of Wauconda, sorry. There  
5 is -- Everybody will -- I'll take that one back.

6 MS. WENTZEL: I think we certainly have not appealed any of  
7 the other permits in that list.

8 MR. HARSCH: In fact, you're in similar discussions with  
9 the villages that you've listed at the end of that paragraph; is  
10 that correct?

11 MS. WENTZEL: Yes, we are -- we are having some discussions  
12 with all of those communities.

13 MR. HARSCH: And those are the same type of communities  
14 that are rapidly growing communities and need to expand their  
15 sewage treatment plant, need a permit for that?

16 MS. WENTZEL: I wouldn't describe all of them as rapidly  
17 growing. Certainly the City of Salem is not a rapidly growing  
18 community.

19 MR. HARSCH: I'm sorry. Itasca, Hampshire and --

20 MS. WENTZEL: They are each communities that have expressed  
21 an interest in expanding their sewage treatment plant.

22 MR. HARSCH: Do you know if these communities have been  
23 advised by individuals within Illinois EPA to negotiate  
24 environmental groups to hopefully resolve any difference prior to

1 the Agency going to final notice on drafting impeditious permits as  
2 to avoid the possibility of public hearings on those permits?

3 MS. WENTZEL: I don't know about those discussions.

4 MR. HARSCH: In addition to the capital costs that you've  
5 referenced in your testimony, is there any impact on ongoing  
6 operating costs for POTWs that installs phosphorus treatment?

7 MS. WENTZEL: It depends largely on what type of process is  
8 chosen. And as I discussed in my testimony, and as was mentioned  
9 or discussed at the previous hearing, there are a couple of  
10 principal mechanisms or processes to choose from. There are a  
11 group of biological processes and there are also the chemical  
12 processes. When somebody chooses a chemical process where they  
13 are adding some type of chemical to essentially precipitate the  
14 phosphate out, there typically isn't an increase in the amount of  
15 sludge produced.

16 MR. HARSCH: That would increase the sludge disposal cost,  
17 sludge handling cost?

18 MS. WENTZEL: Sure.

19 MR. HARSCH: In addition to the chemical cost itself?

20 MS. WENTZEL: Yes. Now for the biological processes, on  
21 the other hand, you know, there are several references in the  
22 literature to adding a biological nutrient removal process and  
23 actually having the effect of improved settleability of the  
24 sludge. There also have been some savings in the amount of

1 aeration that's necessary in developing some other pollutant  
2 perimeters such as BOD, we're certainly to impact the biological  
3 processes.

4 MR. HARSCH: When you referred, I think, in your testimony  
5 to the environmental benefits from this rule, aren't you really  
6 assuming that all of the wastewater treatment plants will be  
7 required to achieve at least one milligram per liter of  
8 phosphorus ultimately from the adoption of -- of nutrient  
9 standards in Illinois?

10 MS. WENTZEL: I don't think I would assume that in my  
11 testimony.

12 MR. HARSCH: Mr. Daugherty has specific questions he would  
13 like to ask.

14 MR. DAUGHERTY: Probably several questions but this relates  
15 to costs. The record so far there's been some site specific cost  
16 numbers have been put in. And of course the report by Mr. Lemke  
17 has been introduced which is a statewide cost figure. On your  
18 Exhibit B, the last table there, has cost figures. Do you have  
19 that?

20 MS. WENTZEL: Yes.

21 MR. DAUGHERTY: In these papers we were looking at two sets  
22 of effluent standards of one of .2 and one of .02. They list a  
23 cost of five million gallons per day of a smaller plant going to  
24 .2 of \$500,000 per MGD of operating cost of \$90 per liter gallons

1 treated. Those costs seem in the ballpark as far as your  
2 experience or your --

3 MS. WENTZEL: I have no reason to believe that they are  
4 inaccurate for this study. If you'd like me to comment further,  
5 I think it's important to note that we're not talking about  
6 achieving the .2 milligram per liter standard and we're also not  
7 talking about achieving .5 milligram per liter total phosphorus  
8 and the 3 milligram per liter total nitrogen which is what is in  
9 the NPDES report document.

10 I think it's also worth noting that we're only looking at  
11 new and expanding facilities and there are going to be some  
12 deficiencies gained when in the process of building a new plant  
13 or expanding an existing plant incorporating these technologies  
14 at that time which is perhaps why several communities are  
15 agreeing to do currently.

16 MR. DAUGHERTY: The difference between the one milligram  
17 per liter decimal and the subject of this hearing and .5 that you  
18 communicated in this testimony, which you said is basically the  
19 same technology, would you expect those costs to be similar?

20 MS. WENTZEL: They can be. The thing about using a  
21 biological process is that in order to -- to achieve the best --  
22 the lowest phosphorus limits possible using a biological process,  
23 you know, if you wanted to achieve a very low level, you can do  
24 so according to much of the literature by working with some of



1 the, you know, perimeters within the sewage treatment plant such  
2 as, you know, your waste activated sludge rate versus your return  
3 activated sludge rate and, you know, there's a lot of information  
4 out there that says operating those biological processes and the  
5 smartest way possible you can achieve down to .5 and lower. But  
6 short of that, there may be times when you're going to need to  
7 use the chemical precipitation and you'll want to have that as a  
8 back-up process. And the differences between achieving a one  
9 milligram liter there and .5 milligram liter, you may very well  
10 be in the increase amount of sludge that you may have from these  
11 chemical additions.

12 MR. DAUGHERTY: Thank you.

13 MR. HARSCH: A couple of additional -- page three of your  
14 testimony, Milwaukee discharges to Lake Michigan, does it not?

15 MS. WENTZEL: It does.

16 MR. HARSCH: And Syracuse, does it discharge to a lake?

17 MS. WENTZEL: It does discharge to a lake in the state of  
18 New York.

19 MR. HARSCH: No further questions.

20 MS. LIU: Good morning, Ms. Wentzel. It's been alluded to  
21 here today that phosphorus in the environment is kind of a  
22 multi-faceted problem and today we're focusing on POTWs. I was  
23 wondering if Prairie Rivers Network had any active work with  
24 other sources of phosphorus in the environment whether you were

1 pursuing the sale and use of phosphorus in common household  
2 products or phosphorus on agricultural front as non-point source?

3 MS. WENTZEL: I personally have not been involved in those  
4 issues. We certainly are very interested in phosphorus reduction  
5 initiatives. And we have some other people on our staff that are  
6 somewhat involved in some of agricultural policies and issues as  
7 well.

8 MS. LIU: Thank you.

9 MR. HARSCH: I have just one.

10 MR. ETTINGER: Maybe I better be sworn. I would just like  
11 to correct a question or impression. Beth is only testifying on  
12 behalf of Prairie Rivers, I think.

13 HEARING OFFICER KNITTLE: You want to be sworn in on all  
14 issues?

15 MR. ETTINGER: I think I'd better.

16 HEARING OFFICER KNITTLE: Would you swear him in, Bev.

17 (The witness was sworn.)

18 MR. ETTINGER: I just wanted to say because she's here for  
19 Prairie Rivers and those that know about what Prairie Rivers did,  
20 the Sierra Club have worked in the past on issues relating to  
21 phosphorus on agricultural settings. God knows I've spent many a  
22 hour in Springfield working on CAFO legislation in the '90s and  
23 some other things that are directly related to plant application  
24 of phosphorus. So Beth with Prairie Rivers doesn't go back far

1 enough to remember. Prairie Rivers was also involved in a lot of  
2 issues regarding CAFOs and other problems that are specifically  
3 related to agriculturally based phosphorus. Also of course the  
4 Sierra Club is trying to work on federal farm bill programs and  
5 other programs that will reduce farm erosion and stream erosion.  
6 I'm very involved in that for about 20 years that I've been  
7 working with the Sierra Club so, yes, we do realize there are  
8 other sources of phosphorus and we're doing what we can. We  
9 don't have the same set of handles on that that we have on this.  
10 We've got to look at other tools.

11 MR. HARSCH: Just a clarifying question or whatever. You  
12 also -- All of those organizations are also involved in the  
13 ongoing efforts by Illinois EPA to develop a long-term nutrient  
14 rule?

15 MR. ETTINGER: Yes.

16 MS. WENTZEL: Yes.

17 MR. ETTINGER: Beth, are you on the nutrient group?

18 MS. WENTZEL: Yes.

19 MR. ETTINGER: We also only got a few troops on many  
20 battles. Cindy is the one, I believe, is the one that is going  
21 to the nutrient group at the state level. I go to the ARTAG  
22 (phonetic) meetings at the regional USEPA level looking at the  
23 nutrients.

24 MS. WENTZEL: I've been attending those groups.

1 HEARING OFFICER KNITTLE: Mr. Rao, do you have a question?

2 MR. RAO: Yes, one question for Ms. Wentzel. You know  
3 based on your review of economic information on upgrading some of  
4 these treatment plants to control phosphorus, right now the  
5 appropriate level is one milligram per liter and we have heard  
6 that there is a company working on a nutrient plant in hopefully  
7 by 2008 that we have a final number. If that ultimate number is  
8 much lower than one milligram per liter, what you're -- and you  
9 have any idea as to what it may do to some of the plants that  
10 have to come in compliance with the one milligram per liter cost  
11 to meet a much lower standard?

12 MS. WENTZEL: Based on my review of some of the literature,  
13 and some of that is summarized in the Exhibit A, the conclusions,  
14 talks about some of the technologies that may be effective in  
15 achieving different ranges of total phosphorus in the effluent.  
16 But I also see in the literature that the key to getting much,  
17 much lower levels of phosphorus is really good solids removal,  
18 particularly through some type of filtration process. So  
19 essentially combining, you know, either a biological process with  
20 filtration or biological -- or a chemical process with filtration  
21 or biological and chemical processes plus filtration. And you  
22 can see in the Exhibit B they are testing -- they have been  
23 testing some of those different filtrations systems to see if  
24 they can get down to very, very low levels.

1 MR. RAO: So in your opinion they have not expanded  
2 significant amounts of costs to come to a lower level, you know,  
3 put in different units to come in compliance with one milligram  
4 per liter?

5 MS. WENTZEL: I think it will depend on, you know, the  
6 particular situation but, you know, based on the literature it  
7 doesn't look like -- it certainly doesn't look like people would  
8 be having to rip out anything that they put in place right now.  
9 I think at the last hearing the Illinois EPA witness testified  
10 that they believe that many folks would use chemical  
11 precipitation which is a pretty minimal capital investment and  
12 most of the processes for achieving much, much lower levels of  
13 phosphorus include the same equipment for -- at least for back-up  
14 purposes.

15 MR. RAO: Thank you.

16 HEARING OFFICER KNITTLE: Anything further for Ms. Wentzel?  
17 All right. Ms. Wentzel, thank you very much for your testimony.  
18 Let's take a recess.

19 (A short break was taken.)

20 HEARING OFFICER KNITTLE: We are back on the record. Mr.  
21 Ettinger, let me remind you you still are under oath and we're  
22 going to ask some questions for you. Do you have a clarification  
23 you would like to make.

24 MR. ETTINGER: Yes, I have a couple clarifications I want

1 to make. First of all, I referred to a Cindy in my earlier  
2 presentation, that is Dr. Cynthia Scrucruce (phonetic) who is  
3 participating in the Nutrient Work Group at the state level.  
4 Also I believe there was mention to various Illinois plants that  
5 have a one milligram per liter phosphorus level. That among  
6 those mentioned were Wauconda, also I don't know whether it was  
7 mentioned or not, McHenry South and Richmond and the -- there was  
8 some confusion on the record, Wauconda does have a one milligram  
9 liter phosphorus limit in the permit that was issued but that was  
10 after a hearing, and there were appeals of that permit despite  
11 the one milligram per liter phosphorus limit due to other issues.  
12 In addition, there is reference to Richmond. The one milligram  
13 -- I think they do have a one milligram per liter phosphorus  
14 limit in Richmond but it has been discussed, but their  
15 anti-degradation on Richmond, the village of Richmond, discharges  
16 to a high quality stream and that's raised a number of issues on  
17 a number of perimeters that they are concerned about.

18 McHenry South also was mentioned. I believe, I don't know  
19 if the final permit has come out, but there was an agreement I  
20 believe to have a one milligram per liter phosphorus limit for  
21 McHenry South which discharges to the Fox River but that was  
22 after a hearing that that was -- was discussed.

23 With that, I just want to, I guess, move the admission of  
24 my own pre-filed testimony, and I don't want to read any of this.

1 It is in the nature of a legal brief, but I did want to give  
2 people an opportunity to ask questions about it. I never really  
3 did know how to handle presentation of law to the Board. Tell me  
4 and I'll do it some other way next time. I thought this would,  
5 at least, give people an opportunity to ask questions about it if  
6 they wanted to.

7 The other thing that I'm prepared to answer questions about  
8 is this part four which is the proposed ELPC PRN Sierra revisions  
9 to the proposal. And if people have any questions about how I  
10 envision this language will work out as opposed to the Agency  
11 language, this is the time to ask questions.

12 HEARING OFFICER KNITTLE: First off, are there any  
13 objections to admitting Mr. Ettinger's pre-filed testimony as  
14 Exhibit No. 7?

