ORIGINAL

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

REPORT OF THE PROCEEDINGS held in the above entitled cause before Hearing Officer Marie Tipsord, called by the Illinois Pollution Control Board, taken by Steven Brickey, CSR, for the State of Illinois, 160 North LaSalle Street, Chicago, Illinois, on the 17th day of December, 2013, commencing at the hour of 9:00 a.m.

A P P E A R A N C E S

MS. MARIE TIPSORD, Hearing Officer
MS. ALISA LIU
MR. ANAND RAO
MR. JERRY O'LEARY
MS. JENNIFER BURKE
MS. DEANNA GLOSSER

MS. TIPSORD: Good morning. My name is Marie Tipsord and I've been appointed by the Board to serve as Hearing Officer in this proceeding entitled Water Quality Standards and Effluent Limitations for the Chicago Area Waterway System and Lower Des Plaines River: Proposed Amendments to 35 Ill. Adm. Code 301, 302, 303 and 304. The docket number is R08-9 and this is Subdocket D.

With me today to my immediate right is Dr. Deanna Glosser, the presiding Board Member, to my immediate left is Board Member Jennifer Burke and to her left is Board Member Jerry O'Leary, to Dr. Glosser's immediate right is Anand Rao and to his right is Alisa Liu from our technical unit.

Today's hearing is the third day in Subdocket D, but the 54th overall day of hearing. We have pre-filed testimony from ExxonMobil and Citgo Petroleum Corporation and PVD Midwest Refining. We will begin with ExxonMobil and then go into PVD. Today's hearing will also satisfy the requirements of Section 27(b) of the Environmental Protection Act for Subdocket D.

Section 27(b) of the Act requires the Board to request the Department of Commerce and Economic Opportunity to conduct an Economic Impact Study on certain proposed rules prior to adoption of those rules. If DCEO chooses to conduct the Economic Impact Study, DCEO has 30 to 45 days after such request to produce a study of the economic impact of the proposed rules. The Board then must make the impact study or DCEO's explanation for not conducting a study available to the public at least 20 days before a public hearing on the economic impact of the proposed rules.

In accordance with Section 27(b), the Board requested by letter dated August 11th, 2010, that DCEO conduct an Economic Impact Study for this rulemaking. The Board received a response to that letter on September 27th, 2010, indicating that no ECIS will be conducted. We will discuss comments concerning the Economic Impact Study, the decision not to conduct one today before the close of the hearing.

We will begin today with ExxonMobil as I stated and we will start with the

IEPA asking questions and then we will go to the environmental groups and Citgo PVD with ExxonMobil and then with Citgo PVD if there is a question, we'll start with the environmental groups and then go to IEPA assuming that schedule works.

Anyone may ask a question. I do ask that you raise your hand, wait for me to acknowledge you. After I have acknowledged you, please state your name and whom you represent before you begin your questions. Please speak one at a time. If you are speaking over each other, the court reporter will not be able to get your questions on the record.

Please note that any questions asked by a Board Member or staff are intended to help build a complete record for the Board's decision and not to express any preconceived notion or bias. Dr. Glosser, did you have anything?

DR. GLOSSER: No, I don't.

MS. TIPSORD: With that, I will turn it over to Exxon. Go ahead.

MR. READ: My name is Matthew Read. I am at the law firm of Hodge, Dwyer & Driver and

we are counsel for ExxonMobil. To my left is Kathy Hodge, a partner at the firm, and to my right is Lial Tischler. He will be presenting testimony on behalf of ExxonMobil today and we would like to start out with a brief statement.

MS. TIPSORD: If you can be sworn in first.

WHEREUPON:

LIAL TISCHLER

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

MS. TIPSORD: Also, can we go ahead and enter his testimony as an exhibit?

MR. READ: Absolutely. This is the pre-filed testimony of Lial Tischler with all the attachments.

MS. TIPSORD: We just need one for the record. If there is no objection, we'll mark the pre-filed testimony of Lial F. Tischler on behalf of ExxonMobil Corporation as Exhibit No. 488. That is his testimony and all exhibits attached. Is there any objection? Seeing none, it is Exhibit 488.

(Document marked as IPCB Exhibit No. 488 for identification.)

MR. TISCHLER: Ms. Tipsord, Board Members, it's my pleasure to be here today.

MS. TIPSORD: You're going to have to speak up.

MR. TISCHLER: Okay. My name is Lial Tischler. I am a consulting environmental engineer with the firm of Tischler-Kocurek, a two person partnership. I'm here on behalf of ExxonMobil to present testimony relating to the water quality criteria that the Board will adopt in Subdocket D.

My pre-filed testimony does describe my experience and the type of work that we typically do. Very briefly. I've been involved in the development and implementation of water quality criteria at both the state and federal level as a consultant to numerous trade associations and companies over the past 40 plus years.

My experience and background is primarily in industry, though I've worked also for municipalities and done work for some government

agencies also. The comments that I've offered here in my pre-filed testimony address the scope of several different things that I want the Board to take notice of. First, I ask that the Board take official notice of a proposed rule that EPA issued about a month or two ago. It's called the September 4th, 2013, Water Quality Standards Regulatory Clarifications Rule.

The reason I want the Board to take appreciable notice of this, although it's a proposed rule, is that EPA describes in this rule that what it is doing is interpreting their current understanding of how states should adopt water quality criteria, the flexibility the states have and the discretion the states have in terms of adopting criteria for the various uses that are specified as designated uses under Clean Water Act Section 101(a), which is, of course, the subject of this hearing.

I want to first say that we support the Board's Second Notice Opinion and Order relating to the designation of the specific category for the Upper Dresden Island Pool, I'll refer to that as the UDIP, as having its own

special aquatic life use in recognition of the fact that it has got physical constraints and constraints with respect to being effluent dominated by upstream sources that do make the achievable water quality use in terms of aquatic life use something different than might be present in other waterbodies.

Specifically, my testimony addresses several items that are enumerated starting on page five of the pre-filed testimony. First one, the Board clearly has the ability to adopt subcategories of designated Clean Water Act Section 101(a)2 uses in which you are proposing to do here and EPA makes it very clear in this preamble to the water quality standards classification rule that you do have discretion not only on adopting these subcategories under aquatic life use, but you also have the ability to set numeric criteria, narrative criteria appropriate to those uses.

I think it's a very important, from ExxonMobil's standpoint, issue that you look closely at the sources of the chlorides of the UDIP and recognize the fact that the chloride

water quality concentrations and the river during certain seasons of the year are highly influenced by human activity and that is something that needs to be considered when you set the numeric criteria.

I think it's very important that the Board consider as part of this rulemaking the ability for facilities to obtain variances because one of ExxonMobil's concerns is that if numeric criteria are set that result in essentially the UDIP being immediately declared as impaired for certain types of pools, we may well be in a situation where it's very difficult, if not impossible, to meet the criteria primarily because it's the upstream sources that are the source of the exceedances of the water quality standard and, again, chloride is one example, temperature would be another.

So variances may well be a very important component of rulemaking recognizing that Illinois already, of course, has a variance provision in both its statute and regulations. It's important to be sure that compliance schedules continue to remain available for those

things that can be implemented by a discharger such as ExxonMobil. There's obviously nothing on the table that would suggest that compliance schedules wouldn't be available. I just want to point out that EPA's clarifications rule makes a big point of the fact that compliance schedules will usually be necessary for many dischargers to comply with water quality standards -- clean water quality standards for a surface waterbody.

I discuss that I would like the Board to consider the need to change the variance provisions or offer some other form of regulatory relief for multiple discharger variances or waterbody variances. EPA's preamble to their water quality clarifications proposed rule does suggest that for certain instances for things like nutrients and mercury that the ability to streamline the variance process so that each individual discharger doesn't have to make a showing to get a variance from standards that are going to have to be met sometime in the future long-term where you have problems like mercury deposition on land that is completely independent of what the dischargers themselves are generating

or where nutrients are coming from non-point sources.

So it's important whether it is part of this rulemaking or a parallel rulemaking in my mind that the Board consider the ability for the IEPA to be able to have a streamline method for having multi-discharger or waterbody variances. We need to -- I need to have the Board thoroughly, which they already intend to do, at the temperature standards that ultimately get adopted for this waterbody, the UDIP specifically, because of the fact that right now the waterbody temperatures are dominated by several thermal sources that are upstream of the ExxonMobil discharge and it's important to us to be able to have standards that we can comply with a normal mixing zone, but without being in a situation where the water is designated as impaired where we could not get a thermal mixing zone.

And then, finally, I think again as part of the temperature standards the IEPA and the Board should look carefully and how they go about setting the testimony standards consistent with what the current sources of the thermal

discharges are and what potential long-term actions will be taken to reduce these thermal loads so that whatever temperature standard the Board chooses to adopt can, in fact, be achieved.

That concludes my opening statement. My pre-filed testimony goes into more detail on this and I'm obviously available for questions.

MS. TIPSORD: Mr. Tischler, one quick question. You mentioned the Federal Register materials, the proposed rules by the US EPA, that's Exhibit C to your pre-filed testimony, is it not?

MR. TISCHLER: Yes, ma'am, it is.

MS. TIPSORD: Okay. So we will go ahead and start with IEPA.

MS. DIERS: Good morning. My name is Stephanie Diers. I will be asking questions on behalf of Illinois EPA. I will start with our pre-filed question number one.

On page 11, you state that the UAA factor three states that "Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or

would cause more environmental damage to correct and leave in place." Can salt usage be remedied such as using less salt during winter deicing?

MR. TISCHLER: The answer to that question is, yes, salt use can be remedied to some extent. However, to the best of my knowledge, there is no replacement for salt that is economically available and likely to be acceptable in terms of deicing as the current usage of sodium chloride. So this remedy while it makes sense to try to apply it as soon as is practical to do so is going to be, in my opinion, a very long-term effort and that for this particular setting of the water quality standard there is no realistic probability that the proposed water quality criterion of 500 mg/L of chloride can be achieved in the foreseeable feature because of the fact we're dealing with an urbanized watershed that uses large amounts of salt for deicing.

MS. DIERS: Are you aware that the City of Chicago has started reducing their use of salts?

MR. TISCHLER: Yes, I am.

MS. DIERS: Question two. On page

11, you state that, "These states, typically western and midwestern states, where natural ambient chloride concentrations exceed the US EPA's recommended criteria, have based their criteria on statistical analyses of ambient chloride historic data." What are the natural ambient chloride concentrations in this system?

MR. TISCHLER: I think my answer to that for the UDIP is that the concept of natural if you like or ambient chloride concentration is really somewhat irrelevant to the situation now because the fact is there is no practical way to return to natural conditions. It's basically a baseline condition set by the usage of deicing salt during, you know, the months of the year when you have icing conditions. So there is no, quote, natural concentration that one can use as a benchmark in my opinion.

MS. DIERS: Question three. I don't know if you've looked at other pre-filed testimony in this, but there have been some talk about winter months. So my question to you is would ExxonMobil be agreeable to look at winter months being defined as December through March or perhaps

maybe March 15th through -- November 15th through March 15th?

MR. TISCHLER: Yes, I believe ExxonMobil would although I think we feel as though and I feel as though there needs to be some additional language that would allow for unique or unusual circumstances where salt had to be applied for icing conditions that occur outside that timeframe.

MS. DIERS: Number four. If the Agency were to propose a salt reduction goal throughout the watershed, would Exxon be willing to participate?

MR. TISCHLER: Yes. Conceptually, I mean, it would depend on what participation meant, but certainly the company would be willing to work on salt use.

MS. DIERS: Number five. Do you know if US EPA would approve a chloride standard that is based on the current ambient conditions?

MR. TISCHLER: I cannot -- obviously, I can't read the minds of the people in Region 5. I will simply say, yes, they should be able to do it. Chloride -- one of the reasons I

point out in my pre-filed testimony is EPA has approved water standards that multiple states that have chloride concentrations substantially higher than the numbers that we're talking about here as being protective of the aquatic life uses in these particular waterbodies. So there is no reason particularly given that the preamble says that the state should have some discretion with setting their standards. There is no reason they shouldn't approve it.

MR. RAO: Mr. Tischler, you mentioned other states and standards approved by US EPA. Are those the states you mentioned in your pre-filed testimony?

MR. TISCHLER: Yes, those are some examples.

MR. RAO: Are there others, too?

MR. TISCHLER: I didn't try to look at every state in the union, but, you know, certainly in many of the midwestern and western states that chloride concentrations exceed the concentrations that would be seen, you know, that are -- for example, in what EPA's criteria documents suggest is necessary and they have

viable aquatic life populations.

MR. RAO: Thank you.

MR. ETTINGER: Are we still playing the game the way we did?

MS. TIPSORD: Yes.

MR. ETTINGER: You pointed to a bunch of states and you said that they came up with chloride standards based on natural backgrounds, but you're telling us we can't do it that way here so what is the relevance of those states to what we're doing here?

MR. TISCHLER: The relevance of those states is that you can have a protective aquatic life use with elevated chloride concentrations and that aquatic life use can be viable and meet Clean Water Act Section 101(a) requirements.

MR. ETTINGER: I understand that you can't have a viable aquatic life use. Obviously in the ocean we have high chloride levels and those have viable aquatic life uses, but in the cases of the states you're pointing to they looked at what you called natural chloride levels and set them based on that and presumably then came up

with what was tolerable to the natural community there.

Here, you're saying there is no natural. So shouldn't we be instead looking at what species could live in that system without reference to some natural waters that you say don't exist there?

MR. TISCHLER: As far as what could live in the system, I think that's true. We have an adapted aquatic life community at this point in time in the UDIP which is recognized by the Board when they established the UDIP ALU in the proposed Second Notice Opinion and Order. So what I'm basically saying is the existing aquatic life use can be protected and clearly is protected under the current regime of chlorides.

MR. ETTINGER: Do you understand the Board to have ruled in its ruling that we're never going to have any improvement to this waterbody and we should put up with whatever aquatic life uses we have for all eternity?

MR. TISCHLER: No, I don't think that's true at all. In fact, water quality standards are supposed to be reviewed triennially

and as the Board -- as the questions from IEPA indicated, there are activities in place to try to reduce salt usage for deicing to try to improve the chloride quality in time. The Board can revisit this particular what the appropriate numeric standards are at any time during the next triennial review or the following triennial review.

In other words, it can incrementally improve the chlorides without trying -- the chloride situation -- to recognize that the aquatic community can improve potentially provided it wasn't also limited by other physical conditions or other chemical conditions in the receiving waterbody. So it's not like you set it now and it stays that way forever. That's not how the Clean Water Act works.

MR. ETTINGER: Could the Board also adopt as a goal a standard which they thought was reasonably protective or use the current goal and grant you a variance for a number of years while we work this out?

MR. TISCHLER: Obviously, the Board can do that. In my pre-filed testimony, I

indicate should the Board adopt a chloride criterion that can't be achieved -- in fact, results in the water being declared as impaired some sort of variance provisions are certainly essential whether it's the current individual variance provision which I think is a little cumbersome because there would be multiple dischargers that are going to have this problem or a change to the variance position or other type of regulatory relief that would, indeed, allow a long-term variance which EPA does, in fact, in this preamble to the water quality standards clarifications rule suggest may be needed in some such cases.

So they basically have options which I'm sure they are fully aware of. They can adopt a criteria that can be achieved now or in the alternative they adopt a criteria that are goals and then have some sort of streamline variance that are a regulatory relief procedure.

MR. ETTINGER: Have you studied the sensitivity of fingernail clams to chloride?

MR. TISCHLER: Have I studied the sensitivity? No. I'm aware that the studies

exist on fingernail clams.

MR. ETTINGER: Are you aware of the existence of fingernail clams in the Upper Illinois River?

MR. TISCHLER: My understanding is that fingernail clams have been reported historically in the Illinois River. As far as the specific locations, how far downstream from the Des Plaines River I don't know, but I'm aware that they were present.

MR. ETTINGER: I have one more thing and then I'll be done.

MS. TIPSORD: You need to identify yourself for the record.

MR. ETTINGER: I'm sorry. I'm Albert Ettinger. I'm sorry. I've been around a while.

MR. TISCHLER: I guessed. It wasn't very hard for me to realize you were asking the questions.

MR. ETTINGER: You were told there would be somebody here who was really obnoxious so you got it right.

MR. TISCHLER: I don't find you

terribly obnoxious.

MR. ETTINGER: I'll keep trying.

MS. TIPSORD: It's early.

MR. ETTINGER: I'm looking at these states that you have here identified. One of them is Wyoming and they have an average chloride of 230 and a chronic of 860. Is that the kind of number that ExxonMobil is looking for?

MR. TISCHLER: No. The answer is those are examples that are provided as I stated a moment ago to show that you can have viable aquatic life uses consistent with Clean Water Act 101(a) goal objectives at higher chloride concentrations. I present a whole range and my take on the chloride as I say in my pre-filed testimony is that I see two basic approaches. One is seasonal chloride standards that recognizes the deicing conditions or the alternative would be express the standard as an annual average which some states do and by averaging cost of seasons the standard can be issued.

MS. TIPSORD: Mr. Diamond, you raised your hand?

MR. DIAMOND: Go ahead.

MR. FORT: Jeff Fort on behalf of Citgo. Since Mr. Ettinger was veering into the issue of variances and what kind of variances one can get from US EPA, I just wanted to note that we have some more questions coming and we'll get into the capability of this witness to get into those matters later, but since Mr. Ettinger went back to the water quality issue I'll recede from that question.

MS. TIPSORD: Thank you. Ms. Diers?

MS. DIERS: I'm going to strike six and strike seven. Question eight. On page 26, you state that "On page 26, you state that "The determination of compliance with AS 96-10 is at the I-55 Bridge and applies to the LDIP." Are you aware that the Des Plaines River downstream of the I-55 Bridge is General Use waters?

MR. TISCHLER: Yes.

MS. DIERS: Question nine. You state on page 21 of your pre-field testimony that the Board should adopt regulations that allow multi-discharger/waterbody water quality variances for various constituents. What would such a variance look like? Have you had any

discussions with US EPA to see if such an approach would be approvable?

MR. TISCHLER: First, let's go to the second part of the question first and the preamble for the water quality standards clarification. So it clearly indicates that it's the EPA's intent that such types should be approvable. I would offer for examples of variances for a multi-discharger would be mercury variances that have been adopted by states such as Ohio and New York and Indiana as they call it an individual streamline variance, but, in effect, it is essentially the same thing as a variance mechanism that can be used simply for multiple dischargers that have an issue with the mercury standard.

EPA also points out in the preamble another good example where this might be required, this type of variance would be for nutrients that are predominantly generated by non-point sources, nitrogen and phosphorous. Since non-point sources can't be directly -- are not directly regulated by the NPDES program, for example, it may take many years to implement

non-point source controls for nutrients when you have a body of water that is impaired to nutrients and that's the examples that they offer and that I would offer to you.

MS. TIPSORD: To clarify, that's US EPA?

MR. TISCHLER: US EPA. Yes. Sorry. I have to be a little careful. I'll try.

MS. DIERS: Okay. Just for clarification. You refer to the preamble, but this is a proposed rule that hasn't been adopted, correct?

MR. TISCHLER: That is correct. Let me make the point again I made before. This is a unique sort of rule in that the EPA in the preamble is discussing they're not, quote, changing any water quality rules, but rather this is their interpretation of how the existing water quality rules can be used by the states to adopt state water quality standards and criteria and they make the point that for the most part this proposed rule will not make any changes in how states are expected to adopt -- review and adopt water quality standards, but rather it's to clear

up questions of interpretation that come up between different regions and different states and US EPA.

MS. TIPSORD: Mr. Tischler, are you aware of when the public comment period closes for the US EPA on this proposed rule?

MR. TISCHLER: Yes, I am, Ms. Tipsord. It's, delightfully, January 2nd.

MS. TIPSORD: Thank you.

MS. DIERS: And just to go back to what -- ExxonMobil or you in general have not had any conversations with US EPA about getting a variance approved? We've talked about multi-dischargers. Have you had any conversations with them about --

MR. TISCHLER: About --

MS. DIERS: -- a variance in this situation? Have you had any discussion with US EPA?

MR. TISCHLER: No.

MS. DIERS: You mentioned I think a mercury variance in some of the states. Have those been approved?

MR. TISCHLER: Yes.

MS. DIERS: Do you know if a nutrient variance has been approved?

MR. TISCHLER: I'm not aware of any waterbody or multi-discharger nutrient variances that have been approved. This is, as I said, an example that EPA has offered up in their preamble to this proposal.

MS. DIERS: Moving onto question ten. On page --

MS. TIPSORD: Wait. Sorry. Mr. Andes?

MR. ANDES: Fred Andes with Barnes & Thornburg for the Metropolitan Water Reclamation District. Good morning, Lial.

MR. TISCHLER: Good morning.

MR. ANDES: Are you aware that in Montana the state is developing statewide variances for nutrients?

MR. TISCHLER: Yes, I am.

MR. ANDES: And has EPA preliminarily indicated in letters that that would seem to be consistent with the regulations?

MR. TISCHLER: That, I don't know. I haven't seen that.

MR. ANDES: Okay. Thank you.

MR. TISCHLER: Yes, it's a question. That's excellent that Fred brought that up. Montana is considering a multi-discharger variance for nutrients that I am familiar with.

MS. TIPSORD: Mr. Tischler, I have to ask a question about variances in other states. Is this consistent with how Illinois uses the term variance? A variance in Illinois is short-term, five years towards compliance.

MR. TISCHLER: Yes, I think, Ms. Tipsord, it has generally been -- generally within the assumption it is a five-year variance, but they also can be extendable and EPA in this clarification rule makes it clear that for five years progress towards, you know, eliminating the need for the variance that variances can be extended.

I will give you a specific example of where it is not really a variance, but it's a similar thing for a TMDL, total maximum daily load, for the Los Angeles and Long Beach Harbors where feds got a 20-year implementation plan with inner limits that scale up for the

dischargers over a period of 20 years with the idea being an equivalent method of regulatory relief in this case to long-term variance.

MR. ETTINGER: Just to follow up on Ms. Tipsord's question. This is an Illinois law question so maybe you can't answer this. But why do you believe or do you believe that there is some obstacle under current Illinois law to adopting the kind of variance that you feel is appropriate here?

MR. TISCHLER: Yes. I'm sorry, Mr. Ettinger. First of all, obviously, no, I'm not an attorney. I'm not going to comment on the statute, this specific statute. My interpretation of the current variance rules that the Board has adopted, the variance rule, is that it is an individual case by case basis with an individual showing by each discharger that, you know, they have a specific burden in terms of complying as opposed to what I was discussing like we'll just take Ohio as an example, a multi-discharger or a waterbody variance for mercury where if, indeed, you have data that shows you can't comply you're basically given an interim goal limit that you

have to meet and certain requirements in terms of mercury minimization plans and if you do that you are subject to this variance without going through an individual demonstration that shows that it is a potential specific hardship on you to try to comply with the standard. Does that answer your question sort of?

MR. ETTINGER: You did the best you could. I think it was -- thank you.

MS. DIERS: I think you already answered ten. So I'll go to 11. On page 32, you state that, "The Board could justify adopting the existing temperature standards on the basis that the existing indigenous aquatic life biota is adequately protected." Are you proposing to protect the species that are there currently or the species that should be there if the heat was absent?

MR. TISCHLER: I am proposing that for this rulemaking you protect the species that are there. Currently as mentioned earlier when I was responding to Mr. Ettinger you have the opportunity to deal with the thermal sources and approve the temperature regime and then the next

triennial review is to change the standards again or as many times as you need to. Again, I think ExxonMobil's concern is that adopting criteria that both ultimately cause the water quality to be designated as impaired which under your rules would not allow someone to have a mixing zone can place a discharger such as ExxonMobil in a situation where they simply wouldn't be able to meet it because, of course, they, like any other manufacturing plant, use cooling water and have heated effluent that cannot meet a water quality criterion at the end of pipe year around.

So they would be in a position that unless there was a variance procedure available as an alternative they would be given limits that they couldn't achieve and that is a major concern here because we don't control the upstream temperature and, you know, the water that -- the water that reaches the refinery from upstream is already heated and if it is heated to a level that is above whatever temperature standard the Board might adopt, it creates a very difficult permitting problem for IEPA and for ExxonMobil.

MR. ETTINGER: Sorry. Doesn't your concern presuppose that this upstream entity is going to be allowed to violate the standard?

MR. TISCHLER: It assumes that that thermal discharge will continue for some indefinite period of time. I guess you could put they would indeed be violating a new standard if the standard was set differently than what is out there today. That's correct.

MR. ETTINGER: So assuming that upstream entity is allowed to violate the law like gangbusters with a huge thermal discharge, do you think poor, little ExxonMobil is going to be caught in its mixing zone downstream?