15 MR. SOFAT: No.

16 MR. ETTINGER: Maybe we can make the proposed revision and  
17 discussion of proposed revisions as Exhibit 8.

18 HEARING OFFICER KNITTLE: Certainly. Any objections to  
19 Exhibit 8 being the proposed revision?

20 MR. SOFAT: No.

21 HEARING OFFICER KNITTLE: And discussion therein? Both of  
22 those are admitted. Any questions of Mr. Ettinger? Mr. Harsch?

23 MR. HARSCH: Albert, I have to ask this question. You do  
24 not have a scientific background, do you?

1 MR. ETTINGER: No.

2 MR. HARSCH: So to the extent that you're -- introduced a  
3 number of exhibits along with your testimony, you're not  
4 testifying as a scientist in any way, shape or form?

5 MR. ETTINGER: I attached the exhibits. You can read them.  
6 I can read them. I presented part of the exhibits that I like.  
7 If you like other parts, you can argue from it for -- and no  
8 weight based on me presenting them should be added on the basis  
9 of my juris doctorate degree.

10 MR. HARSCH: Let's look at Exhibit B to your testimony.  
11 Water Column, I'm not --

12 MR. ETTINGER: I'm sorry?

13 MR. HARSCH: Exhibit B.

14 MR. ETTINGER: Fox River Fish Capacity Studies?

15 MR. HARSCH: I think something called Water Column, then  
16 you have the Department of Environmental Management --

17 MR. ETTINGER: No, that's a different document. That's the  
18 exhibit -- For some reason in my set it's the Fox River Fish  
19 Passage which is D.

20 MR. HARSCH: My set it was Exhibit B.

21 MR. ETTINGER: Well, that was --

22 MR. HARSCH: Whatever, it's the --

23 MR. ETTINGER: It's the water -- the pictures from Indiana,  
24 right, Exhibit A is?



1 MR. SOFAT: D.

2 MR. HARSCH: I'm saying Exhibit B, as in boy.

3 MR. ETTINGER: In my B is the Invasive Blue/green Algae --

4 MR. HARSCH: Yes, that's what I'm talking about. It's from  
5 a document entitled some publication Water Column?

6 MR. ETTINGER: Right.

7 MR. HARSCH: What is -- I'm not familiar with this. What  
8 is the Water Column?

9 MR. ETTINGER: Something I got off the state of Indiana  
10 website.

11 MR. HARSCH: Well, if I look --

12 MR. ETTINGER: I believe I got it from the Illinois  
13 Department of Environmental Management website.

14 MR. HARSCH: I note on page two of that document right  
15 above the -- that there have been no human deaths from blue/green  
16 algae, is that correct, according to the United States?

17 MR. ETTINGER: That's what it says. That's all I know  
18 about it.

19 MR. HARSCH: And the -- in the next column we observed  
20 effect has been observed in finished drinking water in Australia?

21 MR. ETTINGER: That's what it says. I principally put this  
22 in because it gave a good description of what blue/green algae  
23 was in layman's terms.

24 MR. HARSCH: Do you -- Be then on the third page of the

1 document right at the end, like any other plant, the growth of  
2 blue/green algae requires light, nutrient and heat to survive --  
3 thrive. This is a problem that, I guess, was written about in  
4 2001, do you know what's occurred since 2001, if this process has  
5 existed?

6 MR. ETTINGER: In Indiana? I would be surprised if the  
7 nutrient problem was taken care of in Indiana since 2001, but I  
8 don't know that.

9 MR. HARSCH: You probably can't answer then why there's  
10 been such rare documentation of human exposure to these types of  
11 toxins then, can you?

12 MR. ETTINGER: I don't know. All I know is there's been --

13 MR. HARSCH: The document says it's very rare.

14 MR. ETTINGER: All I know there's been hundreds of cases  
15 since 2001, but this document is as of 2001, it was very real.

16 MR. HARSCH: If I draw your attention to what you submitted  
17 as Exhibit D, that would be the relevant pages from the Illinois  
18 Water Report of 2004, correct?

19 MR. ETTINGER: Correct.

20 MR. HARSCH: What's your understanding of the basis that  
21 the Illinois EPA lifts a segment as impaired for phosphorus?

22 MR. ETTINGER: Well, there are rules for doing that. It  
23 seems to change every two years but my current -- my  
24 understanding is that as the large streams, which I think the

1 ones that they have got here in Mississippi and Wood River and  
2 other non-beatable waters that they look at on a percentage  
3 basis, and essentially they try and identify a problem that could  
4 be related to nutrients. And if they then in turn find that the  
5 water body has a higher than normal for Illinois level of  
6 nutrients, that they'll list that as a potential cause of the  
7 problem.

8 MR. HARSCH: That's the statistical guideline approach  
9 where they use 85th percentile?

10 MR. ETTINGER: I believe that's correct. So essentially if  
11 they look at a water and say, for example, we had a problem  
12 before they used to -- they would say it was impaired by copper  
13 or something and then they would use the statistical approach and  
14 leave -- list as a potential cause for the copper impairment that  
15 there was high phosphorus, which didn't make any sense at all. I  
16 believe for this report they corrected this and that they --  
17 there's probably a DO violation, in fact, I think in all of these  
18 cases there is a low DO number, and so that could be related to a  
19 nutrient problem. They then go look at the percentage basis and  
20 with that as a potential cause.

21 MR. HARSCH: For code 0910 total phosphorus, isn't that the  
22 footnote three, 85th percentile for the state AWQM data for the  
23 years 1978?

24 MR. ETTINGER: I think that's correct.

1 MR. HARSCH: That's the statistical -- that's achieved --  
2 that's exceeding 85th percentile of those statistical guidelines  
3 on the standard?

4 MR. ETTINGER: Correct. We don't have a water quality  
5 standard in Illinois with regard to overflowing water.

6 MR. HARSCH: In fact, we don't know if the waters are  
7 listed actually have any visible impairment, we just know they  
8 exceed 85th percentile?

9 MR. ETTINGER: Well, that's not quite true. First of all,  
10 there's lakes, so lakes that are listed, they've got chlorophyl A  
11 data.

12 MR. HARSCH: I think I was referring to streams.

13 MR. ETTINGER: Right. As to the streams that were listed,  
14 as I tried to explain earlier, I believe they found some sort of  
15 impairment such as dissolved oxygen and then we went -- I think  
16 they looked at potential causes then and they identify a cause  
17 would be total phosphorus but they found some other kind of --  
18 they generally found some other kind of impairment such as  
19 generally a low dissolved oxygen. So we know that the stream has  
20 some sort of issue with it, other than that it just has high  
21 phosphorus levels, but the cause and effect relationship between  
22 that issue, that's why they call it a potential cause rather than  
23 a proven cause.

24 MR. HARSCH: And there is currently, and you're well aware,

1 proceedings brought by IAWA to amend the dissolved oxygen  
2 standard in Illinois?

3 MR. ETTINGER: Correct.

4 MR. HARSCH: Now go to Exhibit D, at least my Exhibit D,  
5 the Fox River Fish Passage Feasibility Study?

6 MR. ETTINGER: Yes, it's my exhibit too.

7 MR. HARSCH: Do you know how Mr. Santuski took his  
8 dissolved oxygen measurement readings?

9 MR. ETTINGER: No.

10 MR. HARSCH: You don't know if he measured dissolved oxygen  
11 at the interface between sediment and the water column?

12 MR. ETTINGER: I don't know where it came from.

13 MR. HARSCH: Do you know the temperature either the day  
14 that you were out at Fox River?

15 MR. ETTINGER: Well, some of this could be found in the  
16 data that he lists. He does give temperatures and other things  
17 like that in some of the data. But sitting here today, and not  
18 even having the study in front of me, I -- I wouldn't be able to  
19 help you with that. But if the questions are important, we could  
20 of course give the full report to the Board. It is all available  
21 on the internet.

22 MR. HARSCH: I draw your attention to that table that you  
23 included as page 45 of the report.

24 MR. ETTINGER: Yes.

1 MR. HARSCH: If I understand the table correctly, there  
2 would be an effect showing that that if the P value was less than  
3 or greater than 0.05 -- less than, excuse me, less than -- less  
4 than or equal to 0.05, do you know if there is any statistical  
5 effect given in that table for nutrients?

6 MR. ETTINGER: P is -- I think the safest thing for me to  
7 do now is say I don't know.

8 MR. HARSCH: Okay. We don't have any further questions.  
9 Thank you.

10 HEARING OFFICER KNITTLE: Sir, could you state your name  
11 for the record.

12 MR. HILL: Ron Hill, I represent the Metropolitan  
13 Reclamation District of Greater Chicago. Mr. Ettinger, with  
14 respect to your proposal vision to the IEPA proposal, you state  
15 that you believe that the only plants now discharging through  
16 waters that are not sediment which are Stickney plants or the  
17 MWRDGC, did you know that Bobonson (phonetic) also discharges to  
18 water as general use?

19 MR. ETTINGER: I guess I didn't.

20 MR. HILL: Do you know whether or not the District intends  
21 to expand it's Clinton and Southern Ridge -- Southern Ridge  
22 Contract?

23 MR. ETTINGER: I was going to ask him.

24 HEARING OFFICER KNITTLE: Anything further, Mr. Hill?

1 MR. HILL: No.

2 HEARING OFFICER KNITTLE: All right. Thank you, Mr.  
3 Ettinger, you may step down.

4 MR. SOFAT: I'm going to ask two questions.

5 HEARING OFFICER KNITTLE: I thought you indicated no.

6 MR. SOFAT: Actually I was going to go and Ron wanted to  
7 go.

8 HEARING OFFICER KNITTLE: My misunderstanding. Please  
9 proceed.

10 MR. SOFAT: Mr. Ettinger, I'm looking at proposed revisions  
11 that you have filed and I'm looking at subsection G. It seems  
12 that the language of subsection G triggers the Agency's  
13 obligation to incorporate a total phosphorus permit level of one  
14 milligram per liter any time there is a proposed increase in  
15 pollutants. And because of that the Agency has to either issue a  
16 new permit or renew a permit or modify a permit. This language  
17 also suggests that pollutant doesn't have to be phosphorus. It  
18 could be, for example, copper. Also the language seems to convey  
19 that the discharge pollutants could be in general use water or  
20 public and food processing water or secondary contact. Is that  
21 the intent of the proposed language?

22 MR. ETTINGER: You asked me two questions. Let me address  
23 both of them. General use waters, I think I discussed in the --  
24 in the discussion of proposed revisions, yes, it was intended

1 into the secondary contact waters. At the time I wrote that I  
2 thought I was only addressing the Stickney, Alma and North Side  
3 plants. Sitting here today, and learning for the first time that  
4 it also applies to Lemont, sitting here today learning that  
5 Lemont also discharges through secondary contact waters, that I  
6 would not change my answer. I believe that all new or increased  
7 discharges should be subject to the one milligram per liter  
8 phosphorus limit. So I believe that answers the general use  
9 question.

10 As to the other question, I would note, first of all, that  
11 my change really didn't -- my change of your language didn't  
12 really alter the situation as to that. What I read the subject  
13 to language to mean was that you would still be following your  
14 normal practice of the Agency of not placing limits on -- for  
15 pollutants that -- for people who are unlikely to ever reach that  
16 limit. So if there was no discharge, if the person's new or  
17 increased discharge was not going to involve phosphorus, you  
18 would not put a phosphorus limit on it. So what -- the way I  
19 read your language, subject to math, subject to if it was  
20 necessary to limit phosphorus, if you want to put that in and add  
21 the wording in to say any proposed increase in pollutant loading  
22 or you could say any proposing increase in phosphorus pollutant  
23 loading, we -- I'd be pleased to make that clarification if we  
24 think there is, although we can talk about it. I sort of read



1 that into yours and into mine.

2 MR. SOFAT: Second question I have is the language that is  
3 proposed in subsection I --

4 MR. ETTINGER: Yes.

5 MR. SOFAT: -- that's a -- would you tell with that example  
6 as possible under what circumstances an additional phosphorus  
7 limit would be required under that subsection?

8 MR. ETTINGER: Well, the -- it is basically tempting with  
9 this language to treat phosphorus the way the other effluent  
10 limits in part 304 are generally treated by the Agency with  
11 regard to BOD and other components. That normally the Agency, in  
12 my experience of reviewing Agency permits, uses the 304 rule as a  
13 rule of thumb, which they almost always apply in setting effluent  
14 limits. However, I believe, the Agency has testified in  
15 regarding other proceedings, regarding 304 rules, if it is shown  
16 for some reason that something beyond that is necessary to meet a  
17 water quality standard, some other rule, then they'll do it. The  
18 most obvious case for that, and I believe this was essentially  
19 presented by Mr. Frevert at the last rule on BODC CBOD, is a case  
20 in which there was a TEMPL done. So, for example, if TEMPL had  
21 been done that showed a phosphorus limit was necessary for the  
22 water, then that would be a situation in which a phosphorus limit  
23 would be needed. Also I believe Robert Mosher and others talked  
24 about other situations in which, if for some reason, we knew in

1 this case of this particular stream that a phosphorus limit was  
2 necessary either to avoid an effect of existing use or comply  
3 with the anti-degradation, otherwise then you would put that  
4 limit in. That's not going to be the normal situation. However,  
5 given the way that we have to handle permits pretty quickly here,  
6 and we generally are not in position to do that kind of  
7 scientific studies or permit before decisions are made. I think  
8 I answered your question?

9 MR. SOFAT: Yes.

10 MR. ETTINGER: Yes.

11 HEARING OFFICER KNITTLE: Anything further? Mr. Ettinger,  
12 thank you. I believe we also have scheduled to testify Richard  
13 Lanyon and James Daugherty. I don't know which order we want to  
14 go in.

15 MR. HARSCH: District.

16 THE COURT: Mr. Lanyon, would you like to come on up,  
17 please.

18 (The witness was sworn.)

19 HEARING OFFICER KNITTLE: Mr. Lanyon, would you please  
20 provide your testimony.

21 MR. LANYON: Okay. My name is Richard Lanyon. I am  
22 currently employed by the Metropolitan Water Reclamation District  
23 of Greater Chicago as its Director of Research & Development.  
24 The District is a unit of local government created by the state

1 legislature for the purpose of collecting and disposing of  
2 sewerage, reducing pollution of the waterways and preventing  
3 flooding. 70 ILCS 2605/1. The District's service area is most  
4 of Cook County. In its capacity as a water reclamation district,  
5 the District operates seven treatment facilities in its service  
6 area, serves five million residents and treat an average of 1.4  
7 billion gallons of sewage daily.

8 I have been the District's Director of R&D since 1999. As  
9 Director of Research & Development, I supervise the District's  
10 Research & Development Department, which has a staff of 340.  
11 Prior to becoming Director of Research & Development, I was the  
12 Assistant Director of Research & Development. I held this  
13 position from 1975 until 1999. I have been employed with the  
14 District since 1963.

15 I received both Bachelors and Masters in Civil Engineering  
16 degrees from the University of Illinois at Urbana-Champaign. I  
17 received the American Society of Civil Engineer's National  
18 Government Civil Engineer of the Year Award in 1999 and  
19 Distinguished Alumnus of the Department of Civil and  
20 Environmental Engineering at the UIUC in 2003. I am also a past  
21 President of the Illinois Section of the American Society of  
22 Civil Engineers and have been involved in a variety of technical  
23 activities for ASCE, the Water Environment Federation and the  
24 Association of Metropolitan Sewerage Agencies.

1           My responsibilities as the District's Director of Research  
2 & Development include, but are not limited to, to the following:

3           \* Control of commercial and industrial waste discharges to  
4           the District's sewers and the waterways via the Sewage  
5           and Waste Control Ordinance;

6           \* Recovery of certain District operating, maintenance and  
7           replacement costs via administration of the User Charge  
8           Ordinance;

9           \* Providing analytical laboratory support for the control  
10          of commercial and industrial wastes and for control of  
11          treatment and other operations;

12          \* Monitoring the environmental quality of Lake Michigan and  
13          area waterways; and

14          \* Conducting basic and applied research on new wastewater  
15          and sludge treatment processes.

16 IEPA Proposal

17          The IEPA has proposed that IPCB adopt an interim phosphorus  
18          standard for General Use Waters and requirements for compliance  
19          with the interim standard. I submit this statement on behalf of  
20          the District in opposition to the IEPA's May 14, 2004, Notice of  
21          Filing and Statement of Reasons. Our opposition is based on the  
22          following comments:

23          On the bottom of Page 7 of the Statement and continuing on  
24          Page 8, the IEPA discusses the "shortage of sound scientific

1 information available to examine relationships between nutrient  
2 concentrations, biological parameters, and dissolved oxygen in  
3 the receiving waters." IEPA also discusses the document (labeled  
4 as Exhibit A) that presents IEPA's approach for developing  
5 numeric nutrient standards. On Page 4 of Exhibit A at the top of  
6 the page, IEPA states that "The Illinois Plan for Adoption of  
7 Nutrient Water Quality Standards was submitted to USEPA on August  
8 14, 2003, and was one of the first plans in the nation to have  
9 received "mutually agreed upon" status from USEPA." This plan,  
10 which USEPA agreed to, does not call for the promulgation of any  
11 interim effluent phosphorus standards in Illinois. It clearly  
12 states that more scientific study is needed before numeric  
13 standards can be recommended. Therefore there is no pressing  
14 need for the IEPA to rush into promulgating interim effluent  
15 phosphorus standards, and to do so actually contradicts the IEPA  
16 submittal to USEPA.

17 On page 9 of the Statement, the paragraph beginning at the  
18 bottom and continuing through page 10 cites a wide variety of  
19 phosphorus inputs to the environment, demonstrating how complex  
20 the control of this nutrient can be. IEPA's proposal ultimately  
21 places the responsibility for control solely on certain point  
22 source dischargers of phosphorus, thereby discriminating against  
23 these dischargers by ignoring the significant phosphorus  
24 contributions on non-point dischargers.

1           In the paragraph that begins on the bottom of page 10, IEPA  
2 discusses eutrophication and the adverse environmental impact of  
3 these phenomena. The paragraph closes on page 11, with the  
4 following statement: "Some research has indicated that phosphorus  
5 concentrations above 0.1 milligram per liter can result in  
6 excessive algal growth affecting municipal, industrial  
7 recreational uses in North American fresh water environments."  
8 IEPA bases this claim upon a 25-year-old Canadian sourcebook and  
9 guide for water quality in North America waters. This is not  
10 research, but simply guidance that is over 25 years old, and IEPA  
11 has waited until now to act on it. Further, the IEPA fails to  
12 cite any specific algal growth problems in Illinois lakes or  
13 rivers that affects uses and that can be attributed to excess  
14 phosphorus.

15           In the second sentence of the second paragraph on page 11,  
16 IEPA indicates that a certain level of phosphorus in lakes and  
17 streams is "...necessary to ensure desirable biological  
18 activity..." but higher levels are detrimental. IEPA goes on to  
19 define the classic approach of phosphorus management as one that  
20 determines the upper limit of beneficial nutrient concentration.  
21 However, IEPA fails to determine the phosphorus concentration at  
22 which the change occurs from desirable to detrimental.

23           The last paragraph beginning on page 11 and continuing on  
24 page 12 discusses current phosphorus numeric and narrative

1 standards and cites the current General Use dissolved oxygen  
2 standard. IEPA fails to cite any evidence that deficiencies in  
3 dissolved oxygen concentrations in Illinois lakes or rivers are  
4 the result of excessive phosphorus concentrations.

5 On page 12, second paragraph, second sentence, IEPA states  
6 "The scientific relationships between algal concentrations,  
7 phosphorus concentrations, and other variables that influence and  
8 control plant growth rates, species composition, and chemical  
9 dynamics in an aquatic environment are complex and currently  
10 insufficiently understood." IEPA continues to explain their  
11 current effort to conduct a comprehensive multi-year nutrient  
12 standards development program. This program is fully explained  
13 in Exhibit A attached to the IEPA Statement of Reasons. Thus,  
14 IEPA not only admits to a lack of adequate science upon which to  
15 base the proposed interim standard, but also is unwilling to even  
16 wait for the results of the scientific studies which they are  
17 sponsoring. There is no scientific basis for the proposed  
18 phosphorus standard of 1.0 milligram per liter. IEPA's proposal  
19 is arbitrary and capricious.

20 IEPA states in the second paragraph on page 12 that the  
21 current narrative standard provides no practical guidance in  
22 establishing preventative or protective limits. IEPA claims that  
23 the interim standard will provide needed guidance while it awaits  
24 the completion of the multi-year program. With the potential

1 scientific basis for a justifiable and defensible phosphorus  
2 standard but a few years away, there is no justification for an  
3 interim limit that IEPA cannot demonstrate is needed and has no  
4 scientific basis.

5 On page 13, IEPA reveals its actual motive in seeking  
6 adoption of an interim limit now rather than waiting until data  
7 exists to adopt a scientific based limit. IEPA claims that  
8 interim limit is needed to forestall further delay and litigation  
9 over pending permits that may be, in part, related to the need  
10 for a phosphorus limit. IEPA is asking the IPCB to adopt  
11 unscientific and unsound standards in an effort to rectify the  
12 IEPA's permit backlog. A permit backlog can be remedied by other  
13 means, but not by implementation of a standard that has no basis  
14 in science.

15 In Section IV on page 13, IEPA cites the increasing usage  
16 of phosphorus compounds for corrosion control in potable water  
17 supply systems. Thus at the same time that the IEPA is seeking  
18 to place a burden upon POTWs for removal of phosphorus, it is  
19 also requiring the use of a corrosion inhibitor by potable water  
20 suppliers with high metal concentrations in their distribution  
21 network. A phosphorus compound is the most popular corrosion  
22 inhibitor. Phosphorus used for corrosion control eventually  
23 flows into the POTW. IEPA does not indicate any relief for this  
24 burden that ultimately falls upon the ratepayer and/or taxpayer,



1 that is, to pay for both the addition of and removal of  
2 phosphorus. A more practical and direct solution would be for  
3 the IEPA to initiate a program to replace the offending metal  
4 plumbing systems that are susceptible to corrosion, thereby  
5 eventually removing this double burden from the ratepayer and/or  
6 taxpayer.

7 IEPA explains the available technology for removal of  
8 phosphorus at POTWs beginning at the top of page 14 and ending on  
9 the top of page 15. IEPA does not explain the economic impact on  
10 Illinois POTWs to which this proposed rule would apply, or  
11 explain what environmental benefits will result from the proposed  
12 interim phosphorus controls. The reference cited by IEPA,  
13 Exhibit G, estimates a significant capital and operating cost for  
14 the removal of nitrogen and phosphorus by Illinois POTWs, but  
15 does not identify the cost of phosphorus removal alone. In this  
16 day and age of scarce public money to meet a standard that has no  
17 scientific basis, and has no proven benefit to the environment.

#### 18 Phosphorus Contributions to POTWs

19 As explained by IEPA, there are a number of sources of  
20 phosphorus, in addition to human waste, which are discharged into  
21 the influent sewage to POTWs. Among these sources are  
22 residential and commercial automatic dishwasher detergents, which  
23 still contain appreciable amounts of phosphorus. The Minnesota  
24 Pollution Control Agency commissioned a detailed study of the

1 sources of phosphorus of Minnesota POTWs and watersheds. The  
2 results of the Minnesota study have been useful for the  
3 estimation of phosphorus sources, especially ADWDs, to the  
4 District's water reclamation plants.

5         The Minnesota Pollution Control Agency had a legislative  
6 mandate requiring a comprehensive study of phosphorus  
7 contributions to POTWs and Minnesota surface waters. A report  
8 entitled, "Detailed Assessment of Phosphorus Sources to Minnesota  
9 Watersheds," prepared by Barr Engineering Company, was completed  
10 in February 2004. (See Ex. 1) Volume 2 of the report, entitled  
11 Point Sources Technical Memorandum, February 16, 2004, includes  
12 an estimate of various phosphorus sources discharged to POTWs in  
13 Minnesota. The sources included residential ADWDs,  
14 commercial/institutional ADWDs, water treatment chemicals, food  
15 soils/garbage disposal waste, dentifrices, as well as  
16 commercial/industrial process wastewater.

17         The estimated contributions to the Minnesota POTWs from the  
18 various sources in terms of percent total phosphorus load to the  
19 POTWs statewide are as follows:

20	Residential ADWD	7.3%
21	Commercial/Institutional ADWD	3.4%
22	Dentifrices	1.0%
23	Foods Soils/	16.2%
24	Garbage Disposals	

1	Commercial/Industrial	26.5%
2	Process Wastewater	
3	Water Treatment Chemicals	3.1%
4	Inflow and Infiltration	0.1%

5 These sources accounted for 57.6% of the total phosphorus load to  
6 the Minnesota POTWs. The remaining 42.4% of the phosphorus load  
7 was attributed to human waste.

8 The contribution of ADWDs was based upon the 2000 reported  
9 amount of phosphorus used for ADWD formulation in the United  
10 States, from the Stanford Research Institute publication Chemical  
11 Economics Handbook - Industrial Phosphates, and the estimated  
12 U. S. population for the year 2000 (approximately 281,422,000).  
13 This data was used to calculate a per capita per year ADWD  
14 phosphorus usage in Minnesota. Then the per capita values were  
15 applied to the population served by the POTWs. The following are  
16 the per capita phosphorus values estimated in the Minnesota  
17 study, for ADWDs:

18	Residential ADWDs	0.085 Kg/person/year
19	Commercial/Industrial ADWDs	0.04 Kg/person/year

20 Using the per capita values from the Minnesota report, and  
21 overall estimate of the phosphorus load from ADWDs in Cook County  
22 has been made. The 2002 population for Cook County was reported  
23 by the Census Bureau as 5,283,888. This value does not include  
24 persons living in institutions such as hospitals or college

1 dormitories. The following estimates were made:

2 Residential ADWD is 449,131 Kg phosphorus/yr (494 tons/yr)

3 Commercial/Institutional ADWD is 211,355 Kg phosphorus/yr

4 (232 tons/yr)

5 The combined total phosphorus load to the District's WRPs,  
6 based upon 2003 average influent phosphorus concentrations and  
7 average daily flows is 63,748 lbs/day, or 11,634 tons/yr shown in  
8 the following table. Thus, the phosphorus contribution to the  
9 District WRPs influent phosphorus load is 4.24% for residential  
10 ADWD and 2.0% for commercial/institutional ADWD. These are  
11 broad-based estimates since we do not have data as to ADWD usage  
12 specifically for Cook County. However, it is clear from the  
13 above information that a ban on phosphorus in ADWDs in Illinois  
14 could be a more effective approach to achieving immediate  
15 phosphorus reductions in POTW effluents than enacting the limited  
16 scope of POTW effluent limits proposed by the IEPA.