MR. TISCHLER: Basically, yes.

MR. ETTINGER: Is there any reason that ExxonMobil and that upstream entity couldn't both apply for variances if they were justified?

MR. TISCHLER: Well, ExxonMobil's burden on the variance would be potentially different than that for the upstream discharger. The current individual variances that the Illinois regulations allow requires us to make a showing. Could we make that showing? We could probably

make that showing.

MR. ETTINGER: Wait a minute. So you're saying you probably could make the showing that would entitle you to a variance, but you're concerned you'll have to get a variance?

MR. TISCHLER: No, we assume we can make the showing, but we don't have any certainty that we can make the showing. It depends on how the Board interprets and the IEPA interprets our position in terms of the ability to comply.

MS. DIERS: Question 12. In your opinion, are temperatures up to 100 degrees Fahrenheit protective of the existing aquatic life?

MR. TISCHLER: No, generally they are not protective of the existing aquatic life. I would note that -- I don't know what the highest recorded temperatures of the UDIP are. To the best of my knowledge, there have been no fish kills so it's probably essentially what happens if the temperature gets that high you basically have the fish moving into areas where the temperatures aren't that high. So, you know, it's basically what is called avoidance, which is not part of the

temperature standard, but which is a reality, a physical, biological thing that occurred.

MS. DIERS: Is long-term avoidance acceptable?

MR. TISCHLER: I don't know what the term long-term avoidance means. I think I stated a moment ago that, you know, avoidance is not a basis for setting the temperature criteria, but it's a natural phenomena that occurs just like there is a mixing zone whether you allow it or not. It's a physical or biological reality.

MS. GLOSSER: I have a question. Then are you saying that you wouldn't support a temperature standard of up to 100 degrees because it wouldn't be protected?

MR. TISCHLER: What I'm saying is that I believe that 100 degrees approaches the incipient lethality and that any time there's an extended period of 100 degrees would probably have a significant adverse effect on aquatic life.

MR. ETTINGER: Sorry. This is on the avoidance concept. You say that avoidance is not a basis for setting a water quality standard?

MR. TISCHLER: It's certainly not in

any guidance that I've read that you set a standard on the basis of the fish can avoid the high temperatures.

MR. ETTINGER: Okay. So you're aware of no authority that says that it is okay to have a waterbody in which the fish aren't living there because they've been driven out?

MR. TISCHLER: I'm not aware of anything.

MR. ETTINGER: Does it make sense to protect a waterbody by allowing conditions to exist there that will drive all the fish out?

MR. TISCHLER: No.

MR. ETTINGER: You're right. If we had -- if the thing was totally poison, you wouldn't have fish kills because fish would never be there, right?

MR. TISCHLER: That would be logical.

MS. DIERS: Question 13. On page 37, you state that "US EPA's guidance for developing water quality criteria for toxic chemicals uses a 95 percent protection level." Does the guidance for developing water quality

criteria for toxic chemical allow you to choose the 95 percent of the species that you are going to protect?

MR. TISCHLER: No, that's not the way the calculation works. It's not directly. Indirectly it, in effect, does because essentially you -- when you're looking at toxic criteria, you list the most sensitive to the least sensitive and then you basically use the upper bound, if you like, so that the upper -- the five percent most sensitive species don't get used in the calculation, but you don't select them. They're self-selected by their tolerance levels.

MS. DIERS: Okay. Doesn't the criteria use the four most sensitive species that are present or should be present?

MR. TISCHLER: Yes, it does, but then it takes essentially the 50th percentile of that. It basically fits that curve and calculates a mean and that's why they use it and they use what is called -- statistically will use what is called an Alpha level .05, which is equivalent to establish the 95 percent upper boundary.

MS. DIERS: What about species that

do not have toxicity data?

MR. TISCHLER: Well, they're assumed to be protected by the species that there is a specific set of criteria that EPA recommends in their guidance be used to determine the particular number -- different families that have to be represented in the types of organisms in those that are -- you know, where you have no data or supposed to be captured by the selection of the species that are, in fact, have data and are used in the calculation.

MS. DIERS: Okay. Fourteen. On page 39, you suggest using the 95 percent to determine the monthly average. Is this recommendation based on page 1 of Appendix E in the Technical Support Document for Water Quality-based Toxics Control, which states, "Monthly average limits are in most cases based on the 95th percentile of the distribution of averages of daily values"? Isn't the Technical Support Document for Water Quality-based Toxics Control for guidance for writing NPDES permits and not for water quality standards derivation?

MR. TISCHLER: Yes.

MS. DIERS: And is the technical support document for water quality based toxic controls for guidance providing EPS permits and not for water quality standards deprivation?

MR. TISCHLER: That is true, but as I stated earlier in the preceding question EPA 19 -- I believe it is 1985 EPA Water Quality Criteria Guidance For Development of Water Quality Criteria. It basically uses we just discussed a moment ago essentially a 95th percent probability level and, indeed, if you look at multiple EPA regulations whether they're water quality criteria or air quality, they generally use a number like 95 percent in recognition that there will be some variance outside of that level, but when you try to use a number with a much higher -- or a smaller probability of occurrence, you develop standards that are unnecessarily conservative.

MS. DIERS: Question 15. Can you explain your statement on page 39, "Selection of a list of fish species on an arbitrary assumption is not a scientific basis for setting a standard"?

MR. TISCHLER: I believe it is fairly clear what I was trying to state in my

pre-filed testimony which is basically that no effort was made to compare the actual resident aquatic species in the UDIP with the list that was actually used recognizing that that list was a goal, but by not making any attempt to reconcile what you'd like to see with what is actually developed there and recognizing that you have both physical configuration issues and other issues that may restrict the aquatic populations that you develop even in the absence of high temperatures I just think that that is arbitrary and that's why I stated that.

MS. DIERS: Question 16. On page 40, you suggest putting in a threshold of 0.5 billion BTU/hour for application of the Cold Shock provision. What do you believe that ExxonMobil would have to do to comply with the Cold Shock Provision as written?

MR. TISCHLER: I believe ExxonMobil can comply with the Cold Shock Provision as written. One reason, however, we would like limitation is that this -- these would simply be another permit requirement which would require additional administrative work on our part for

what we believe would be of no real value because ExxonMobil's discharges effects on the temperature regime of the river are minimal.

We are doing modeling that has shown that. So there is really no -- no problem directly with the Cold Shock Provision other than the fact that it is just an extra requirement that doesn't serve any useful purpose in our mind.

MS. DIERS: That's all we have. Thank you.

MS. TIPSORD: We'll move to the environmental groups.

MR. ETTINGER: Let's just talk about cold shock since we're there now. What is your understanding of cold shock? What is it?

MR. TISCHLER: The cold shock concept goes back to some of the original EPA water quality criteria documents. I believe it goes back to what they call the Green Book, which was in the late '60s. The idea was when you have a large thermal discharger in very cold water like would occur on one of the Great Lakes during the winter the fish could tend to congregate in the warmer plume because obviously they're cold

blooded species and they would have prefer to have temperature up so they're not essentially in stasis. What would happen is if the power plant or something else, another major source of heat would just shutdown suddenly, the rate of change of temperature would be such that it would cause cold shock and potentially result in a fish kill.

MR. ETTINGER: How much -- to what degree is Exxon capable of heating the water around its discharge in the winter?

MR. TISCHLER: Not very much. The modeling work that has been done which is basically a requirement of the existing permit which will be submitted sometime this year indicates that about 1,500 feet downstream from the discharger of the I-55 bridge it could have an affect on temperature at the delta above existing of about 4/10th's of a degree Fahrenheit.

MR. ETTINGER: That's interesting at the I-55 bridge and we'll get to that, but what I'm concerned about is these poor, little fish that are swimming into the immediate discharge point. In that discharge point, wherever the mixing zone would be, how much warmer would that

be than the water outside of the mixing zone?

MR. TISCHLER: I don't -- I'm not -- the mixing zone -- of course, there's the allowable mixing zone the size that the Illinois rules allow. But when you say the mixing zone, I mean, there is a grading of temperature. I mean, the temperature goes from the temperature that is in the discharge pipe which may be 10 or 20 degrees Fahrenheit above the ambient and it rapidly mixes to where it is a degree or two and then it continues to decline as it moves downstream.

MR. ETTINGER: Okay. I think we're getting there. Okay. I'm assuming the fish aren't going to swim into your pipe, right?

MR. TISCHLER: That would be difficult.

MR. ETTINGER: That would be difficult. So now the question is I assume, tell me if I'm wrong, that there is some area immediately below your pipe which is warmer than the rest of the river because it is warmed by the heated water coming into your pipe, is that correct?

MR. TISCHLER: That's correct.

MR. ETTINGER: My question is under winter conditions, how much warmer could that area be below the pipe than the rest of the river?

MR. TISCHLER: You know, basically I'd have to look at the modeling results, but I don't know the exact number. It dissipates rather quickly because it mixes quickly in the river. It would be a small area until it gets down -- like I said, 1,500 feet is the number I do remember. It's like 4/10th's of a degree Fahrenheit or something like that.

MR. ETTINGER: And does -- is the refinery subject to shutting off quickly? Does it have that situation where it might shutoff quickly and quit discharging for a while?

MR. TISCHLER: Not really. It's why I stated a moment ago when the IEPA -- Ms. Diers asked me the question would we have directly a problem with the cold shock provision I said "I don't believe we would."

MR. ETTINGER: Okay. I'm going to go through my questions now. I don't think I missed anything -- well, I think I came in during

your speech. So I should not be repeating questions earlier.

On page three of your testimony, you state that ExxonMobil discharges only 1,600 feet from the waters currently designated as General Use in the Lower Dresden Island Pool. Are there any significant tributaries or other sources of dilution between the ExxonMobil discharge and the beginning of the General Use waters of the I-55 bridge?

MR. TISCHLER: No, there are not.

MR. ETTINGER: To your knowledge, do the General Use waters at the I-55 bridge violate Illinois water quality standards for temperature chloride or copper?

MR. TISCHLER: I do not believe they're designated as impaired waters. So the answer would be, no, as far as I know they don't violate the standards.

MR. ETTINGER: So nothing happens between your discharge point and the I-55 bridge in terms of dilution?

MR. TISCHLER: No, that's not true. It started diluting the moment the discharge hits

the river.

MR. ETTINGER: Correct.

MR. TISCHLER: So 1,600 feet of the dilution is not insubstantial with river -- upstream river water.

MR. ETTINGER: So it's being diluted by the upstream river water, but there is no water -- there is no non-Des Plaines water that is coming in there now?

MR. TISCHLER: That is correct except during storm water events when there are some storm water discharges.

MR. ETTINGER: You have storm water discharges there?

MR. TISCHLER: The refinery has storm water discharges.

MR. ETTINGER: On page three, you state that any changes to the existing designated use and applicable water quality criteria could have technical and economic impacts on refinery operations. In what ways do you believe ExxonMobil is currently benefitting from the existing use designations?

MR. TISCHLER: I believe in my

responses to IEPA's question I indicated our concern is with the uncertainty and how the existing standards may change and I think I stated, hopefully very clearly, that our concern would be if limits were set in the UDIP that resulted in immediately being declared an impaired water where we would no longer have allowable mixing zones for things such as temperature and chlorides it could be very detrimental to the refinery operations unless we were able to receive some sort of regulatory relief. The cost would be -- would be extremely large if we had to meet end of pipe, for example, the chloride standard or the temperature standard.

MR. ETTINGER: Okay. Now, I'm trying to make clear. You know what -- you know the Clean Water Act pretty well and the principles. I'm just trying to make clear what is catching you. It's the mixing -- it is the no mixing zone and the impaired water rule, is that correct?

MR. TISCHLER: Yes, that is correct.

MR. ETTINGER: You're not concerned about the principle that you can't cause or

contribute to a violation of downstream water quality standards?

MR. TISCHLER: No. I mean, that's a given. That is part of the statute. That is part of the regulations.

MR. ETTINGER: Right. And so you're not concerned that anything that you're doing now is causing or contributing to a violation of the water quality standards at the I-55 bridge?

MR. TISCHLER: Well, no, we meet the General Use standards downstream of the I-55 bridge with the allowable dilution that is authorized under IEPA rules, but, you know, when you ask about cause or contribute, obviously it's the interpretation. If we add heat to a waterbody that is already heated, I mean, some people are going to take the position that is contributing even if our contribution is immeasurable.

MR. ETTINGER: I probably would, but we'll move on to chloride. If -- as I understand it, you're concerned that the chloride standard will be violated or will become applicable and thereby violated above the I-55 bridge. Is the chloride standard now being violated below the

I-55 bridge?