17 You can see the Average Daily Phosphorus Loadings to  
18 District WRPs in 2003 in the chart.

19 Agricultural Sources of Phosphorus are Significant

20 While focusing on POTWs as significant sources of  
21 phosphorus, IEPA ignores the fact that agricultural drainage and  
22 runoff are also a significant source. The lack of control of  
23 this source will result in continued water quality problems.  
24 This source is not due to entirely natural causes, but results

1 from the excess use of fertilizer containing phosphorus and other  
2 nutrients. In the year 2000, a study reported in the Journal of  
3 Soil and Water Conservation found that farmers in Wisconsin  
4 over-apply nutrients. (See Exhibit 2) As reported, on average,  
5 farmers applied an excess of 83 Kg/ha (74 lb/ac) of phosphorus  
6 beyond University of Wisconsin recommendations for growing corn.  
7 In addition, it was found that the simple promotion of best  
8 management practices will not guarantee water quality protection  
9 and/or improvement. This study is reported in the Journal of  
10 Soil and Water Conservation, First Quarter 2000, pages 63 through  
11 68, Nitrogen and phosphorus management on Wisconsin farms:  
12 Lessons learned for agricultural water quality programs, by R.  
13 Shepard. Undoubtedly, farming practices in Illinois are similar  
14 to those in Wisconsin. Even modest reductions in overuse of  
15 agricultural fertilizers would have a far larger effect on  
16 reducing the phosphorus levels in Illinois streams, than adoption  
17 of the current IEPA proposal.

18 Large concentrated animal feeding operations have been long  
19 identified as major sources of excess agricultural phosphorus  
20 that is discharged into surface waters in the United States. The  
21 contribution of CAFOs to excess agricultural phosphorus in the  
22 environment is discussed on pages 36 and 37 in a bulletin titled  
23 Plant Nutrient Use in North America Agriculture, published in  
24 2002 by the Potash and Phosphate Institute. (See Exhibit 3) In

1 Appendix 6.3 of this bulletin, on pages 112 and 113, it is  
2 reported that in the state of Illinois, CAFOs generate about 27  
3 million pounds of excess phosphorus pentoxide annually, which is  
4 equivalent to 12 million pounds of phosphorus. This excess  
5 phosphorus is prone to over application on the farms where it is  
6 generated and potentially lost through runoff and drainage.  
7 Appendix 6.3 of the report also shows that besides the excess  
8 phosphorus generated by CAFOs, unconfined animals on Illinois  
9 farms excrete about 67 million pounds of phosphorus pentoxide  
10 annually, which is equivalent to 29 million pounds of phosphorus.  
11 This is calculated by the difference between the total amount of  
12 manure phosphorus excreted by all farm animals (162 million  
13 pounds of phosphorus pentoxide) and the total excreted by CAFOs  
14 (95 million pounds of phosphorus pentoxide). This excess  
15 phosphorus can contribute to agricultural phosphorus runoff if it  
16 is not accounted for in farm nutrient management plans.

17 The IEPA has apparently embraced these findings, but does  
18 not inform the IPCB of this matter in their proposal. On July  
19 14, 2004, IEPA issued a news release titled "ILLINOIS EPA WILL  
20 IMPLEMENT ADVISORY GROUP RECOMMENDATIONS Pilot Projects in Rock  
21 River Basin will demonstrate comprehensive watershed planning."  
22 (See Exhibit 4) The press releases states "'Governor Rod  
23 Blagojevich asked the Illinois EPA to work with a broad range of  
24 interests and to rethink how we can protect our vital water

1 resources, which are essential to both our quality of life and  
2 economic well-being, and I want to thank the B-MAG members for  
3 their vital work,' said Illinois EPA Director Renee Cipriano."  
4 The B-MAG is a stakeholder group from a broad range of interests  
5 that assisted the IEPA in reaching consensus on the Facility  
6 Planning Issue.

7           One of the B-MAG recommendations (VII.C.1) reads as  
8 follows: "IEPA should embark on a process that utilizes existing  
9 resources to develop a statewide watershed management approach to  
10 protecting and preserving water quality in the seven major basins  
11 across Illinois." (See Exhibit 5) The news release indicated  
12 that pilot projects would occur for the Green and Kishwaukee  
13 River watersheds in the Rock River Basin. Agricultural non-point  
14 sources of nutrients are dominant in these two watersheds. The  
15 IEPA should inform the IPCB and others how this new initiative  
16 will solve water quality problems caused by phosphorus and other  
17 nutrients and use this initiative as the basis for a statewide  
18 plan for the control of nutrient discharges.

19 Phosphorus Not the Only Nutrient of Concern

20           IEPA correctly points out in their Statement of Reasons  
21 that nitrogen is also a nutrient of concern and that federal  
22 water quality criteria has also been published for nitrogen.  
23 Dodds, Smith and Lohman (Canadian Journal of Fisheries and  
24 Aquatic Sciences, Vol. 59, pp. 865-874, 2002) note that "Although

1 the occurrences of Nitrogen limitation in streams is inconsistent  
2 with the early view that Phosphorus is generally the primary  
3 limiting factor in inland freshwaters, experimental nutrient  
4 enrichment bioassays have confirmed Nitrogen limitation in a  
5 variety of different stream ecosystems. The data reveal a  
6 significant Nitrogen Phosphorus interaction in streams and  
7 suggest that it is necessary to consider both Nitrogen and  
8 Phosphorus as potentially limiting nutrients for periphyton  
9 biomass accrual in lotic systems." Statistical techniques  
10 established significant breakpoints of about 30 ug total  
11 Phosphorus per liter and 40 ug total Nitrogen per liter, above  
12 which mean benthic chlorophyll values were substantially higher.  
13 Thus it is questionable whether an interim effluent phosphorus  
14 limit of 1.0 milligram per liter, by itself, would have any  
15 noticeable impact on Illinois streams.

16           However, IEPA does not explain that there has also been a  
17 significant amount of federal study of the problem of hypoxia in  
18 the Gulf of Mexico. In January 2001, the report of Mississippi  
19 River/Gulf of Mexico Watershed Nutrient Task Force identified  
20 nitrogen as the cause of hypoxia in the Gulf. (See Exhibit 6)  
21 This report also stated the need to reduce the contribution of  
22 Nitrogen to the Gulf because of the point and non-point sources  
23 of nitrogen in the state.

24           In another news release dated June 30, 2004, Governor



1 Blagojevich identified farm nutrient runoff as a cause of hypoxia  
2 in the Gulf. (See Exhibit 7) This release, titled Gov.  
3 Blagojevich joins Mississippi River Water Quality Initiative,  
4 expressed the Governor's disappointment at not being able to join  
5 the Governors of Minnesota and Wisconsin on June 30 in LaCrosse,  
6 Wisconsin, to pledge continuing commitment to protect and improve  
7 the Mississippi River.

8 In the news release, Governor Blagojevich states: "While I  
9 will not be able to be there in person, in spirit I join my  
10 fellow Upper Mississippi Valley Governors in our commitment to  
11 continuing to protect and improve the great river that first  
12 brought settlers and commerce to our region. Recently, at my  
13 request, the Illinois Environmental Protection Agency proposed  
14 new limits on phosphorus discharges for most new and expanding  
15 wastewater treatment plants and last fall I nominated the  
16 Mississippi River segment that borders Illinois and Missouri for  
17 the federal Watershed Initiative Program to help reduce farm  
18 chemical runoff into the Mississippi River."

19 The news release continues "Governor Blagojevich said he  
20 has requested nearly \$1.3 million in federal funding for  
21 innovative programs to help address 'Gulf Hypoxia' - a condition  
22 caused by farm [fertilizer] runoff that has been blamed for  
23 killing off aquatic life in a large and growing area in the Gulf  
24 of Mexico.

1           Because Governor Blagojevich has joined with the Governors  
2 of Minnesota and Wisconsin in this commitment, it is helpful to  
3 know what these two Governors have committed to do. A news  
4 release issued jointly by both Governors dated June 30, 2004,  
5 includes the following:

6           \*       Focus on meeting the two states' shared  
7                   responsibility of nutrient and sediment reduction,  
8                   including making progress on the multi-state plan  
9                   to reduce nitrogen discharges into the Gulf of  
10                  Mexico by 30 percent by 2015;

11          \*       Expand the partnership beyond Minnesota and  
12                   Wisconsin to also include the other three  
13                   states in the Upper Mississippi River basin:  
14                   Iowa, Illinois and Missouri;

15                  (See Exhibit 8)

16           We bring this matter to the attention of the Board because  
17 there have been significant discussions with IEPA, USEPA Office  
18 of Water, and USEPA Region V Division of Water regarding the use  
19 of constructed and restored wetlands in Illinois to reduce the  
20 concentrations of nitrogen and phosphorus in the Illinois River  
21 Basin. These discussions were initiated by several members of  
22 the Illinois Association of Wastewater Agencies, including the  
23 District, and The Wetlands Initiative, a not-for-profit  
24 corporation in Chicago. The discussions have also included other

1 not-for-profit environmental advocacy organizations. The TWI and  
2 the several members IAWA, including the District, have proposed a  
3 by comprehensive research program involving several Midwestern  
4 universities, including the University of Illinois, and the  
5 Argonne National Laboratory to demonstrate the effectiveness of  
6 large-scale constructed or restored wetlands in removing  
7 nutrients.

8         The use of wetland technology to control the contribution  
9 of nitrogen and phosphorus was not mentioned by IEPA, but it  
10 should be included as a viable control technology. The use of  
11 this technology would serve to control the discharge of nitrogen  
12 and phosphorus in Illinois waters as well as to reduce the  
13 contribution of nitrogen to the Gulf by the State of Illinois.  
14 The use of this technology bring other benefits as well, such as,  
15 reduced demand on nonrenewable energy, reduced demand on  
16 treatment process chemicals, increased wildlife habitat, reduced  
17 flood damages and biodiversity. (See Exhibit 9)

18         The use of wetland technology for point and non-point  
19 sources can be integrated with the use of conventional treatment  
20 technology by POTWs in a watershed. To create a useful planning  
21 tool for the use of these two technologies, the District recently  
22 submitted a project proposal to the Water Environment Research  
23 Foundation, IAWA and Illinois Water Resource Center. (See  
24 Exhibit 10) The project will involve the University of Illinois

1 to develop the planning tool under contract to the District and  
2 under the oversight of a project steering committee including the  
3 IAWA, IEPA, Region V, other departments of federal and state  
4 government and other interested parties.

5       Effective control of nutrients in watersheds will also  
6 require some form of water quality trading to create incentives  
7 for trading between point and non-point sources of these  
8 nutrients. Recognizing this need, EPA adopted a Water Quality  
9 Trading Policy on January 13, 2003. (See Exhibit 11) Water  
10 Quality trading programs have been successfully tested and  
11 demonstrated in other states. Already, trading is an effective  
12 tool in attaining air emission reductions in Illinois. Water  
13 quality trading will be an effective component in the development  
14 of nutrient standards in Illinois where it can be shown that  
15 trading within upstream watershed areas will not contravene water  
16 quality standards and will be effective in controlling nutrients  
17 from point and non-point sources impacting downstream areas.  
18 This policy has received much support nationwide. Recently, the  
19 National Association of Counties adopted a resolution on July 18,  
20 2004, in support of the EPA Water Quality Trading Policy. (See  
21 Exhibit 12)

22       The use of wetland technology for nutrient management on a  
23 watershed scale would provide a cost-effective technology to  
24 control nutrients from both point and non-point sources in a

1 watershed. It would not place the entire burden for nutrient  
2 control solely on the POTWs. Several IAWA members, including the  
3 District, are willing to proceed with this technology only if the  
4 IEPA creates a mechanism for it to be recognized with the current  
5 body of rules. It is extremely important for the POTWs that the  
6 burden for control of nitrogen and phosphorus be equitable,  
7 therefore a means must be found to reduce the contribution of  
8 these nutrients from non-point, as well as point surfaces.

9         There are significant efforts underway in neighboring  
10 states to address the discharge of nitrogen in the Mississippi  
11 River Basin. As mentioned above, the Governors of Minnesota and  
12 Wisconsin have agreed on mutual efforts to control the discharge  
13 of nitrogen. Iowa has been funding the construction of wetlands  
14 in agricultural areas in watersheds tributary to the Mississippi  
15 River to reduce the discharge of nitrogen. The states in the  
16 Ohio River Basin have begun a voluntary effort to address the  
17 discharge of nitrogen. However, only about 15 percent of the  
18 area of Illinois is in the Ohio River Basin. It appears that  
19 Illinois is behind its neighboring states in controlling the  
20 discharge of nitrogen.