MR. TISCHLER: I'm not aware of any data that indicates it is. Clearly, it probably could be if you have high chlorides during seasonal periods above the bridge, but it's not an impaired water for chlorides to the best of my knowledge.

MR. ETTINGER: So that's my confusion. What is happening between your discharge and 1,600 feet lower that causes you to be concerned that you would be causing or contributing -- that you'd be concerned you'd lose your mixing zone 1,600 feet above and you're not causing or contributing at the I-55 bridge?

MR. TISCHLER: Well, you make -- I mean, your point is well taken. The fact of the matter is we would have a problem if we determined that below the I-55 bridge was impaired for chloride. That would be the same problem.

MR. ETTINGER: Okay. My question four is the point of your testimony regarding "Criteria for Use Subcategories." Simply that. Is it permissible for Illinois to establish a separate designation and criteria for the UDIP as

it now proposes to do?

MR. TISCHLER: Yes.

MR. ETTINGER: Okay. I already touched on this, but I'll ask the general question five and I'll let you reflect to the whole thing. I'm going to read the whole question even though it's a series of questions.

You state at page 8 of your testimony that "US EPA's interpretation of the discretion allowed to states in the development of numeric criteria are particularly relevant to the future UDIP criteria for temperature, chlorides, dissolved oxygen and potentially copper." Is it relevant to ExxonMobil? Is water quality as to any of those parameters appreciably worse at the point of ExxonMobil's discharge than it is 1,600 feet downstream at the I-55 Bridge? What data does ExxonMobil have regarding dissolved oxygen levels at its point of discharge? I'll stop there.

MR. TISCHLER: I mean, the direct answer is we really don't know because the waterbody has not been designated impaired and I don't believe there has been sufficient water

quality data collected by IEPA to make a determination. So I really can't answer that question directly in terms of -- but I already testified there is no additional dilution water that comes in.

MR. ETTINGER: All right. So if IEPA would determine that the copper or chloride or the temperature standards were being violated at the I-55 bridge, you'd have all the problems here without regard to the mixing zone rule?

MR. TISCHLER: We'd still have -- it is still a mixing zone rule problem and it would still be the predominant sources by far are upstream and our contribution would be in compliance with the standards were it not for the fact that we had the upstream sources.

MR. ETTINGER: Then we have a different issue here, though. What data does ExxonMobil have regarding dissolved oxygen at the point of discharge?

MR. TISCHLER: We don't collect any ambient dissolved oxygen data in the river. We operate the biological treatment plant at, you know, levels of oxygen that are appropriate for

them to operate, but that is only a small portion of the total effluent. It's a fraction of the total effluent. So we don't really measure DO in discharge.

MR. ETTINGER: So you don't know what the DO concentration is of your discharge water?

MR. TISCHLER: At the point where it enters the river, no.

MR. ETTINGER: Does ExxonMobil discharge BOD or phosphorous?

MR. TISCHLER: It discharges both.

MR. ETTINGER: Does ExxonMobil have a mixing zone for ammonia?

MR. TISCHLER: No, we meet the ammonia criteria at the end of the pipe for the discharge.

MR. ETTINGER: I'm going to skip eight. I believe we've gone over that enough. At page 11 of your testimony, you suggest that as part of the IPCB proceedings it could take the effects of Chicago deicing activities in the Chicago area into account. Just how would you want the Board to take deicing activities into

account?

MR. TISCHLER: I think I stated that a few minutes ago in response to the IEPA's questions. I would request that the Board consider setting either seasonal chloride standards or in the alternative an annual chloride standard which would address the question of the periodic spiking of chlorides in the river due to the deicing activities. And then in concert with that continue to pursue the activities to reduce the use of salt on highways and streets and parking lots and open areas. I see that as a long-term problem. We're not trying to offer up that that is not something that should be addressed, but rather it should be addressed through the standard making process by not adopting achievable standards at this time, but my improving over time.

MR. ETTINGER: You talked about seasonal standards before and I think we're going to get there again. Are you aware of data that shows aquatic life is less sensitive to chloride in some part of the season or some part of the year than others?

MR. TISCHLER: Yes. That's generally my understanding, and, again, I'm not an aquatic biologist, but my review of the chloride data in some of the literature suggested that chloride concentrations are less important during the periods of the year when the most sensitive life stages are present which is like during reproductive periods and rapid growth periods.

MR. ETTINGER: I'm not sure I understood that. You said they are less sensitive or more sensitive when early life stages --

MR. TISCHLER: I should have said more sensitive. The more sensitive species -- the more sensitive life stages are -- the sensitive life stages are more susceptible to the concentration of things like chlorides and these life stages are typically during reproduction and growth.

MR. ETTINGER: Okay. So are life stages -- sensitive life stages are around generally, what, February to June? We've had a lot of testimony on that. Is that what you're thinking?

MR. TISCHLER: February sounds a

little early, but, you know, I suppose it's possible. I think generally my recollection is that it is late March through the summer.

MR. ETTINGER: So we'd be more concerned about chloride in March than we would in January because of the early life stages, is that correct?

MR. TISCHLER: Yes.

MR. ETTINGER: And then as we got further down into the season it would be more of a problem?

MR. TISCHLER: I'm not testifying as to exactly where the cutoff should be. I'll make that clear.

MR. ETTINGER: I'm not asking you to say anything that you don't know. There's been suggestions that there should be a seasonal standard in the way -- there was a lot of testimony before this Board regarding early life stages with regard to dissolved oxygen and I was trying to figure out whether that was the concept you were alluding to?

MR. TISCHLER: That was the concept I was alluding to, but, again, I haven't done

research in that area relating to information that I've seen from the literature.

MS. TIPSORD: Mr. Fort?

MR. FORT: Madame Hearing Officer, a lot of generalities here by people that are not tying it into particular evidence. Can I ask a follow-up question on this concept?

MS. TIPSORD: Absolutely.

MR. FORT: Mr. Tischler, when you're talking about sensitivity in early life stages, you're not talking about when you have extreme cold conditions and certain species become dormant?

MR. TISCHLER: No, I'm not -- no, that was not what I was referring to.

MR. FORT: In fact, it's completely the opposite?

MR. TISCHLER: It's when they're most active.

MR. FORT: Most active. Not when they're in a dormant stage such as cold and in the wintertime here in the Chicago area?

MR. TISCHLER: Correct.

MR. FORT: We'll have more testimony

on this obviously later.

MR. ETTINGER: Let me just get back. I don't know anything about chloride and toxicity as I've already demonstrated, but what I want to ask about is, for example, on ammonia there is a chemical of -- a chemical process such as ammonia is found to be more toxic when temperatures get warmer because of the ratio of un-ionized to ionized ammonia. There is nothing like that going on with chloride or is there?

MR. TISCHLER: I'm not aware. That is beyond my expertise in terms of evaluating aquatic life use -- rather the criteria.

MR. ETTINGER: Okay. Do you believe that a showing has been made in the record that chloride pollution caused by human cause conditions cannot be remedied?

MR. TISCHLER: I think as I say in my pre-filed testimony and I believe as I responded to the questions by EPA while I believe that there are approaches that will improve things I think it is going to be very long-term actions that from a practical standpoint cannot be remedied certainly during this next triennial

review period nor foreseeably -- for the foreseeable future in my opinion.

MR. ETTINGER: I hate to disillusion you, but when do you think Illinois did its last reconsideration of the water quality standards applicable to this waterbody?

MR. TISCHLER: I don't wish to cast dispersions on anybody over the triennial review process because there are very few states that actually impact the triennial reviews if that's the point you're making.

MR. ETTINGER: That is the point I'm making. So when you say we should wait for the next triennial review, do you have some idea when you think that might be?

MR. TISCHLER: Well, I think as I stated a moment ago with respect to chlorides I don't foresee that you're going to be able to introduce alternatives. There is none that I see on the horizon that are going to have any really significant huge effects for five, ten years or more.

MR. ETTINGER: So a five-year variance would be about right?

MR. TISCHLER: Extendable.

MR. ETTINGER: Have you studied whether the City of Chicago or other entities upstream of the ExxonMobil refinery have adopted best management practices to minimize the amount of chloride necessary to keep streets safe in the winter?

MR. TISCHLER: My understanding is that, and, again, I'm responsive to IEPA's questions, that, yes, there are efforts being made to reduce the use of chlorides -- sodium chloride.

MR. ETTINGER: I'm going to skip down to 11. Have you studied the work of David Soucek regarding chloride toxicity?

MR. TISCHLER: I'm aware of the work, but study would be too strong of a statement.

MR. ETTINGER: Are you aware of whether US EPA is considering new criteria for chloride?

MR. TISCHLER: I know there's been a lot of discussion whether they're really considering criteria and what kind of studies they've done to support revised criteria I'm not

sure of. I will make a point that EPA's criteria whether they're national or regional are just that. They are not what the state adopts the standards if the state can deviate from those criteria as appropriate to the receiving waterbody and the aquatic life conditions they're in.

MR. ETTINGER: Has there been any research done to your knowledge as to what species could live in the Lower Des Plaines -- drop the question. It's too convoluted already. We'll go on.

MR. READ: I have a follow up while we're still on chloride. When you mentioned the five to ten-year timeframe, would that be to make progress or would that be a final resolution of the program?

MR. TISCHLER: It would be to make progress I think as I've stated already. I know of no alternatives certainly probably not in my lifetime, although I'm fairly old, I don't see a complete substitution that would reduce the sodium chloride use to the extent that you wouldn't have issues during periods when you apply it.

MR. ETTINGER: Well, to meet what

standard? How far off are you now from meeting a standard that you think might be more protective?

MR. TISCHLER: I think as I stated a moment ago one of the problems that I see is by interpreting a standard that essentially sets a chloride limit at any place at any time when you have a phenomena, a use of salt for deicing that causes sporadic, but not long-term changes in chloride then you have -- then the problem is with the standard, per se, and how it is applied. That's why I mentioned one approach that other states have used is an annual average because it averages out these occasional spikes and some states at least believe that that is a better representation of what the appropriate level of control is.

The other option is to indeed have language in the -- to have a standard, for example, seasonal that allows for the spikes. There are other options the Board could consider. The Board could consider -- they could consider language in the standard that essentially would allow the standard to be exceeded during periods when there was salt applied. That's a possibility

in the form of somewhat of an exception.

So there are opportunities that the Board has to look at and I think that EPA's suggestion in the preamble to that water quality standard clarifications rule they have considerable discretion is the term EPA uses on setting limits. They have some options. You don't have to set the chloride standard that is 1,000 all the time, but that would allow for those kind of peaks that would occur in these salting operation -- deicing operations rather.

MR. ETTINGER: Well, in terms of the way you normally set standards to protect aquatic life, wouldn't any variance of the standards go back to what you spoke of earlier regarding the sensitivity of species?

MR. TISCHLER: Only to some extent and I think you're probably familiar with some of the language in terms of frequency of exceedances and the amounts of exceedances that are in, for example, the Technical Support Doctrine For Water Quality-Based Toxics Control. I mean, EPA presumes in there based on actual data that you can exceed the toxic standards once every three

years without causing significant adverse effects on the aquatic life that they're designed to protect.

So, again, there is flexibility. It doesn't mean because you have a chloride number that goes up to 900 PPM for three days or five days or even a week or two that that is going to cause long-term disruption of the aquatic environment -- aquatic life. And so the Board does have discretion to write standards that would address such a thing.

MR. ETTINGER: My question is actually more general. As I heard your comments, you were focusing on a rule that would focus on when entities were putting salt on highways. I'm asking is -- when setting allowances and water quality standards for various seasons, don't you normally focus on what is tolerable to aquatic life rather than what is tolerable to people who want to put salt on roads?

MR. TISCHLER: Certainly in the development of aquatic life standards you need to look at what is tolerable to the aquatic life if you provide for these kinds of conditions or

unusual exemptions as to whether, indeed, it would have an adverse impact on aquatic populations.

MR. ETTINGER: I should start carrying a clock that isn't a cellphone.

MS. TIPSORD: 10:15.

MR. ETTINGER: How long do you want to go? I have quite a bit more here.

MS. TIPSORD: That's okay. Keep going.

MR. ETTINGER: Is there any contradiction between the IPCB finding that a use is attainable even if it is not currently being attained?

MR. TISCHLER: Certainly the Board could find the use attainable sometime in the future if it is not being attained now. That is certainly allowable under the rules.