21         Illinois representation in the Ohio River Basin initiative  
22 includes the IEPA and Department of Agriculture. Region V is also  
23 represented. With this Illinois participation in the Ohio River  
24 Basin, the commitment to join Minnesota and Wisconsin in the

1 nitrogen reduction initiative and the work underway in Iowa, it  
2 is remarkable that the IEPA, faced with the mountain of evidence  
3 regarding Gulf hypoxia, has not shown any inclination to address  
4 the reduction of nitrogen from point and non-point sources.  
5 Instead, IEPA proposes a rulemaking for phosphorus that is  
6 lacking scientific foundation and is discriminatory in its  
7 application to certain POTWs.

8         The District recommends that until the IEPA develops (1) a  
9 plan for statewide control of nitrogen discharges to meet the  
10 desired 30 percent reduction target for nitrogen and (2) a  
11 watershed water quality trading program, an allowance be granted  
12 for those dischargers who wish to voluntarily participate in  
13 nitrogen reduction efforts through participation in the creation  
14 or restoration of treatment wetlands in the watershed in which  
15 the discharger is located. The District proposes such an  
16 allowance.

17 **District's Findings Related to Phosphorus**

18         The District has three plants that discharge to General Use  
19 waters. The effluent monthly average total phosphorus  
20 concentrations range from 0.17 to 4.45 milligram per liter for  
21 the 2000 through 2003 period. Individual plant data is as  
22 follows: You can refer to the chart below.

23         The 2003 annual average and monthly grab sample maximum and  
24 minimum TP concentrations in the receiving streams downstream of

1 the outfalls for these plants are as follows: Refer to the chart  
2 below.

3 As can be seen above, there is considerable variability in  
4 effluent and stream TP concentrations. However, at this point  
5 neither the District nor the IEPA has been able to correlate the  
6 varying stream TP concentrations with differences in attainable  
7 uses or the general biological health of these waterways.  
8 Therefore, if this proposed interim effluent standard were to be  
9 applied to one of these WRPs some day, there is no certainty of  
10 any environmental gain being achieved, or of even knowing how to  
11 assess if the change in effluent phosphorus levels even  
12 significantly effected in-stream phosphorus levels.

13 MWRDGC attempted to determine if industrial contributors  
14 were a significant source of phosphorus. Based on our review of  
15 plant influent loadings and regulated industrial contributor  
16 loadings for 2002, we determined that the industrial phosphorus  
17 loading that could be controlled through local pretreatment  
18 limits varied from zero to three percent of the influent loading  
19 at six of the District's seven plants. The variation is detailed  
20 as follows: You can see in the box below.

21 There is no significant industrial phosphorus loading at  
22 the Lemont WRP.

23 Most of the phosphorus in raw sewage results from human  
24 waste and residential uses of products containing phosphorus. As

1 explained earlier, although phosphorus is no longer used in  
2 residential laundry detergents, it is used in ADWD, dentifrice  
3 products and commercial and industrial cleaning products. IEPA  
4 should consider controlling phosphorus at its source by banning  
5 some of these products that contain phosphorus. Such controls  
6 would remove far more pounds of phosphorus from Illinois waters  
7 than the current IEPA proposal.

8 For example, IEPA should consider a ban on the use of  
9 phosphorus in fertilizers for residential use. It is noted that  
10 Minnesota Governor Tim Pawlenty signed on May 10, 2004, a law  
11 (Minnesota House File No. 2005, 83rd Legislative Session) that  
12 bans the use of fertilizer containing phosphorus on turf. The  
13 ban will become effective on January 1, 2005, and applies to  
14 fertilizer to be used on turf that is purchased at retail after  
15 August 1, 2004. The ban prohibits the application to turf of  
16 phosphorus-containing fertilizer on property unless (i) a soil  
17 test indicates that phosphorus is needed, (ii) the application is  
18 for the first turf growing season and (iii) the property is a  
19 golf course. (See Exhibit 13) It would appear that such a  
20 statewide ban would eliminate more phosphorus in Illinois waters  
21 than the limited approach taken by the IEPA.

#### 22 District's Suggestions for Measures to Control Phosphorus

23 The District has proposed to the IEPA, transmitted by  
24 letter dated April 27, 2004, to conduct a demonstration project



1 at its Egan Water Reclamation Plant in Schaumburg to determine if  
2 phosphorus removal would show any impact or improvement in Salt  
3 Creek downstream of the plant outfall. (See Exhibit 14) The  
4 proposed project includes comprehensive monitoring of Salt Creek  
5 upstream and downstream of the Egan WRP outfall. The monitoring  
6 program will be coordinated with downstream discharges to Salt  
7 Creek in DuPage County and must be approved by the IEPA. The  
8 IEPA has indicated an interest in proceeding with this and other  
9 similar initiatives at other POTWs to develop a scientific basis  
10 to demonstrate whether or not justification for a phosphorus  
11 standard exists. The Region V Division of Water has also shown  
12 support for the District's proposed demonstration project. The  
13 District's monitoring results and conclusions will be prepared in  
14 a scientific report available to the public. Should the report  
15 demonstrate that phosphorus causes impairment, it will support  
16 the need for a water quality based effluent limit.

17 If the results of this demonstration project show that the  
18 removal of phosphorus will have a beneficial effect on Salt  
19 Creek, then the IEPA will modify the District's NPDES permit for  
20 the Egan WRP by incorporating a water quality based effluent  
21 limit for phosphorus.

22 District's Recommendations on the IEPA Interim Phosphorus  
23 Proposal

24 The District requests that the IPCB deny the entire

1 proposed interim limit as described in the IEPA petition for  
2 Section 304.123 (g) through (j). In the event the IPCB deems it  
3 advisable to adopt regulations at this time, it is recommended  
4 that the IPCB adopt the following requirements:

- 5 1. The IEPA shall, upon a demonstration by a scientifically  
6 sound receiving stream monitoring program that existing  
7 phosphorus loadings are causing or increased phosphorus  
8 loadings will cause impairments, petition the Board for a  
9 site-specific phosphorus standard for the waterway  
10 segment impacted by a proposed new or increased  
11 phosphorus discharger prior to issuing a new permit for  
12 said discharger.
- 13 2. Any applicant for a permit to discharge additional  
14 phosphorus loadings to a receiving stream that is  
15 identified as phosphorus impaired, shall include controls  
16 to limit phosphorus discharges to a water quality based  
17 effluent limit based on an appropriate water quality  
18 phosphorus standard.
- 19 3. A point source discharger that participates in a  
20 dedicated wetland creation or restoration project in the  
21 same watershed as the discharger is located, shall  
22 receive credit for the nutrients removed by the  
23 project as if the nutrients were removed at the outfall  
24 of the discharger, provided that the amount of credit

1 received is proportional to the monetary participation  
2 of the discharger in the nutrient removal portion of the  
3 total project cost.

4 Respectfully submitted, Metropolitan Water Reclamation  
5 District of Greater Chicago, Richard Lanyon, Director of R&D.

6 HEARING OFFICER KNITTLE: Thank you, sir. Mr. Hill, do you  
7 have any questions that you would like to ask?

8 MR. HILL: I have a few follow-up questions.

9 HEARING OFFICER KNITTLE: And before we get to that, were  
10 you intending to submit the prepared testimony as an exhibit?

11 MR. LANYON: Yes, I was. With the exhibits attached.

12 HEARING OFFICER KNITTLE: With the exhibits. Are there any  
13 objections to that?

14 MR. SOFAT: No.

15 HEARING OFFICER KNITTLE: Seeing none, that will be  
16 admitted as Exhibit No. 9. You may proceed, Mr. Hill.

17 MR. HILL: Mr. Lanyon, your testimony you identified  
18 automatic dishwasher detergent other than human waste and in the  
19 effluent sewage to publicly own treatment works. Are  
20 non-phosphate automatic dishwasher detergent products variable?

21 MR. LANYON: Yes, they are. Such products available at  
22 local stores and the product has been seen at People's Market.  
23 Cole Foods carry four brands of ADWD under the names Bio Kleen,  
24 B-I-O-K-L-E-E-N, Citrasuds, C-I-T-R-A-S-U-D-S, 7th Generation and

1 Wave. People's Market I found some of these brands and one other  
2 Ecos E-C-O-S. Most of these were in powder form. Some of these  
3 are also in gel form. Those on my list predominantly officially  
4 did not carry any of these brands but did carry products Cascade,  
5 Electrosol, E-L-E-C-T-R-O-S-O-L, Palmolive, Simply Clean and  
6 Sunlight. Again most of these were available in powder and some  
7 in gel form. According to the product labels all, except  
8 Palmolive, contain phosphate ranging from 6.4 to 4.5 percent as  
9 phosphorus. Palmolive contained phosphates at 1.9 percent as  
10 phosphorus. I also found that all of the non-phosphorus brands  
11 were approximately 50 percent more expensive than the phosphorus  
12 brand. This is probably a market monopoly since the large  
13 retailers did not carry products that cost more.

14 In our home we formerly used Cascade but we now use a  
15 non-phosphorus ADWD product and we find no difference in the  
16 leading effectiveness of the non-phosphate ADWD as compared to  
17 Cascade.

18 MR. HILL: Do you believe that a ban on phosphates  
19 containing ADWDs can be effectively implemented?

20 MR. LANYON: Yes, I do. I recall in the early 1970s the  
21 city of Chicago put a ban on the sale of residential laundry  
22 products containing phosphorus. Today all such products would be  
23 phosphorus free. The same can be done for ADWDs since  
24 non-phosphate products are available and are effective. Such a

1 ban would force the large retailers to carry the non-phosphate  
2 brands and the additional sales volume would probably bring down  
3 the production cost and the retail price of these products.

4 MR. HILL: If ADWDs were banned, can you estimate what load  
5 of phosphorus would be eliminated from Illinois waters?

6 MR. LANYON: Yes, I estimate that approximately 1,200 tons  
7 per year would be eliminated from Illinois waters. This estimate  
8 is based on residential ADWD products only and is calculated  
9 using the Minnesota per capita usage in my testimony. And the  
10 population of Illinois which is 12,419,000. Adding commercial  
11 ADWDs to the ban would increase the eliminated load by about 50  
12 percent. This is pollution prevention at its best and reduces  
13 the introduction to phosphorus into the environment.

14 MR. HILL: Do you have an estimate of the excess class  
15 versus crop land to Illinois?

16 MR. LANYON: Yes, as noted in my testimony on page 9,  
17 farmers in Wisconsin applied an excess of 74 pounds of phosphorus  
18 per acre. According to information available from Illinois  
19 agricultural statistics service for 2003, there were a total of  
20 22,237,000 acres in production in Illinois for corn, grain,  
21 sorghum, oats, soybeans and winter wheat. Assuming that Illinois  
22 farmers over apply at the same rate as do farmers in Wisconsin, I  
23 estimate that there is an approximate excess of 823,000 tons per  
24 year of phosphorus applied annually.

1 MR. HILL: Do you have an estimate of reduction of  
2 phosphorus loading on Illinois waters that would result from a  
3 proposed rule and how this would compare to other sources in  
4 phosphorus rule?

5 MR. LANYON: The proposed rule would probably remove over  
6 200 or 300 tons of phosphorus per year. I base this estimate on  
7 a few of these that now remove phosphorus and the number of water  
8 reclamation plants that will be removing phosphorus under the  
9 proposed ruling. This quantity of phosphorus reduction is far  
10 below the amount of phosphorus from non-point sources and below  
11 the amount that would result if a ban of ADWDs was implemented.

12 MR. HILL: I think the only thing I will offer is a very  
13 brief rebuttal testimony to Professor Walter Dodd's testimony.

14 HEARING OFFICER KNITTLE: Offering that as Exhibit No. 10.

15 MR. HILL: Yes.

16 HEARING OFFICER KNITTLE: Any objection to that testimony?  
17 Seeing none, we will admit that. Are there any further  
18 questions, Mr. Hill?

19 MR. HILL: Not at this time.

20 HEARING OFFICER KNITTLE: Any questions of this witness?

21 MR. ETTINGER: You gave an estimate as to the amount of  
22 reduction in phosphorus and the proposed rule would go, I didn't  
23 quite catch the end, you said how many, 200 to 300?

24 MR. LANYON: Tons per year.

1 MR. ETTINGER: I have some questions. First of all,  
2 looking at your -- looking at your Exhibit A or one here, I'm  
3 sorry, at Roman Numeral Two, the executive summary, is the first  
4 or second paragraph here it talks about phosphorus is the  
5 nutrient primarily responsible for the beautification of  
6 Minnesota surface water and then it goes on to say phosphorus  
7 from point surface may be more by vital available impacting  
8 surface water quality one in similar found in non-phosphorus that  
9 enters the same surface water. Do you know -- have any research  
10 that either proves or disproves that based on your experience?

11 MR. LANYON: There is current research under way in  
12 Illinois as part of the nutrient standard development program  
13 that is collecting data on this -- the subject of nutrients in  
14 Illinois streams and rivers.

15 MR. ETTINGER: Are you part of that task force?

16 MR. LANYON: No. We are cooperating with one of the four  
17 investigative teams and supplying samples and data for waterways  
18 in the Chicago area.

19 MR. ETTINGER: Do you know Professor Mark David of the  
20 University of Illinois?

21 MR. LANYON: Yes.

22 MR. ETTINGER: Is he participating in that task force?

23 MR. LANYON: Yes.

24 MR. ETTINGER: Get some data here on estimates of the point

1 source versus non-point source loading in Minnesota. Are you  
2 aware of any data of a similar sort for specific to Illinois?

3 MR. LANYON: No, I searched for such data but couldn't find  
4 no similar data especially for the run-off from non-point  
5 sources.

6 MR. ETTINGER: You're aware that this proposal only applies  
7 to newer increase discharges?

8 MR. LANYON: Yes.

9 MR. ETTINGER: Does the Water Reclamation District intend  
10 to increase the amount of discharge of any of its plants within  
11 the next five years?

12 MR. LANYON: Well, that's a good question. There is  
13 variability in the flow of our plant due to the weather of course  
14 so --

15 MR. ETTINGER: Let me -- let me -- I should clarify that.  
16 That is -- No, actually it was a bad question. Does the Water  
17 Reclamation District intend to request permit changes in the next  
18 five years that would allow an increased average discharge over  
19 and above the current permitted levels?

20 MR. LANYON: Currently we are preparing a plan or expansion  
21 of our Lemont Water Reclamation Plant that probably will put in  
22 such a permitting request. We're completing master plan studies  
23 for our three large plants and will anticipate that will result  
24 in increase dry weather flow capacity.



1 MR. ETTINGER: I'm sorry. You're very soft spoken, and  
2 with the truck behind you, the three big plants you're not  
3 anticipating requesting an expansion of?

4 MR. LANYON: Right.

5 MR. ETTINGER: Lemont you may request an expansion?

6 MR. LANYON: Correct.

7 MR. ETTINGER: What would the expansion be at Lemont?

8 MR. LANYON: Well, it would be an increase in plant  
9 capacity for Lemont. Lemont is one of those rapidly growing  
10 communities.

11 MR. ETTINGER: And when would you anticipate making this  
12 request?

13 MR. LANYON: Probably within the next three years.

14 MR. ETTINGER: I was confused also by your testimony about  
15 with regard to Governor Blagojevich's press release in joining  
16 the Mississippi Water Quality Initiative, do you like Governor  
17 Blagojevich's proposal here or do you not like it?

18 MR. LANYON: Yes, I find them acceptable.

19 MR. ETTINGER: Well, part of this says recently at my  
20 request the Environmental Protection Agency proposed two limits  
21 on phosphorus discharges for most new and expanding wastewater  
22 treatment plants, isn't this the proposal we're talking about  
23 here?

24 MR. LANYON: Well, I didn't see that the Governor requested

1 the limit of .1.

2 MR. ETTINGER: You don't think this is what he's referring  
3 to -- well, the press author of the press release was referring  
4 to this?

5 MR. LANYON: I don't know what the Governor had in his mind  
6 specifically.

7 MR. ETTINGER: Okay. Well, do you think the fact that the  
8 Governor proposes something makes it more or less likely to like  
9 it?

10 MR. LANYON: Well, he may like it but I don't know that he  
11 did the science for making such a proposal.

12 MR. ETTINGER: This is just perhaps a hyper technical point  
13 except of you refer to various places in your testimony about  
14 Minnesota and Wisconsin agreeing on mutual efforts to control the  
15 discharge of nitrogen, do you know that discharge is a magic  
16 water under the Clean Water Act? Do you mean that to say that  
17 the efforts of Wisconsin and Minnesota were limited to point  
18 sources, i.e., discharges opposed to loadings of phosphorus  
19 generally -- I'm sorry, nitrogen generally?

20 MR. LANYON: Well, reading the press releases that you're  
21 reading, that had nothing to get into sources specifically  
22 knowing that in those states that they have large areas of  
23 agricultural such as in Illinois, presumably they address  
24 non-point sources also.

1 MR. ETTINGER: Okay. But I guess I was just clarifying  
2 that. I didn't mean to limit this to discharges meaning point  
3 sources. You also meant that you believe their efforts also  
4 refer to non-point as well sources?

5 MR. LANYON: I do believe that.

6 MR. ETTINGER: If -- You make very good recommendations as  
7 to automatic dishwasher detergents. If there was ordinances or  
8 laws passed that would reduce the amount of automatic dishwasher  
9 detergent phosphorus coming into your plant, would that reduce  
10 the cost of treating for phosphorus if it becomes later necessary  
11 for the sewage treatment plant to treat with phosphorus?

12 MR. LANYON: Well, given that the portion of phosphorus  
13 from ADWDs that contributory to a treatment plant is less than 10  
14 percent, I don't see that there would be a measurable cost  
15 difference. They may not even be a measurable difference in  
16 effluent cost simply by that reduction.

17 MR. ETTINGER: I'm sorry. Perhaps I didn't understand your  
18 testimony, your answer. I believe your testimony was that if  
19 there were these reductions in or shifting in uses of phosphorus  
20 and detergents, that you would have 1,200 tons less phosphorus  
21 discharge a year; is that correct?

22 MR. LANYON: That's correct.

23 MR. ETTINGER: So you don't mean to say that take the  
24 phosphorus out of the discharge or out of the detergent would

1 have no effect on effluent quality, do you?

2 MR. LANYON: Well, it may be difficult to determine the  
3 effect on effluent quality. When you operate a treatment plant,  
4 this plant varies by day, by hour in loadings. And the extent to  
5 which you're reducing a portion, which I've identified it about  
6 four or five percent from ADWDs, you may have very little impact  
7 on the variations that you see in the daily operation of the  
8 water reclamation plants.

9 MR. ETTINGER: I don't have any further questions at this  
10 time.

11 HEARING OFFICER KNITTLE: Mr. Harsch?

12 MR. HARSCH: A clarifying question if I might. In your  
13 recommendation as to an alternate rule the Board might want to  
14 consider adopting, if they don't follow the District's  
15 recommendation to deny it in its entirety, you refer to a stream  
16 that is identified as phosphorus impaired, you're not talking  
17 about a stream that exceeds the 85th percentile value, you're  
18 talking -- you mean a stream that's actually showing by cause and  
19 effect to have a phosphorus impairment issue; is that correct?

20 MR. LANYON: Correct.

21 MR. ETTINGER: Let me follow-up on that. Is it your  
22 knowledge now that IEPA identifies any streams as impaired by  
23 phosphorus in a cause and effect manner?

24 MR. LANYON: Well, they identify streams as impaired

1 according to certain criteria. At the present time that's used  
2 in their annual bi-annual water quality report. But this is  
3 based on the criteria that was discussed earlier.

4 MR. ETTINGER: Correct. But to your knowledge IEPA now  
5 just uses the percentage method that Mr. Harsch has identified  
6 for identifying potential causes but in your view that would not  
7 be sufficient to lead to any phosphorus controls?

8 MR. LANYON: No.

9 MR. ETTINGER: Are you aware of any research being done now  
10 by IEPA that would lead to that sort of cause and effect  
11 phosphorus sciences as you're working from?

12 MR. LANYON: Well, IEPA does include as part of their  
13 monitoring strategy so called intensive base in surveys and  
14 facility surveys where they look at the receiving stream. And it  
15 would be possible from those surveys to determine impairments by  
16 virtue of algae or excessive growth in streams downstream of a  
17 source.

18 MR. ETTINGER: Okay. Now I guess we got something going  
19 here differently then. You're saying if we identify by looking  
20 at algal or chlorophyll levels, high levels, then that would  
21 justify phosphorus controls?

22 MR. LANYON: Well, you would have to conduct a study and  
23 make a determination that the stream had already demonstrated  
24 that these conditions existed, then aggravating those conditions

1 wouldn't be a good move.

2 MR. ETTINGER: Thank you.

3 MR. RAO: Just for a follow-up, so in your proposal, that  
4 the scientific studies with the impairment, would that be the  
5 trigger for aquatic phosphorus control? Right now the Agency's  
6 proposals are based on new and expanded loading. But the way in  
7 your proposal is set up it can be existing loading and if the  
8 Agency determines an impairment, then they can require controls  
9 on possibility to be the cause?

10 MR. LANYON: Yes.

11 MS. LIU: In your alternative recommendations you mentioned  
12 uses water quality trading as part of that. You also mentioned  
13 that the Agency came out with a water quality trading process in  
14 2003 and I was wondering if the Metropolitan Water Reclamation  
15 District has seen any progress in that since then?

16 MR. LANYON: To my knowledge there has been no progress in  
17 use of trading in Illinois.

18 MS. LIU: In your testimony you also say there's a  
19 potential scientific basis for a justifiable, sensible phosphorus  
20 a few years away and there is no justification for an interim  
21 limit?

22 MR. LANYON: Correct.

23 MS. LIU: Would you be more receptive to a phosphorus limit  
24 if it were to come in the form of a package along with other

1 nutrient standards when the Agency has completed its nutrient  
2 standard multi-year program?

3 MR. LANYON: Yes.

4 MS. LIU: Thank you.

5 HEARING OFFICER KNITTLE: Any further questions for Mr.  
6 Lanyon? Seeing none, thank you, sir, for your testimony and you  
7 may step down.

8 MR. ETTINGER: I'm going just to offer as an exhibit a  
9 study so I don't have to carry them home. I would otherwise have  
10 them -- otherwise submitted afterwards. This is Anthropogenic  
11 Inputs of Nitrogen and Phosphorus and Riverine Export for  
12 Illinois USA by Mark B. Davis.

13 MR. HARSCH: You're not finding any testimony supportive of  
14 that study or --

15 MR. ETTINGER: I'm submitting it as it's a published.

16 MR. HARSCH: Other than the fact it's a published study,  
17 you believe no support presented for it, with that I have no  
18 objection.

19 MR. ETTINGER: Fine.

20 HEARING OFFICER KNITTLE: Any other qualification or  
21 objections? This will be admitted. Mr. Harsch, we have the  
22 testimony of James Daugherty. Let me just check real quick. Is  
23 there anybody else here today planning on testifying today at  
24 this hearing today? Go off the record for a second.

1 (A discussion was held off the record.)

2 HEARING OFFICER KNITTLE: Mr. Harsch is offering testimony  
3 of James Daugherty. Sir, do you mind having a seat and we'll  
4 swear you in.

5 (The witness was sworn.)

6 MR. HARSCH: Mr. Daugherty, have you prepared the pre-filed  
7 testimony that was previously submitted to the Pollution Control  
8 Board on October 20th?

9 MR. DAUGHERTY: Yes.

10 MR. HARSCH: At this point would you please read your  
11 pre-filed testimony.

12 MR. DAUGHERTY: My name is James Daugherty. I am currently  
13 employed by the Thorn Creek Basin Sanitary District as its  
14 general manager. The sanitary district operates a wastewater  
15 treatment facility in southern Cook and northern Will counties,  
16 Illinois, with a design flow of 16 million gallons per day. The  
17 facility currently serves a population of 100,000. I have been  
18 employed by Thorn Creek Basin Sanitary District since 1973. I  
19 have held the position of District Manager since November of  
20 1976.

21 I have received both a bachelors and masters degree in  
22 civil engineering from the University of Illinois at  
23 Urbana/Champaign. I hold an Illinois Environmental Protection  
24 Agency Class 1 and Class K operator's license for wastewater



1 treatment and an Illinois Environmental Protection Agency Class A  
2 license for potable water. I have been active in many technical  
3 organizations, including the Water Environment Federation and the  
4 Association of Metropolitan Sewage Agencies.

5 My testimony is provided on behalf of the Illinois  
6 Association of Wastewater Agencies. I am a past president of the  
7 IAWA and currently serve as chairman of the Technical Committee  
8 on the Proposed Interim Phosphorus limit. IAWA is a professional  
9 association representing the major wastewater treatment plants in  
10 the State of Illinois. We have about 100 members and affiliate  
11 members, which includes approximately 55 districts and  
12 municipalities throughout the state. These agencies operate  
13 approximately 75 publically-owned treatment works, including  
14 almost all of the state's major facilities. In addition to these  
15 sanitary districts, water reclamation district and  
16 municipalities, the largest Illinois private wastewater utility  
17 that operates 12 plants is also a member. Representatives of  
18 these organizations are public officials and include both elected  
19 and appointed trustees of districts and appointed officials at  
20 municipalities throughout the state. Our constituents are the  
21 citizens and taxpayers of Illinois, who are the same constituents  
22 as any other state or public agency.