MR. ETTINGER: Okay. Do the proposed US EPA regulations regarding variances recognize that a waterbody could satisfy one of the 131.10(g) factors for the period of a proposed variance even if the use is attainable in the future?

MR. TISCHLER: Yes.

MR. ETTINGER: Had you read the Board's opinion and order of November 21, 2013, might that opinion be properly interpreted as to the Upper Dresden Island Pool as stating that although the water is not currently obtaining all of the fishable, swimable uses the Board has determined that such uses are attainable in the future?

MR. TISCHLER: I believe what the Board -- my understanding and reading of that is the Board's current proposal is that the aquatic life uses -- it addresses the question of what currently is adaptive to the waterbody with the potential in the future that a higher use could be attainable.

MR. ETTINGER: With regard to your testimony regarding variances, could the Board's opinion be interpreted as finding that some of the 131.10(g) factors may be present for several years in the future, but in the long run the Upper Dresden Island Pool should be able to attain fishable, swimable uses?

MR. TISCHLER: Yes, I believe that's true.

MR. ETTINGER: I'm going to skip 15 and 16 in light of our discussion. I think I've done 17.

I asked this sort of before, but you understand the process. We all pre-file questions and we don't know what anybody else is filing at the time. So that makes for some awkward moments down the road.

With regard to 18, with regard to multi-discharger variances, you ask at page 21 that the Board allow -- adopt regulations that allow multi-discharger waterbody water quality variances for constituents including temperature, mercury and chloride for the Upper Dresden Island Pool. Do you know of any obstacles in the current regulations to such variances?

MR. TISCHLER: I thought I already answered that question, but my answer is that my reading of the regulations is that individual dischargers must apply for variances to the Board and make individual cases and that there is no sort of streamline mechanism for when you have all the dischargers on a waterbody to have the streamline approach to variance and have to not

make individual appeals to the Board for a variance -- petitions rather.

MR. ETTINGER: Well, is there any reason why ExxonMobil couldn't talk to those other entities that might have a problem and file a joint petition to the Board?

MR. TISCHLER: I believe that the problem would be is that the circumstances that would justify the variances might differ between the different entities and so, you know, again, I don't read anything in the rules the way I read the rules, and, again, that's me and I'm not an attorney, but the way I read the rules is that each discharger must make the showing of hardship and inability to meet the standard on a case by case basis. So applying as a -- with someone else that wouldn't necessarily be acceptable to the Board in terms of making a determination on whether a variance is due to an individual discharger.

MR. ETTINGER: Do you know if ExxonMobil has ever talked to that upstream thermal discharger regarding variances?

MR. TISCHLER: Yes, there was

basically one conference call that I'm aware of that I was indeed on.

MR. ETTINGER: Nineteen. Have you study the release data for mercury for the ExxonMobil Joliet refinery?

MR. TISCHLER: I assume when you mean the release data you're talking --

MR. ETTINGER: For mercury. I'm sorry.

MR. TISCHLER: Are you talking about for the federal toxic release inventory data?

MR. ETTINGER: Yes.

MR. TISCHLER: Studied is not the proper term, but, yes, I am familiar with it.

MR. ETTINGER: Can you explain the reasons for the apparent recent increase in mercury releases?

MR. TISCHLER: Are you taking about the water or air?

MR. ETTINGER: I'm trying to remember where I saw it. It must have been in your materials.

MR. TISCHLER: Let me talk about the effluent releases. Historically until ExxonMobil

started in this current permit set of conditions using the low level mercury analytical method they had always reported not to protect values using the standard analytical method for mercury and so they had reported I think mostly -- I think they reported zeros for the discharge of mercury.

In the last several years, they have been collecting effluent mercury data using low level mercury numbers and they come up with about one pound particularly. So they're rapidly going to increase -- it looks like an increase on paper, but it really is because the analytical method was insufficiently sensitive.

With respect to air releases, those calculations are done using EPA emission factors which sometimes change in the way you apply a change so you see the numbers change, but they don't -- they haven't changed much. There were a couple of years that were low, but that was probably an artifact of the factors that were being used.

MR. ETTINGER: I think I understood that.

MR. TISCHLER: We don't believe in

the past decade that there has been any change in terms of the increase in mercury.

MR. ETTINGER: The apparent change relates to increased sensitivity of the detection methods in your belief --

MR. TISCHLER: Correct. For water.

MR. ETTINGER: Yes, for water. You're using the clean labs method in 136?

MR. TISCHLER: Yes.

MR. ETTINGER: Let's do 20. Page 21 you mention TMDL's as a possible regulatory mechanism. Why is a variance better than a TMDL?

MR. TISCHLER: The reason a variance is better than a TMDL for regulatory relief is that a TMDL actually offers no regulatory relief to anyone whose state calculates during permitting has a reasonable potential to cause or contribute to an exceedance of water quality standards.

So let's just say the states calculation indicated that you had reasonable potential to cause or contribute to a temperature standard. Even if there is a TMDL going on that will sometime in the future be completed and allocate temperature, the states position on this

and their interpretation of the EPA regulations and their regulations is that you get no mixing zone and, therefore, you have to meet the water quality standard at the end of the pipe immediately next permit or potentially with a compliance schedule of a certain number of years.

That may, in fact, be impractical. So the TMDL is not a substitute for a variance during that period. Some states use a different approach and actually permit what is called existing effluent quality and hold you where you are until the TMDL is completed, but that's apparently not what Illinois EPA's interpretation of 40 CFR 122.44 is.

MR. ETTINGER: I wish I agreed with you on Illinois' interpretations, but this brings us to my next question.

Is there any reason why Illinois can't both allow a temporary variance and prepare a TMDL that will be implemented and eventually bring the waterbody into compliance with criteria?

MR. TISCHLER: No, there is no reason they can't do that, but there has to be recognition that the variance period could be

potentially long because, in fact, TMDL's historically take a long time to complete and indeed I think that the impairments on the Des Plaines River and UDIP are actually given low priority in IEPA's TMDL implementation procedure. So it could be many years before the TMDL is completed.

MR. ETTINGER: Twenty-one. Regarding chloride you state at page 22 that under current US EPA policy if a waterbody designated as impaired for a constituent, all renewed NPDES permits should be based upon an improved TMDL that will assure that the impairment be removed. I'm going to break down my question first and say what is your understanding of that policy? Where is that stated?

MR. TISCHLER: I believe it is a TMDL guidance. It's also in, I believe, essentially section, what is it, 304 whatever the TMDL provisions are in the Clean Water Act. If a body of water is impaired, there shall be a development of the total maximum daily load and that would be the basis for the water quality effluent limits for all dischargers.

MR. ETTINGER: Is there some reason that this should be done for chloride with regard to the Upper Dresden Island Pool?

MR. TISCHLER: No. As I stated before, certainly a TMDL potentially could -- I mean, at some point a TMDL for chloride probably is going to be developed and has to be developed. The problem with a TMDL process is it takes many, many years. I've just been involved in a couple that were relatively quick because they're higher priority -- they were complicated and they still took six or seven years to complete. And that's to complete the TMDL and get it approved by EPA, not to implement the TMDL which is implemented over multiple years.

MR. ETTINGER: Which ones are you involved in?

MR. TISCHLER: The most recent one was the Los Angeles Long Beach Harbor TMDL for toxic pollutants, which actually had a 20-year implementation period.

MR. ETTINGER: Who paid for that?

MR. TISCHLER: US EPA Region 9. Another example of the adoption of the TMDL was

for the Houston Ship Channel. That TMDL has taken almost ten years to identify the sources and do all the sampling that is required to try to control it, but they still have not developed the final TMDL and implementation plan because the sources are all non-point. So the TMDL is appropriate, but it's not really a solution that will work for dischargers in the short term if they're denied mixing zones or a variance.

MR. ETTINGER: Let's get back to mercury then. Regarding mercury -- I'm on 22. I'm actually back on my program here. Regarding mercury, are you aware if the Illinois River and other waters downstream of the Upper Dresden Island Pool are impaired by mercury?

MR. TISCHLER: I believe that they aren't indicated as impaired by mercury because of fish tissue concentrations most of which were sampled some time ago, but I think they're on the 303(d) list for that.

MR. ETTINGER: Have any such mercury impairments affected ExxonMobil permits?

MR. TISCHLER: Not today.

MR. ETTINGER: Does ExxonMobil

currently meet the mercury criteria at the end of the pipe?

MR. TISCHLER: Based on the sampling that we've been doing with the low level methods we do meet the criteria at the end of pipe which is expressed as an average. We meet it quite easily.

MR. ETTINGER: Then you don't have a problem as to mercury? ExxonMobil doesn't have a problem as to mercury. You're meeting the water quality standard at the end of the pipe.

MR. TISCHLER: We certainly hope we don't.

MR. ETTINGER: So you're trying to get the Board to change a rule that you're not violating. Okay.

MR. TISCHLER: I'm sorry?

MR. ETTINGER: That's okay. On pages 27 and 28 of your testimony, you --

MS. TIPSORD: Excuse me, Albert.

MR. FORT: A clarification on the question. Which mercury standard are you talking -- asking the question of and which mercury standard are you thinking about in

answering the questions? We've got the acute, the chronic and the human health standard.

MR. ETTINGER: I'm sorry. I did presume you meant the most sensitive human health standard.

MR. TISCHLER: I did mean the General Use standard of 12 ng/L. Thank you for pointing that out.

MR. ETTINGER: Since Mr. Fort was so kind as to bring that up, do refineries vary in their ability to meet that standard?

MR. TISCHLER: Yes. Because typically there is -- there is some mercury in the crude oil that they use. So that crude oil slate can have some dependency on that, but for the most part refinery treatment systems remove mercury fairly efficiently because of absorption onto solids and other materials in the treatment process.

MR. ETTINGER: Other than being unusually smart, is there some reason why ExxonMobil would do a better job with mercury than oil companies?

MR. TISCHLER: It's really hard to

answer that. I mean, it's the performance that we measure is what the performance is that we've measured and, remember, we've only been actually analyzing it for a period of a year and a half, but the results that I gave you are the results that we have today.

MR. ETTINGER: On pages 27 to 28 of your testimony, you discuss provisional variances that have been attained by Midwest Generation from temperature standards. You state that the variances do not address other downstream Upper Dresden Island Pool or Lower Dresden Island Pool dischargers. Does that mean that past ExxonMobil discharges during the period of provisional variances were illegal?

MR. TISCHLER: No, we meet our thermal limits of temperature conditions in the permit. So we're complying with the permit as far as I know. There has never been any contention that our discharges were illegal.

MR. ETTINGER: Okay. But they have a provisional variance at the time and you are discharging as you generally discharge, why isn't there some recognition of your permit that a

waterbody is not meeting water quality standards?

MR. TISCHLER: I think IEPA's fact sheet for the last permit in that analysis of the discharge from the ExxonMobil refinery suggests that they didn't believe the refinery -- the thermal dischargers caused or contributed to any exceedances of the water quality standard as I interpreted it. And so I can't answer your question any better than that.

MR. ETTINGER: Let's say someone were to object to your next permit and say you can't have a mixing zone for temperature because there have been these provisional variances which throw the Upper Dresden Island Pool out of compliance with the existing temperature standards at the I-55 bridge, would ExxonMobil have a response to that argument?

MR. TISCHLER: Our response to that argument would basically be what I alluded to much earlier in this hearing, which is we would have a problem and have to have some sort of variance or some form of regulatory relief because, you know, our discharge would not be the cause of the temperature standard being exceeded. It, indeed,

would have very little effect on the receiving water temperature, but we would be essentially caught in the trap of not being able to get an allowable mixing zone temperature and put in a position where it would be virtually impossible to operate.

MR. ETTINGER: So if that upstream thermal discharger goes on acting the way it has been acting you might need to do something by way of a variance in your next permit?

MR. TISCHLER: Again, depending on how the Board acts with respect to how they set temperature standards, yes.

MR. READ: I have a follow-up question and this is about the provisional variances. Is ExxonMobil made aware in realtime of when a provisional variance is being issued --

MR. TISCHLER: No.

MR. READ: -- or is the facility contacted?

MR. TISCHLER: No, we don't have any information on provisional variances until after the Board has authorized them. And even then we don't know what the temperature of the receiving

water is including whether the standard is -- whatever the standard is that the variance is intended to address.

MR. READ: Okay. One more follow up. Does ExxonMobil measure the temperature at the bridge, the I-55 bridge?

MR. TISCHLER: No, they do not.

MR. RAO: Can I ask a follow-up question? In your testimony, you mentioned the use of variance by US EPA as a means of ensuring compliance during the status where the waterbody is not achieving standards. Are you aware of any other provisions under the Board rules that maybe use that -- that it is consistent with the variance in the Clean Water Act like an adjusted standard?

MR. TISCHLER: Yeah, I am aware of the Board's adjusted standards that they may issue that addresses this issue. I'm familiar with it in general. Not real specifically.

MR. RAO: With those adjustment standards, the burden is different than the variance, the state variance?

MR. TISCHLER: That's my

understanding and I have looked at -- I mean, ExxonMobil I think has an adjusted standard for total dissolved solids if I'm not correct -- that is a site specific standard non-adjusted. Okay. The terminology I'm not familiar with.

MR. RAO: Are you aware of any other Board rules where the Board sets the burden of proof for an adjusted standard in their rule?

MR. TISCHLER: I haven't really looked at the adjusted standard rules to be able to answer your question.

MR. RAO: Thank you.

MR. ETTINGER: Going back to temperature. We're jumping around here. My question 25. Based on Exhibit E, Figure 3, you claim that the IEPA proposal would apply temperature standards in the Upper Dresden Island Pool that are substantially more restrictive than General Use standards downstream of I-55. Are you aware of the temperature criteria applicable to Midwest Generation at the I-55 bridge?

MR. TISCHLER: I am aware of it. I couldn't cite to you item by item, but I'm aware that they have a specific temperature standard

they have to meet at the I-55 bridge.

MR. ETTINGER: Have you considered what temperatures would be allowable in General Use waters under the provision requiring that the maximum temperature rise above natural be kept below 5 degrees Fahrenheit?

MR. TISCHLER: You start with the question what is natural? I don't know what -- I don't really know how to answer that question in the case of ExxonMobil's discharge because the temperature when its discharge enters the river is certainly not natural. I know that the five degree Fahrenheit allowable increase above, I'll call it background, is determined by IEPA at the edge of the authorized mixing zone whatever they authorize either the allowable mixing zone approach or the formally adopted mixing zone.

MR. ETTINGER: Have you considered the other restrictions on temperatures and General Use waters provided by 35 Ill. Adm. Code 302.211?

MR. TISCHLER: Yes, I did look at all of those.

MR. ETTINGER: Is it your understanding that the five degree above natural

in those other standards relate solely to what is allowable within the mixing zone?

MR. TISCHLER: If I recall, yes, they do. Well, some of them relate to what is allowed in the mixing zone, at the edge of the mixing zone.

MR. ETTINGER: Do you think that Midwest Generation has a mixing zone from the Joliet plant down to the I-55 bridge?

MR. TISCHLER: I don't know. I didn't look at that question specifically so I can't give you an answer.

MR. ETTINGER: On page 31 of your testimony, you state that the IEPA proposal is supposed to represent the ambient river temperatures in the absence of point source thermal loading. Is it your understanding that this is true of the IEPA proposal for the whole year or only for part of the year?

MR. TISCHLER: It was for part of the year and I guess I should clarify a little further. They did, in fact, of course include certain portions of the year temperature increases in the seasonal numbers for -- associated with the

Metropolitan Water Resource District.

MR. ETTINGER: All right. So they use the MWRD discharge temperatures in the winter, is that correct?

MR. TISCHLER: I believe that's correct.

MR. ETTINGER: Do you believe that the winter temperatures in the Upper Dresden Island Pool are accurately reflected by the temperatures of the discharges in the Metropolitan Water Reclamation District sewage treatment plant?

MR. TISCHLER: The winter temperatures in the UDIP in the absence of thermal discharges may be reasonably estimated using the method that IEPA used considering the MWRD discharges.

MR. ETTINGER: Is there any cooling that occurs between Stickney and the ExxonMobil plant?

MR. TISCHLER: I would assume in the winter there is some cooling.

MR. ETTINGER: What is your understanding about the temperature of sewage treatment plant discharge relative to ambient

temperatures?

MR. TISCHLER: In the winter months, it will generally be higher than what the natural receiving water temperatures would be. That's not necessarily so over summer.

MR. ETTINGER: Summer it's normally cooler, isn't it?

MR. TISCHLER: It may be. It may not be. It depends on how hot it is for how long outside.

MR. ETTINGER: Let's say they put the water out at Stickney at a temperature considerably above the ambient temperature in January, isn't it likely that it will cool by the time it reaches the ExxonMobil refinery?

MR. TISCHLER: It will cool somewhat, but the degree of cooling is highly a function of the depth of the water, the surface area, the outside temperature, cool to some extent. If there is no other influences, yes, it would cool to some extent in the winter.

MR. ETTINGER: Does ExxonMobil have data regarding non-summer temperatures at its discharge point that cause it to fear that there

may be violations of the temperature standards in the vicinity of its plant if the IEPA proposal is adopted?

MR. TISCHLER: Not that I'm aware of.

MR. ETTINGER: Is it your understanding that the Yoder report you discuss at page 37 of your testimony did not consider the fish species actually present in the Upper Dresden Island Pool?

MR. TISCHLER: It considered the fish species that were present plus an array of other species that were not currently present.

MR. ETTINGER: And what is your understanding of how he selected those additional species?

MR. TISCHLER: If I recall from the Yoder report, what he indicated is the species that he selected were based on what he believed could have successful population in an impounded waterbody.

MR. ETTINGER: Were those not species that already live in the Kankakee or the Upper Des Plaines River?

MR. TISCHLER: I don't recall whether he actually explicitly stated that.

MR. ETTINGER: Did he consider walleye?

MR. TISCHLER: I'm sorry?

MR. ETTINGER: Did he consider walleye?

MR. TISCHLER: I don't remember the species individually.

MR. ETTINGER: Well, were there any of the species that he considered that you would identify as not being representative species that could live in the waterbody?

MR. TISCHLER: If you recall, and I think you were here for my earlier testimony, my opinion is that presuming that a full range of aquatic species that can survive in any sort of impounded water quality like a typical lake that doesn't have the specific hydrographic characteristics of the UDIP or Lower Des Plaines River which is highly varied flows during storm water periods and constituted, you know, over 90 percent either urban runoff or effluent that you cannot make the presumption that all those species

that you can list under those conditions are going to be successful in the UDIP. That's my position.

MR. ETTINGER: How many species do you think he added that aren't there now?

MR. TISCHLER: I don't recall the exact numbers, but if I recall correctly there's like nine plus species that were actually identified and I think he used the number more like 26 in his calculation. That's my recollection. That may not be right exactly.

MR. ETTINGER: Do you think the Kankakee River is devoid of sewage treated water or the Upper Dresden -- the Upper Des Plaines River?

MR. TISCHLER: Devoid? No, of course there is virtually no waters in the US that are devoid of any major rivers, but there is not that many rivers that are 90 percent effluent urban runoff in the US.

MR. ETTINGER: Do you know what percentage urban runoff -- sorry. Not urban runoff. You're not saying that the Upper Dresden Island Pool is 90 percent runoff? You meant --

MR. TISCHLER: No, it depends on

whether there is runoff occurring. During the low flow periods, if I recall the numbers correctly, the 7Q10 approximately 90 percent of the 7Q10 represent dischargers. During wet weather periods when you have runoff from the urban areas, the urban areas constitute a significant portion of the watershed. So there are approximately during runoff wet weather periods -- urban runoff is going to constitute, you know, again, 75, 80, 90 percent. I don't know the exact number, but it's a significant amount.

MR. ETTINGER: Do you have any idea what the comparative numbers would be for the DuPage River or the Upper Des Plaines River or the Kankakee River?

MR. TISCHLER: No, I didn't look at that?

MS. TIPSORD: Ms. Diers?

MS. DIERS: Did the Yoder report look at historical data for fish species?

MR. TISCHLER: Not that I recall. I believe he referenced the data -- the information that was collected from the Use Attainability Study and the other study done on the UDIP, for

example. When you said look at it, you know, I can go back and look and verify this, but I believe at least he considered that data.

MS. TIPSORD: Just a point of clarification. The Yoder report you're referring to is the report that Mr. Yoder presented as part of this rulemaking, correct?

MR. TISCHLER: Yes, ma'am.

MS. TIPSORD: Ms. Glosser?

MS. GLOSSER: I have a question. On this issue of the fish in the Yoder report, I don't think you did it in your pre-filed testimony, but could you provide greater clarification in post-hearing comments as to which exact fish -- with what is the exact objection to the fish he uses and give me the list of fish that you think should have been considered?

MR. TISCHLER: Yes, I can do that.

MS. GLOSSER: Thank you.

MR. ETTINGER: I guess this follows with Dr. Glosser's comment of which of those fish do you think it would be okay to eliminate through heat discharges?

MR. TISCHLER: I beg to differ with

the characterization. It is not eliminate. This is determining what prospectively could populate the UDIP, for example, if the temperature was reduced. It's not a question of eliminating species that are there. It is what will repopulate and my position as I mentioned a moment ago is it's very unlikely in my opinion that the UDIP could basically be repopulated by a full range of species that might be in another impounded waterbody that did not, in fact, have the characteristics of the UDIP, both physical characteristics, i.e. navigation, hydro- -- the variation in flows and the high percentage of treated domestic effluent in urban runoff. What I'm saying is you should not be able to just assume that all those species are going to move and have successful populations once you adjust the temperature standard.

MR. ETTINGER: Let me go back. I want to ask about the Tischler method for setting water quality standards. The 95th percentile numbers back from the 9th, the US EPA report, that is based on testing a wide range of species of different genuses, is that correct?

MR. TISCHLER: That's correct.

MR. ETTINGER: And then we use based on that wide variation of data we set a toxicity level that will protect 95 percent of the species, is that correct?

MR. TISCHLER: Correct. Basically, yes.

MR. ETTINGER: As I understand the Tischler method, what we do instead is we find the specific species already present in that waterbody and then you protect 95 percent of those?

MR. TISCHLER: Basically, what I'm suggesting is that you are already protecting those. You look at your water quality standards and you look at the other factors and you determine what else is being protected, but remember what I'm advocating here is we used a measured improvement approach and you don't try to adopt standards based on a target that is not going to likely be achievable in the next triennial review. So, therefore, you make sure you protect the species that are there plus any that you feel like that you had a high probability that they would also be inhabited.

MR. ETTINGER: Okay. The general US EPA method of setting national toxicity criteria is not really relevant to what we're doing here, is it?

MR. TISCHLER: No. I mean, it's only relevant in the context that they don't use one hundred percent of the species or all of the most sensitive species, but let me add their very method is intended to be, by design, highly conservative and I'm sure you're familiar with the fact that let's just take toxic metal standards for things like aluminum.

They have, indeed, got methodologies for adjusting those standards to be protective to recognize the water quality in an actual waterbody that you're setting the standard on. For something like aluminum, for example, you get a water effects ratio, i.e., their standard is usually overprotected by a factor of four or more and, again, the same thing is going on when you're setting temperature standards. You want to be protective, but where is the level at which you're overprotective of what you're trying to have as the protected aquatic population.

MR. ETTINGER: Well, I just want to finish what I'm doing on this here. So let's say we're not using the US EPA broad method of looking at national criteria and we've instead identified particular fish. Now, you don't apparently agree with all of Yoder's choices, but let's say we identified a particular fish that we want to protect in that waterbody, you wouldn't then use some sort of 95 percent statistical method that would kick out some of those fish, would you?

MR. TISCHLER: No.

MR. ETTINGER: When we set acute water quality standards for toxics, you generally use something like the LC50 of your four most sensitive species, right, the lethal concentration of that toxin that kills 50 percent of them, is that correct?

MR. TISCHLER: Yes.

MR. ETTINGER: And then the number you set for the acute is 50 percent of that number, is that correct?

MR. TISCHLER: Correct, to adjust the LC50 to an LC1, if you like.

MR. ETTINGER: Right. Now, we can't

do anything comparable to that for temperature standards, can we?

MR. TISCHLER: No, they have to be developed differently.

MR. ETTINGER: That would be silly. We obviously are not going to have the temperature that we would find as the lethal temperature, is that correct?

MR. TISCHLER: Correct.

MR. ETTINGER: So really this whole toxicity method doesn't have much to do with the temperature standards, does it?

MR. TISCHLER: The point I was trying to make as I stated before is that you -- I was stating particularly in determining upstream water temperatures and the like is the use of a percentile is not a hundred percent, is typically used to make an adjustment when you make water quality standards so that you're not so overconservative that you result in the standard being violated most of the time and I think Yoder, in fact, points that out in the introduction of his report that there -- you have to make a balancing about between setting the standards low

enough to be protective in terms of high temperatures, but also not so low as to result in a condition where natural conditions or earth conditions that occur in the receiving water cause frequent violation of the standards because they're not necessarily meaningful in terms of the protection of the aquatic population.