#### 23 IAWA Goals

24 Our members are responsible both for the operation of

1 existing wastewater treatment facilities and the construction of  
2 new facilities. New facilities are constructed either to meet  
3 additional environmental protection needs or to provide more  
4 capacity for expanding service areas. IAWA members are committed  
5 to both ensuring that the aquatic environment is maintained in a  
6 healthy state and to providing wastewater treatment services at a  
7 reasonable cost to our constituents. IAWA is proud of its long  
8 commitment to the application of sound science to the development  
9 of water quality and effluent standards. When standards are  
10 developed from sound science, IAWA members have a high level of  
11 confidence that those standards will be in place for many years.  
12 This allows us to do our job, which is to provide needed  
13 wastewater treatment at a minimum long-term cost to our  
14 constituents. In contrast, when standards are developed without  
15 the use of sound science, IAWA members are forced to use interim  
16 solutions to treatment needs to avoid building facilities that  
17 might not be needed once more appropriate limits are developed.

18 I would like to thank the Board for this opportunity to  
19 participate in an important rulemaking.

#### 20 Nutrient Limits

21 IAWA supports the Agency's work plan, as approved by USEPA,  
22 to develop nutrient water quality standards for Illinois. That  
23 plan calls for the application of sound science to develop  
24 nutrient limits by the year 2008. The development of such limits

1 is consistent with IAWA's long standing support of science-based  
2 water quality standards. IAWA has and will continue to  
3 participate in the Agency's Illinois Nutrient Work Group.

4 Proposed Interim Phosphorus Limit

5 IAWA is opposed to the proposed interim effluent phosphorus  
6 limits. We urge the Board to reject the Agency's proposal in its  
7 entirety. As proponent of the proposal, the Agency is required  
8 to provide an environmental, technical, and economic  
9 justification for the proposed rule. See 35 Il. Adm. Code  
10 102.202. The Agency has not provided an adequate environmental,  
11 technical or economic justification for a new statewide effluent  
12 limitation. With respect to the environmental justification for  
13 the proposed rule, the Agency has repeatedly stated that it  
14 cannot determine what, if any, would be the environmental benefit  
15 of the proposed effluent limitation, or whether there will be any  
16 benefit on a state-wide basis to receiving streams where  
17 dischargers will be subject to the proposed limitations.

18 The Agency has stated that the proposed interim phosphorus  
19 limits are based on the application of certain technology in the  
20 wastewater treatment process for the reduction in phosphorus.  
21 For streams where phosphorus can be shown to be impairing a  
22 recognized stream use, there are already regulations which would  
23 allow the Agency to give those dischargers effluent limitations  
24 that will address such impairments. For receiving streams where

1 it cannot be determined that there will be a benefit from  
2 reductions in phosphorus levels, the proposed interim limit would  
3 result in the installation and operation of treatment technology  
4 with no known benefit.

5 With respect to the technical justification and economic  
6 cost of the proposed rule, the Agency has stated that it expects  
7 facilities to use chemical phosphorus removal processes to meet  
8 an interim limit. The Agency readily acknowledges that the  
9 application of this technology will increase the cost of  
10 wastewater treatment, but it has failed to provide a sound and  
11 accurate estimate of the cost and omits important components of  
12 the cost. The most significant omission from the Agency's cost  
13 figures is the cost of handling and disposal of additional  
14 sludge. The Agency has estimated sludge volumes would increase  
15 by 15 to 30%. For a proposed limitation where the Agency is on  
16 record as admitting that it does not know what, if any, benefit  
17 to the receiving streams will be realized if the standard is  
18 adopted, the prospective costs are unsupportable.

19 IAWA believes there is no need for the proposed interim  
20 phosphorus limitation. Given that nutrient limits based on sound  
21 science are "on the way" and that the Agency currently has means  
22 to deal with streams that have known nutrient problems, adoption  
23 of an interim technology-based phosphorus limit is not wise  
24 public policy. The Agency has at times represented this interim

1 limit as the first step in a nutrient control program. The  
2 Agency has also admitted that at this point in time it does not  
3 understand the role of elevated levels of nutrients in the wide  
4 range of stream conditions found in Illinois. The Agency is  
5 saying it does not know what the nutrient control problem in  
6 Illinois will look like when it has completed the scientific  
7 studies. We question how anyone can know that the proposed  
8 interim limit is the first step in that process when the  
9 scientific studies have not been completed on the appropriate  
10 nutrient limitations for this state.

11 The Agency has also argued that there would be savings to  
12 the public when POTWs install phosphorus removal technology as  
13 they undergo expansion or new construction. The Agency has  
14 stated its expectation that treatment facilities will install  
15 chemical phosphorus removal in lieu of biological phosphorus  
16 removal given the fact that this is an interim limit, as  
17 biological phosphorus removal has a much higher capital cost.  
18 POTW managers are unlikely to spend significant capital dollars  
19 on a process their facilities may not need when real phosphorus  
20 water quality standards are adopted. POTW managers are more  
21 likely to install chemical phosphorus removal which has a lower  
22 capital cost, but higher operating costs. The facilities needed  
23 for chemical phosphorus removal are not in-line facilities. They  
24 are not facilities where an additional unit needs to be inserted

1 within the treatment train of unit processes. Chemical removal  
2 facilities are sideline facilities. They include chemical  
3 storage and pumping facilities that inject chemicals into  
4 existing treatment units. For this reason, they are fairly easy  
5 to add to the treatment facility at any time, not just during  
6 construction or expansion. IAWA does not believe there will be  
7 long-term cost savings by requiring facilities to add chemical  
8 phosphorus removal as they currently undergo expansion or  
9 construction, except possibly for the increase in the solids  
10 production due to chemical removal. Again, we would point out  
11 that the increase in solids production (between 15 and 40% as  
12 mentioned by the Agency) would have significant capital and  
13 operating cost implications to any facility. These costs have  
14 not been documented by the Agency.

#### 15 Specific Technical Issues

16 Written testimony has been provided by the Metropolitan  
17 Water Reclamation District of Greater Chicago on September 28,  
18 2004. IAWA has reviewed that testimony. It raised many  
19 important specific technical issues. IAWA urges the Board to  
20 give them careful consideration to the issues they raise.

#### 21 Conclusion

22 IAWA requests the Board to reject the Agency's proposed  
23 interim phosphorus effluent limits. The Agency has failed to  
24 demonstrate that the proposed limits are justified from an

1 environmental, technical or economic basis. For streams where  
2 phosphorus can be shown to be impairing a recognized stream use,  
3 there are already regulations which would allow the Agency to  
4 give those dischargers effluent limitations that will address  
5 such impairments.

6 Thank you for your consideration to our comments.

7 HEARING OFFICER KNITTLE: Thank you, sir. Mr. Harsch, do  
8 you have any questions that you would like to ask?

9 MR. HARSCH: A couple of clarifying questions. On page one  
10 of your pre-filed testimony I think you referenced 55 districts  
11 and municipalities and you may have read that number as 75. The  
12 correct number is 55; is that correct?

13 MR. DAUGHERTY: That's correct.

14 MR. HARSCH: You're aware that IAWA has filed and is  
15 currently under consideration before the Board revisions to the  
16 State's General Use Water Quality For Dissolved Oxygen?

17 MR. DAUGHERTY: Yes.

18 MR. HARSCH: Was that proposal in part intended to develop  
19 a dissolved oxygen standard based on sound sciences which could  
20 then be utilized in the long-term development of nutrient  
21 limitations by Illinois?

22 MR. DAUGHERTY: Yes, IAWA looked at the basis for current  
23 limits and felt that they were inadequate based on currently  
24 available information.

1 MR. HARSCH: No further questions.

2 HEARING OFFICER KNITTLE: Mr. Ettinger, do you have any  
3 questions?

4 MR. ETTINGER: Yeah, I have a few questions. This is sort  
5 of on IAWA's general policies. Does IWA -- IAWA support the  
6 current phosphorus rule?

7 MR. HARSCH: Which rule? As it relates to discharge of --

8 MR. ETTINGER: One, two, three, A limits shall contain no  
9 more than one milligram per liter of phosphorus to be discharged  
10 into Lake Michigan, does the IAWA support that rule?

11 MR. DAUGHERTY: We haven't done a detailed review for the  
12 basis of that rule. Are you asking if we think it's based on  
13 sound science?

14 MR. ETTINGER: Actually I asked the question, I asked do  
15 you support it or not? You can tell me why you don't support it  
16 depending on what you think.

17 MR. DAUGHERTY: We're not objecting to it. But we haven't  
18 done a review to conclude it is based on sound sciences.

19 MR. ETTINGER: Okay. What about one milligram per liter  
20 limit on phosphorus where it's discharged above a lake of 8.1  
21 hectares or more, does IAWA support that rule?

22 MR. DAUGHERTY: Again, I would say we have not chosen to  
23 object to it but we have not done it, review a scientific basis  
24 for that.



1 MR. ETTINGER: And going back to the EFD the effluent  
2 limits for oxygenating waste, does IAWA support that effluent  
3 rule?

4 MR. HARSCH: It's not an issue in this proceeding. I fail  
5 to understand the relevancy of that question. We can go through  
6 all the board rules today and find out if IAWA objects to if  
7 that's your intent.

8 MR. ETTINGER: Well, I guess that's true. I guess the  
9 question is -- well, if you don't want to answer the question,  
10 fine, don't answer the question, Mr. Harsch has pointed out  
11 limitations to.

12 MR. DAUGHERTY: There's a whole series of POTW limits.

13 MR. ETTINGER: Do you believe those limits never require  
14 any sewage treatment discharge or to put on more treatment than a  
15 strict study of stream conditions would require?

16 MR. DAUGHERTY: I believe the different levels of effluent  
17 permits are based on making available, to a degree, and over a  
18 period of many years they have been found to be fairly reasonable  
19 limits the vast majority of times.

20 MR. ETTINGER: Okay. We'll stop there.

21 HEARING OFFICER KNITTLE: Any questions from the Agency?  
22 Mr. Hill? Ms. Liu?

23 MS. LIU: Mr. Daugherty, if a treatment found it necessary  
24 to add-on in order to meet the 1.0 proposed phosphorus limit, and

1 later on the final numbers were changed to a lower number where  
2 other nutrient standards came into play, how effective would that  
3 treatment process be that they had to spend money on? How easy  
4 would it to be to dial it up and treat more?

5 MR. DAUGHERTY: In most cases it would require some  
6 modifications. It's hard to answer that question without knowing  
7 what level you're going to. And whether you can work it into  
8 that final design with certain modifications and whether it would  
9 be the same facilities that you would put in if you had a clean  
10 piece of paper to work from. It's probably not the case.

11 MS. LIU: Would you be more acceptable to a nutrient  
12 standard proposal that was more comprehensive than just one  
13 element at time that would allow you to design something that  
14 would be productive for all perimeters?

15 MR. DAUGHERTY: Yes, I think it would be more an efficient  
16 approach.

17 MR. ETTINGER: One more question, Mr. Daugherty. Have you  
18 ever designed a biological phosphorus removal system?

19 MR. DAUGHERTY: No.

20 MR. ETTINGER: Have you studied any biological phosphorus  
21 removal?

22 MR. DAUGHERTY: Yes.

23 MR. ETTINGER: Where have you studied them?

24 MR. DAUGHERTY: Water Environment Federation Technical

1 Presentations.

2 MR. ETTINGER: Are there any to your knowledge being  
3 operated in Illinois?

4 MR. DAUGHERTY: No.

5 MR. ETTINGER: Thank you.

6 HEARING OFFICER KNITTLE: Anything further? Thank you,  
7 sir. You can step down. Mr. Sofat, did you want to have  
8 testimony provided?

9 MR. SOFAT: Toby is going to meet some Agency comments and  
10 be open for any questions that the Board or other people may  
11 have.

12 HEARING OFFICER KNITTLE: Do you mind having a seat up here  
13 so the court reporter can hear you better.

14 (The witness was sworn.)

15 HEARING OFFICER KNITTLE: You can begin your testimony,  
16 sir.

17 MR. FREVERT: Yeah, I don't want to duplicate the testimony  
18 I gave at the first hearing but I did want to give a little bit  
19 of reaction to today's testimony. I think you've heard from the  
20 various witness. Number one, I don't think there is anybody in  
21 the room that's against sound science. We all want sound  
22 science. Based on the testimony nobody has that sound science  
23 and knows exactly what to do with nutrients. There's good,  
24 strong cause against many of Illinois waterways so that's a thing

1 that we're going to have to deal with the reality of that.

2       The next point I want to bring out is in an ideal world if  
3 we could wait for the perfect conclusion, we probably would, but  
4 reality is putting it on day after day a program to operate. Our  
5 existing regulation that require the agency to have documentation  
6 and determine what controls the limitations are necessary upon a  
7 discharge before they can authorize the discharge. At the  
8 present time we don't know, I think everybody in the room has  
9 agreed, we don't know exactly what rule specific phosphorus plays  
10 in the overall environment. We know that phosphorus is  
11 problematic in streams in Illinois. We know that phosphorus is  
12 not problematic in some streams and we want to keep it that way.

13       The first point I want to make our proposal is not intended  
14 solely to be remedial or respond to adherent laws. There's no  
15 distinction in our proposal between discharges to impaired water  
16 and discharges to high quality waters. We're basically saying  
17 it's prudent. A point source discharge is required under both  
18 state and federal law to get prior authorization to the extent  
19 that there is a parameter of question out there, we don't know  
20 exactly how to deal with the traditional or perhaps the only  
21 legal response so a higher authority can make a policy decision  
22 on that. We have what we believe is a measured and balance  
23 policy for application that deal with that.