MR. ETTINGER: Now, you'd agree that if we're trying to protect the species, adopting a standard that will kill 50 percent of it is not acceptable?

MR. TISCHLER: No, that's not acceptable.

MR. ETTINGER: So we'd have to make some allowance if we're using the equivalent of an LC50 for temperature, we'd have to make some allowance for the fact that we don't want to kill half of our representative species we're trying to protect, is that correct?

MR. TISCHLER: Yes.

MR. ETTINGER: So my final question because I'm going to skip back here. Are you asking -- is ExxonMobil asking the Board to reconsider and revise its current variance rules

before completing this UAA proceeding?

MR. TISCHLER: I think as I testified earlier what I'm requesting the Board to consider is either as part of the Subdocket D rule with some explicit relief mechanism if the standards are set at a point for certain constituents that would result in immediate permit designations, some sort of a variance procedure or in a parallel rulemaking and, again, I don't want to tell the Board what the approach is. Some sort of variance procedure or other regulatory relief mechanism that would allow dischargers that contribute potentially to an exceedance of a standard that are by far not the predominant cause of the standard and would indeed comply with the standard in the absence of upstream sources that some sort of provision needs to be made either in this docket or in this subdocket rather or in the other Illinois rules. That was sort of a long, drawn-out rule. Sorry.

MR. ETTINGER: I'm done.

MS. TIPSORD: With that, let's take a ten-minute break.

(Whereupon, a break was taken after which the following proceedings were had.)

MR. FORT: Mr. Tischler, I'm Jeff Fort from Dentons on behalf of Citgo Lemont Refinery. I have a couple of questions for you. I appreciate you coming all this way today and I appreciate your conversation with Mr. Ettinger. I felt like I was back in a college classroom or a law school classroom.

I have a few pre-filed questions to ask you. On page 17 of your pre-filed testimony, you state that US EPA has essentially vacated the existing Illinois variance rule, end quote. With except to that statement, do you have any basis for that statement other than as a comment on the action taken by US EPA with respect to the Citgo variance which you cite on page 11 and footnote 15?

MR. TISCHLER: The answer is no and that was probably a poor choice of words, Mr. Fort. I would agree with your comment that essentially they've made it much more difficult to get a variance than what had been previously

required in Illinois, but vacating was probably not the appropriate word to use.

MR. FORT: And with respect to that Citgo variance, do you know if US EPA in that action made any references in their memorandum to the uses of the Chicago Sanitary and Ship Canal or to any of the evidence developed before the Board in Docket C?

MR. TISCHLER: As I recall, yes, they did. I mean, I didn't look at the letter recently, but as I recall they referenced some of the 131.10(g) factors.

MR. FORT: I agree that they cited the factor, but I don't think they had any of the evidence that the Board developed in Docket C on the uses for the Ship Canal.

MR. TISCHLER: You mean the evidence? No, I agree.

MR. FORT: And with respect to the 131.10(g) factors, those are the use factors that are permitted as exceptions to the fishable swimable goal?

MR. TISCHLER: Yes, that is correct.

MR. FORT: In your view, if there is

a variance, you believe that those use factors are relevant to establishing a basis for a variance as well as whatever the interim conditions or goals are?

MR. TISCHLER: I have to say that, you know, EPA makes its own interpretation. I don't believe historically that's been the interpretation that you have to make a 131.10(g) showing in order to obtain a variance. Indeed, in other states as in Illinois in the past, variances were frequently issued and approved by EPA. That did not involve having to make a showing that one of the 131.10(g) factors applied.

MR. FORT: Thank you. With respect to question number two, for a body of water which is upstream sources of pollution that went from non-point or point sources which cause a water quality standard to be violated and for a discharger who uses that water in its processes before discharging pursuant to an NPDES permit, do you recommend that the Board approve any one or more of the following as an alternative to the existing rule, which provides that there is no mixing zone in the extent of an exceedance of a

water quality standard use of the BMP with respect to the pollutant of concern as a condition of the NPDES permit until a TMDL is adopted and allowing a mixing zone for that pollutant based on that BMP plan?

MR. TISCHLER: Yes. And I believe, Mr. Fort, when I referred to that other states use what is called existing effluent quality, that's exactly what they're doing.

MR. FORT: Okay. What about conditions imposed through variance procedures if those conditions in the variance procedures are part of the state water quality standards?

MR. TISCHLER: Yes, I think that's another approach I would agree with.

MR. FORT: Why could not the variance procedures be generic and merely cross referenced from the water quality standards?

MR. TISCHLER: Clearly, they could and I believe that's what states like Ohio and New York have done for their mercury variances.

MR. FORT: On page 24 of your -- I'm going to go to my number three. On page 24 of your testimony, you indicated that BMP's for

mercury control have been used by some states to address point source discharges. Can you expand on the type of BMP activities that one might include in such a BMP?

MR. TISCHLER: Yes. In general, those have been what you would call mercury minimization plans, which are then implemented by the discharger to do things such as identify sources of mercury like seals and instruments and plans that are placed to reduce use of mercury containing devices, handling of fluorescent light bulbs and basically identifying all the potential sources of mercury and doing -- having a plan to figure out how to make sure that they don't contribute to the waste water discharge.

MR. FORT: Thank you. I think you've answered the rest of the question.

MR. RAO: May I ask a follow up? In these BMP's that you talked about for mercury, do they qualify the amounts to offset what is being discharged by a plant?

MR. TISCHLER: No, they generally do not, at least the ones I'm familiar with which primarily are the ones in New York state, Ohio and

Indiana. They require the discharger as part of the plan to estimate it, but they don't set a required target. Now, they may, and indeed they do for both New York and Ohio, they do establish an effluent limit that is substantially above the water quality standard itself that somebody has to meet unless they get a special variance external to the general variance.

MR. RAO: Okay. And these BMP's are -- are these requirements written into the rules in those states?

MR. TISCHLER: Well, I mean, the BMP's are actually -- the rules describe -- they have a mercury minimization plan in the rulemaking.

MR. RAO: That's what I was --

MR. TISCHLER: Yeah, the rules, themselves, do describe that certain BMP's delineate it, but mainly it's the mercury minimization programs that is required.

MR. RAO: Would it be possible for you to provide us a citation to those?

MR. TISCHLER: Yes, we can.

MR. RAO: Thank you.

MR. FORT: Following up on that question. In terms of the regulatory language that is included in these other states like New York, how detailed are they? Are they more in general to, say, a mercury minimization plan where their guidance documents is developed by an implementing agency? How detailed is the regulatory language I guess is my question?

MR. TISCHLER: They're not particularly detailed and to give you the specifics I haven't looked at them reasonably enough to be able to give you a direct answer in this hearing.

MR. FORT: Okay. Thank you. On page 23 of your testimony, you cite in the footnote several EPA reports and the testimony of Marcia Willhite with respect to air deposition of mercury and its effect on the US watershed and fish tissue levels of mercury. Is this evidence applicable to the Chicago Sanitary and Ship Canal and other bodies of water which are tributary to the UDIP?

MR. TISCHLER: Yes. Basically, this testimony is applicable to all the waters in the

US because EPA studies and studies done for individual watershed have shown that mercury deposition is usually the principal, by far, source of the mercury that goes into the surface waters of these watersheds.

MR. FORT: The quantities that you calculate for mercury are reported for mercury and that testimony seems to be in order of magnitude or so greater what we're talking about in this proceeding for discharges.

MR. TISCHLER: That's generally true. I mean, let me just add. That's the reason that these variances are in place because, in fact, relying on the NPDES program of point sources to try to remedy these mercury impairments will have virtually no effect on the mercury impairment because the source of the mercury impairment is a non-point point source -- atmospheric deposition.

MR. FORT: Thank you. I'll skip over five. Number six. On page 24, you ask the Board to include a "multi-discharger/waterbody variance." Do you have any recommendations for processes or language for variances from state

water quality standards which could meet the proposed US EPA policy which you attach as Exhibit C to your testimony?

MR. TISCHLER: I believe that the Ohio, the New York and the Indiana variance procedures are all applicable. I wouldn't necessarily -- you know, you could pick and choose language and mix for the different variance procedures in those states, but they all address primarily the same issue and generically would be the same way and I think we just agreed the Board would be provided with copies of those.

MR. FORT: Thank you. One other follow-up question here. We've talked about variances and mixing zones and the like and you had a colloquy with Mr. Ettinger about setting water quality standards. Are you familiar with the US EPA water quality recalculation procedure for setting site specific criteria?

MR. TISCHLER: Yes, I am.

MR. FORT: Do you have any comments or objections to that process?

MR. TISCHLER: I have no objections to it. I will tell you that I've often found that

it doesn't work very well unless when you remove nonresident species you also place in terms of the number of resident species the ones you took out in the database because of the way the calculational procedure works is what is called a confidence interval. If you make the database smaller, you actually even if the one -- if the most sensitive organism is dropped out, you may get a more restrictive limit. So it has its limitations.

MR. FORT: But in that situation if you replace that nonresident species with another that is representative of species that are present, but there may not be particular toxicity data, that's how you deal with that confidence internal issue?

MR. TISCHLER: That's correct. Indeed, I would say most of the southern states and western states have had to use recalculation when they set their standards because they have to remove the cold water species from the databases that EPA has used to develop the criteria.

MR. FORT: But in setting those standards you're first starting with the uses and

the indigenous species that are present and then moving from there to calculate the appropriate protective water quality criteria?

MR. TISCHLER: Yes, that's correct.

MR. FORT: Thank you.

MS. TIPSORD: Anything further for Mr. Tischler? Thank you very much. It's been a pleasure.

MR. TISCHLER: Thank you.

MS. TIPSORD: With that, we'll move to the witnesses for Citgo PVD.

MR. FORT: Okay.

MS. TIPSORD: Do you want to show the video first?

MR. FORT: Let's swear in Bruce Nelson and then we'll show the video and then we can figure out where we're going to have everybody sit.

MS. TIPSORD: Awesome.

WHEREUPON:

BRUCE NELSON

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

MR. FORT: You can probably move the

table once we do the video.

MS. TIPSORD: Do we have a copy of Mr. Nelson's testimony? If there is no objection, we will enter Mr. Nelson's testimony as Exhibit 489. Seeing none, it is Exhibit 489.

(Document marked as IPCB Exhibit No. 489 for identification.)

MR. FORT: Madame Hearing Officer, we have copies of the video that we would ask to be marked as an exhibit.

MS. TIPSORD: If there is no objection, we will be showing a short video and we will mark the DVD of that video as Exhibit 490. Seeing none, it is Exhibit 490.

(Document marked as IPCB Exhibit No. 490 for identification.)

MS. TIPSORD: Just a point of fact, Mr. Nelson. Your testimony is actually the narrative of what we're about to see as well, correct?

MR. NELSON: Yes.

MR. FORT: Mr. Nelson, would you state your name for the record.

MR. NELSON: My name is Bruce

Nelson.

MR. FORT: And, Mr. Nelson, you were involved in the preparation of the video that we are about to show?

MR. NELSON: Yes, I was.

MR. FORT: And can you describe how it was prepared and made?

MR. NELSON: We set out samples for microbes and vegetation in the Sanitary and Ship Canal along with Roger to sample above and below our intake and our outfall for the refinery and in the course of doing that a videotape was created and it was edited down to this version.

MR. FORT: And this is your voice on the video that we're about to see?

MR. NELSON: Yes, it is.

MR. FORT: And this video you believe is representative and demonstrative of the conditions in the Ship Canal when you were on the boat?

MR. NELSON: Yes, it was.

MS. TIPSORD: While Irene is working on that, let's swear in the rest of your witnesses.

MR. FORT: I'm sorry?

MS. TIPSORD: Why don't we go ahead and swear in the rest of your witnesses.

WHEREUPON:

LARRY TYLER and ROGER KLOCEK

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

MS. TIPSORD: We'll rearrange once -- we might as well get what we can.

MR. FORT: Our other witnesses besides Mr. Nelson are Mr. Larry Tyler, environment manager at the refinery; Mr. Jim Huff vice president of Huff & Huff; and Mr. Roger Klocek who is a biologist with Huff & Huff and all of whom have submitted pre-filed testimony here. So Mr. Huff has been sworn in before I know, but do you want to do it again?