24       Lacking this specific sciences and the data to demonstrate

1 a particular level of phosphorus in a discharge that's acceptable  
2 today, I don't know how I can authorize an NPDES on these  
3 changes, and quite frankly that's not just limited to expanding  
4 facilities, that's all facilities. So that's the other thing I  
5 want to bring out in this proposal. We've been talking greatly  
6 about the impact and the economic upon impact of sources which we  
7 estimate to be 20 sources per year or less. In the state of  
8 Illinois there are only 2,000 permitted sources. Over 500 of  
9 those facilities have domestic sewage limits. This proposal  
10 specifically says until during this interim period, unless those  
11 facilities are expanding or relocating to a new stream, have some  
12 new discharge to that effect, they do not have an obligation in  
13 the immediate time to invest the money and resources to that  
14 spot. They're allowed to continuing operating. I know I made  
15 that point in my earlier testimony. But that gets direct with  
16 the economics in mind. It's not a consequence for a new cost.  
17 We recognize and admit it that there is some incremental cost.  
18 And we recognize up front that the exact impact of that  
19 incremental cost and incremental treatment beyond our ability to  
20 measure and predict with axes at this point in time.  
21 Nevertheless, for those new sources what we know there's going to  
22 be an increased load, we're recommending this technology. It's  
23 not excessively expensive. We do have some general cost data on  
24 the record. To the extent the Board needs more, we'll be happy

1 to work with them.

2 I do have some requests that some sources in Illinois that  
3 currently are removing phosphorus have been removing them for  
4 over a decade. I can assure you there are a capital -- operating  
5 expenses are being met. And so it is affordable. In that regard  
6 we don't believe we're creating unnecessary burden, but the  
7 bigger benefit is for the other 500 plus facilities, this  
8 proposal would say that you do not have to move forward with  
9 phosphorus removal and the Agency does indeed have a policy  
10 directive and an interpretation of how the water quality  
11 standards and committee regulations and the like. Again, we need  
12 to permit and allow you to continue operating as is without  
13 incurring that expense. I think those are the primary things I  
14 wanted to mention.

15 A little bit of response to Dick's statement. In our  
16 proposal we're establishing a discharge limitation on the  
17 concentration that can be discharged to the stream. We're not  
18 mandating and requiring any particular technology. To the extent  
19 that Dick and his operation and his facility can achieve, if they  
20 are subject to this standard, they can achieve this standard  
21 through source control that is perfectly acceptable for them to  
22 pursue that route. That's a good decision as to whether or not  
23 it adequately effects any level of cost disruption. I guess I'll  
24 finish that point. We're specifying a discharge level that's

1 consistent with prudent technology. We're not mandating that  
2 exact technology.

3 The other thing I'd point out when we have the records,  
4 things are complete. We will, of course, file our final closing  
5 comment and we will specifically look at the alternative language  
6 produced by Albert Ettinger here and the question raised at the  
7 prior hearing and we will do that.

8 HEARING OFFICER KNITTLE: Thank you, sir. Do we have any  
9 questions of Mr. Frevert?

10 BOARD MEMBER GIRARD: Toby, early we heard testimony from  
11 Dick Lanyon that several IAWA members would consider the using of  
12 wetland technology or nutrient management if the Illinois EPA  
13 created rules to cover that situation. Has the Illinois EPA  
14 considered creating a set of rules to cover that.

15 MR. FREVERT: We were involved with discussions last year  
16 with Dick Lanyon and some of his affiliates at the wetland  
17 institute and the USEPA staff and the wire regarding that same  
18 issue and the possibility of developing a trading type approach  
19 and wetland type approach. That's how we deal with nutrients in  
20 a broader range. That particular initiative is kind of wound  
21 down to a back burner. There's not a lot of activity today but  
22 we're still amenable about discussing about wetland technology,  
23 still amenable to concepts on training and things of that nature.  
24 At the present time I would say that most promise I'm aware of

1 discussions costs to develop those technology, particularly the  
2 technology and the specific legal administrative measures  
3 relative to trade, are taking place within the Ohio River Valley  
4 Group on hypoxia issues. There is such a thing as Orsanco,  
5 O-R-S-A-N-C-O, which Illinois is a member of, and they receive  
6 funding from headquarters to fund that effort. A major part of  
7 that effort includes bringing point sources down and non-point  
8 sources and how to proceed.

9           On a similar side the state of Illinois works with the  
10 upper Mississippi river and other effluents through the state to  
11 formulate similar groups to address new issues on the effluent  
12 river basin, and we will participate in that. I believe that  
13 effort is initially being funded by, not headquarters, but Region  
14 5 and Region 7 of the USEPA. Those are the two areas where the  
15 talks and the opportunity to have advanced these concepts are  
16 probably the most promising. Either way I think there is a fair  
17 amount of leg work to get to the point where anybody would want  
18 to set a regulatory policy that a statutory approach we need to  
19 put it in place.

20           BOARD MEMBER GIRARD: Okay.

21           MR. ETTINGER: I just wanted to add that we have worked  
22 with permit applicants, and actually much more unreasonable than  
23 Mr. Harsch suggested, not solely phosphorus that we look at in  
24 these permit questions and sometimes we have been very happy and



1 work with permit applicants. One was the Village of Manhattan  
2 which put in a wetland polishing on Manhattan Creek. The Village  
3 of Manhattan has had some work done in Illinois. Also with  
4 Village of Huntley, a lot of their wastewater is going on the  
5 golf course and there are other places like that where we are  
6 specifically looking at ways of dealing with the wetlands, or  
7 rather, with the wastewater that will involve some sort of  
8 biological polishing or wetland treatment in addition to a sewage  
9 treatment plant.

10 MR. FREVERT: I'll follow-up on that. The Agency routinely  
11 creates validly to look at those technologies as part of their  
12 early facility plan.

13 BOARD MEMBER GIRARD: So just to clarify, are those wetland  
14 technology projects that are being used in Illinois are developed  
15 in the context of the NPDES permit under current rules?

16 MR. FREVERT: I don't know the specifics of Manhattan. I  
17 know in the case of land application through irrigation where  
18 you're actually applying the water to the land and you don't have  
19 a surface discharge, we're increasing wetland polishing.  
20 Ultimately there is still is a point where that water, that  
21 surface water, leaves the treatment process and enters the water  
22 of the nation and waters of the state. And at that point that is  
23 a discharge subject to Clean Water Act and the Environmental  
24 Protection Agency has to make, and we got to work with people to

1 identify what specific limitations are to be put in that whether  
2 or not phosphorus applies to that point. To the extent the  
3 wetland removes the phosphorus and it no longer makes it, then  
4 the wetland requires the treatment process, not an independent  
5 resource in and of itself.

6 BOARD MEMBER GIRARD: Would there be any problems with the  
7 discharge or utilizing saying an adjusted standard process or  
8 site specific rulemaking process to incorporate those current  
9 technologies or evening a training stream?

10 MR. FREVERT: I would specifically assume regulatory  
11 authority of the Board can help address some complexities we  
12 have. If we still involve the discharge. That discharge would  
13 have to be subject to whatever requirements came on that site  
14 with specific rule adjustment to the extent they investigated  
15 water quality, it would be subject to USEPA review and approval.  
16 But to the extent there is a good technology, there is the  
17 existing regulatory structure prevents it, yeah, I think state  
18 and federal people are looking more ways to address that.

19 BOARD MEMBER GIRARD: Thank you.

20 MR. FREVERT: I think part of our issue here is the science  
21 and technology testimony is regulatory structure. We got to find  
22 the right way to deal with that.

23 HEARING OFFICER KNITTLE: Anything further?

24 MS. LIU: Mr. Frevert, could you give us an idea of what

1 the final nutrient standard looks like? I know it's a ways off  
2 but I've only seen a small glimpse of it and I was wondering what  
3 might be coming down the pipeline.

4 MR. FREVERT: I guess I'm not going to speculate on behalf  
5 of the Agency. At this point we believe the primary parameters  
6 are focused on an increase in the phosphorus. We ideally would  
7 like to have and find a numeric concentration of phosphorus with  
8 whatever temporal applications are appropriate and whatever  
9 perhaps spacial areas are necessary. Such that number is a  
10 protective number protecting against the detrimental of the  
11 excess plan and probably going to vary from location to location  
12 around the state. I don't believe there's one size fits all.  
13 This is complicated science.

14 When I was a sophomore in college, my basic water quality  
15 course I had an introduction to nutrient cycle concepts and  
16 really should quantify and say stream A versus stream B becomes  
17 problematic if that concentration stays below that concentration.  
18 We don't have the answer. The rest of the participates in the  
19 room don't have the answer. My counterparts in the state don't  
20 have the answer. That's the goal. Get there where we can say  
21 with some rationality this stream or these 10 streams we've got  
22 to manage phosphorus. This concentration for this time of the  
23 year is a set of circumstances and we met other goals for  
24 protecting the environment. It may be a different number in a

1 different stream. It will probably be a different number in a  
2 different stream. I guess that's the longwinded way of saying I  
3 can't give you a great deal of vision other than we think  
4 primarily phosphorus is going to be the most difficult parameter  
5 to create.

6 MS. LIU: Given your uncertainty and the fact that, I think  
7 the year 2008 I think was mentioned, that is when you might be  
8 able to propose something more solid. Could you maybe speak to  
9 the environmental disbenefits of waiting that four years before  
10 going ahead with proposing this phosphorus limit?

11 MR. FREVERT: I think what our proposal is suggesting is we  
12 think there are a lot of places where there's excessive  
13 nutrients, at least certain times of the year now, well, we don't  
14 know exactly what to do with that. We don't want to make the  
15 situation worse, therefore, the new significant loading subject  
16 to this permitting program under permitting regulations needs to  
17 be dealt with. We spent a lot of money. We go to a lot of  
18 meetings. We do a lot of work on the non-point source side.  
19 We're also addressing nutrient and primarily phosphorus in  
20 non-point sources. Hopefully we're getting some reduction there  
21 but those programs are a little more flexible and fluid to a  
22 great extent they move with the flow of money. They don't move  
23 fast.

24 One example, I guess I could point out now, CAFO

1 regulations, that particular permitting program now will require  
2 a nutrient management plan, management of manure for those  
3 operations and I believe technical practicing standards both  
4 managing that manure primarily on phosphorus loading and  
5 phosphorus agronomic applications to the land whereas more focus  
6 on nitrogen. So even in the non-point source program or the  
7 agricultural program you see a fair amount of emphasis on  
8 managing phosphorus.

9 MS. LIU: Thank you.

10 HEARING OFFICER KNITTLE: Anything further? You remain  
11 there but technically steps down if you prefer. Let's go off the  
12 record for just a second.

13 (A discussion was held off the record.)

14 HEARING OFFICER KNITTLE: We're back on the record. If  
15 anyone has any questions about the procedural aspects about this  
16 rulemaking, I can be reached by telephone at (217) 278-3109. You  
17 can also reach me by E-mail. I think everyone has my E-mail. As  
18 we talked off the record, we're going to set a written public  
19 comment deadline of December 10th. Also just a housekeeping  
20 matter, I never got a copy of the reference that -- that one that  
21 goes to the City of Elgin. You took it and gave it to Roy. I  
22 may need that. That was Exhibit No. 6. And, Mr. Harsch, you  
23 never, I don't think offered, correct me if I'm wrong,  
24 Daugherty's testimony as an exhibit. I'm assuming you want to do

1 that?

2 MR. HARSCH: Sure.

3 HEARING OFFICER KNITTLE: That would be Exhibit 12. Do you  
4 have any objections to that? Admitted as Exhibit 12. That's all  
5 I have. Thank you all very much. The transcript, as we said,  
6 will be on available on November 4th. We will post it on the  
7 Board's website thereafter. And please give me a call if you  
8 have any other issues. Thank you.

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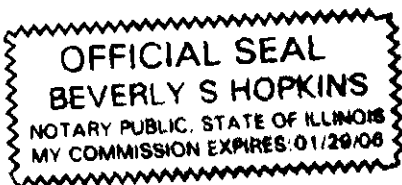
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STATE OF ILLINOIS  
COUNTY OF FAYETTE

C E R T I F I C A T E

I, BEVERLY S. HOPKINS, a Notary Public in and for the County of Fayette, State of Illinois, DO HEREBY CERTIFY that the foregoing 118 pages comprise a true, complete and correct transcript of the proceedings held on the 25th day of October, 2004, at the Illinois Department of Natural Resources, Lakeview A, B, and C, One Natural Resources Way, Springfield, Illinois, in the case of In the Matter of: Interim Phosphorus Effluent Standard, Proposed 35 Ill. Adm. 304.123 (G-K), in proceedings held before Hearing Officer John Knittle, and recorded in machine shorthand by me.

IN WITNESS WHEREOF I have hereunto set my hand and affixed by Notarial Seal this 3rd day of October, 2002.



*Beverly S Hopkins*

\_\_\_\_\_  
Beverly S. Hopkins

Notary Public and

Certified Shorthand Reporter and

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