MS. TIPSORD: Yeah, let's do it again.

WHEREUPON:

JAMES HUFF

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

MR. FORT: Okay. Off the record.

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

MS. TIPSORD: If there is no objection, we will mark the pre-filed testimony of Roger Klocek as Exhibit 491. Seeing none, it is Exhibit 491.

(Document marked as IPCB Exhibit No. 491 for identification.)

MS. TIPSORD: If there is no objection, we will enter the pre-filed testimony of Larry Tyler as Exhibit 492. Seeing none, it is Exhibit 492.

(Document marked as IPCB Exhibit No. 492 for identification.)

MR. FORT: Jim Huff is the next one.

MS. TIPSORD: If there is no objection, we will marked the pre-filed testimony of James E. Huff as Exhibit 493. Seeing none, it is Exhibit 493.

(Document marked as IPCB Exhibit No. 493 for identification.)

MR. FORT: Before we get to the video now that we're all ready to go, Madame Hearing Officer, we submitted as a public comment

a proposed regulatory proposal as a public comment and we'd like to have that marked as an exhibit.

MS. TIPSORD: You know what, for ease of citation, we have the public comment number so we can just use the public comment number.

MR. FORT: That's fine with me.

MS. TIPSORD: And we all have copies of it up here so that's Public Comment 1394.

MR. FORT: Thank you.

MS. TIPSORD: We're ready for the video then.

MR. FORT: Before you start running it, let me say a few things. The few things concern Citgo's testimony today. We have presented prepared testimony and we look forward to the questions that focus on two major issues; a chloride water quality standard, seasonal standard, for the winter months based upon the existing biota and designated uses of the Ship Canal.

So we've taken the Board's processes so far and taken it to a chloride water quality data. We're going to present that data.

Separately, and this is the regulatory proposal that we have submitted and if anybody needs copies we've got them up here, regulatory proposal attempts to deal with the effluent dominated stream phenomena and the issues for the Lemont Refinery are entirely due to upstream water quality conditions.

We've identified chlorides, of course, as being an issue in TDS. We also see a risk of mercury in upstream samples. So this is all about the mixing zone and the condition of our proposal to get a mixing zone even when water quality standards are exceeded at the location, in our case, the Lemont Refinery has a BMP plant in place for that pollutant.

We have some suggested language here. We've circulated it to several interested parties. We welcome any comments on it, but we see this as something that would be environmental progress while also not subjecting downstream dischargers to impossible conditions based upon what happens above them in terms of the waterbody. So, with that, let's do the video.

We thought a good place to start

was on the regulation navigation area, the immediate vicinity of the Citgo refinery, what that looked like and also it shows the mixing zone.

(Whereupon, a DVD was played.)

MR. FORT: Madame Hearing Officer, there was one pre-filed question asked to Mr. Nelson from the Agency and I would propose that we have that question propounded to him and then anybody else who has questions so that we don't need to keep him the rest of the day. Ms. Diers is --

MR. TWAIT: She is upstairs.

MR. FORT: I can read the question, Scott, or if you want to ask it or re-ask it, that's fine with me.

MS. TIPSORD: Yeah. If you want to ask the question, that's fine.

MR. TWAIT: Since the intake is only 60 feet upstream of the outfall, are there any conditions where the intake is drawing water from the effluent?

MR. NELSON: It is located upstream and every day as part of my job I look at it --

it's a USGS website that gives the current speed for the day and I have never seen a negative flow on that output when I look at the website. Plus any training or drills that I've done on the Canal, I've never seen the water flow the other way.

MR. FORT: And, Mr. Huff, you've got a few other comments?

MR. HUFF: Yes. If you saw the discharge in that video, the discharge I believe is about 15 feet below the surface. However, there is a lot of entrained air in the outfall. So the outfall is very positively buoyant and comes right up to the surface literally right around that pipe and you have a lot of turbulence there and then spreads out from there basically as a surface plume one to three feet as it gets deeper in there. The water intake upstream is also a submerged discharge, but well below the three feet down. So even if there were backflow, it would not take in any effluent under that condition.

MR. TWAIT: Thank you.

MS. TIPSORD: Mr. Ettinger?

MR. ETTINGER: The report you referred to, you said there was no negative flow. What exactly was that?

MR. NELSON: It's a US Geological Survey site that is available on the web.

MR. ETTINGER: Do they have a site right there?

MR. NELSON: It says near Lemont.

MR. ETTINGER: It's near Lemont. So does it -- it shows whether there is negative flow going north of the fall?

MR. NELSON: It goes in feet per second and the average is 0.5 feet per second.

MR. FORT: Can I ask a couple questions that will give you a context of this. It may help the next --

MR. ETTINGER: I'm just trying to understand how a chart from Lemont would tell us about whether there was negative flow in the relatively limited area between your discharge and your intake.

MR. NELSON: The website we've used I've compared it to conditions on the Canal when we do training and the positive flow is showing

the flow from north to south. So this website chart is live maybe up to within an hour. If there was a flow from south to north, I would assume it would read as a negative instead of a positive flow.

MR. FORT: Mr. Nelson, this is something you do as part of your duties?

MR. NELSON: Right. If we have an emergency response and oil spill, it helps us calculate how far or how much time we have to collect that oil, how far downstream we have to go. So the faster the current, we may have to go further downstream to catch it before it gets past where we're trying to contain it. So we kind of rely on that site to help us. When we get on scene, we'll have to evaluate more when we get on scene.

MR. FORT: Any other questions?

MS. TIPSORD: Any other questions for Mr. Nelson? Thank you, Mr. Nelson.

MR. FORT: Can we excuse Mr. Nelson?

MS. TIPSORD: We can excuse Mr. Nelson.

MR. FORT: Thank you, Madame Hearing

Officer.

MR. ETTINGER: Am I up next?

MS. TIPSORD: Yes. We're going to let the environmental groups begin asking their questions.

MR. ETTINGER: So I don't have to talk into the court reporter's back I'm going to move over here if that is okay with people. So shall we start? Who wants to start or do you care? My questions were to individual witnesses.

MR. FORT: We can start with Jim or start with Larry. You have more questions to Jim than anybody else. Whatever you want.

MR. ETTINGER: All right. Let's do Jim. For what parameters is the Chicago Sanitary and Ship Canal currently listed as impaired?

MR. HUFF: PCB's, or polychlorinated biphenyls, dissolved oxygen, total dissolved solids, total phosphorous, channelization, unknown, combined sewer overflow, sediment resuspension, storm sewers, hydro-structure flow regulators, atmospheric deposition and municipal point discharges.

MR. ETTINGER: Does the Citgo Lemont

Refinery discharge BOD or phosphorous?

MR. HUFF: It discharges BOD. They had phosphorous into their biological activated sludge system. So I have not calculated it. I would guess on a mass basis they discharge approximately what they take in in the way of phosphorous.

MR. ETTINGER: Do you have -- do you measure dissolved oxygen at your intake?

MR. HUFF: I'll differ that question to Mr. Tyler.

MR. TYLER: We do not measure dissolved oxygen in our intake.

MR. ETTINGER: You measure chloride and I think later we talked about what you take in in your intake. You do measure chloride at the intake, but not DO?

MR. TYLER: Repeat your question, please.

MR. ETTINGER: I'll just ask a different question. What do you measure at your intake?

MR. TYLER: We measure TDS and from December through March we measure chlorides

temperature.

MR. ETTINGER: On page two of your testimony, you state the Chicago Sanitary and Ship Canal upstream of the Lemont Refinery exceeds 1,500 mg/L TDS during snow melt periods during deicing practices throughout Northeast Illinois. How much of this 1,500 mg/L is chloride?

MR. HUFF: Under periods when we have elevated TDS, approximately 50 percent, 5-0, would represent -- be represented as chlorides.

MR. ETTINGER: What is the rest?

MR. HUFF: Well, sodium within approximately 30 percent of that and then the rest would be made up of sulfates, manganese, magnesium and carbonates.

MR. ETTINGER: So if we were to apply the current chloride standard to the Sanitary and Ship Canal, your concern is that 750 mg/L, which I think is 50 percent of 1,500, is over 500, is that the issue?

MR. HUFF: Yes.

MR. ETTINGER: I guess I kind of asked the next question, but I'll ask it more generally. At page two, you describe difficulties

that Citgo has had in getting a variance approved by US EPA. How will the IEPA proposed changes to the criteria make things any worse as to chloride or TDS?

MR. HUFF: The US EPA focus has shifted in the case of the Citgo NPDES permit from an increase in total dissolved solids to chloride specifically despite that there was no increase in chlorides that were associated with the Wet Gas Scrubber Project that triggered the need to get the variance in the first place. The Agency proposal will continue to result in an inability to get a NPDES permit without the expenditure of literally tens of millions of dollars.

MR. ETTINGER: So as I understand it the problem is the 750 over the 500 mg/L, is that correct?

MR. HUFF: I'm not quite sure. The 750 is when the stream is at 1,500, you would have 750 mg/L of chloride. We currently have higher chloride and TDS levels than 1,570.

MR. ETTINGER: I'm sorry. I'm missing something then. When those -- when the stream has problems that we're concerned with is

when? When it is at the 1,500 TDS?

MR. HUFF: When it is above 1,500 TDS.

MR. ETTINGER: How high does it get?

MR. HUFF: In the way of chlorides or total dissolved solids?

MR. ETTINGER: Actually, chloride, I guess we've decided is more important. So how high does it get for chloride?

MR. HUFF: We have recorded on the water intake as high as I believe it was 1,090 mg/L chloride.

MR. ETTINGER: What dilution is present in the system between the Lemont Refinery and the Upper Dresden Island Pool?

MR. HUFF: 168 to 1.

MR. ETTINGER: That's 168 -- I'm sorry. My question isn't very good. It's 168 to 1 between the effluent of -- from the Lemont Refinery and the Sanitary and Ship Canal, is that correct?

MR. HUFF: I think you asked about the Upper Dresden Island Pool and, no, that's not correct. It would be 1 to 168. There is 168

times more flow in the Upper Dresden Island Pool at the 7Q10 than what the design average flow from the Lemont Refinery is.

MR. ETTINGER: Okay. That's useful. Let me ask the question I was thinking of as opposed to the one I asked.

What dilution sources are there to the river between the point of the Lemont Refinery discharge and the Upper Dresden Island Pool and just to spoil some of the suspense I'm thinking mainly of the Upper Des Plaines River, but what other sources of water are there to the system that would dilute the chloride between the Sanitary and Ship Canal and the Upper Dresden Island Pool?

MR. HUFF: I don't know that they would dilute the chloride. You're assuming that the Upper Des Plaines River has lower chlorides. So if you make that assumption and you're correct, that would be the primary source of flow. There are other tributaries that come in, Deep Run Creek, for example right below the Lockport Lock and Dam and a number of others, but absolutely the Upper Des Plaines would be the largest source.

MR. ETTINGER: I'm not making that assumption. Do we have any reason to believe that the Upper Des Plaines River has any less chloride in it on a concentration level than the Chicago Sanitary and Ship Canal?

MR. HUFF: I would believe that would be the case because there is slightly less urbanization through parts of the Upper Des Plaines watershed and certainly through the Sanitary and Ship Canal.

MR. ETTINGER: What happens to chloride and sulfate that the Lemont Refinery puts into the Chicago Sanitary and Ship Canal?

MR. HUFF: So the chlorides are for all practical purposes highly sailable and I would anticipate that the vast majority of any chlorides discharged will find their way down into the Gulf of Mexico. Sulfates less true. There would be some precipitation of sulfates as the water flows downstream toward the Gulf of Mexico.

So I would anticipate a pretty significant reduction in sulfates that were discharged from the refinery.

MR. ETTINGER: What happens to the

mercury that the Lemont Refinery puts into the Chicago Sanitary and Ship Canal?

MR. HUFF: They're predominantly in a very, very fine particulate state. They would slowly, gradually settle out, get incorporated into flocculated solids and settle to the bottom of the streams.

MR. ETTINGER: Have you or Citgo measured how far mercury can travel downstream from the point of discharge?

MR. HUFF: No, sir.

MR. ETTINGER: What mercury effluent limits is the Lemont Refinery currently subject to?

MR. HUFF: The current NPDES permits under which the Lemont Refinery operates has no effluent limits. The permit that is under appeal also has no mercury limits on there and that is based on Illinois EPA doing a reasonable potential to violate a water quality standard that exists on the Sanitary and Ship Canal and determined there was no reasonable potential and, therefore, there was no effluent limit imposed.

MR. ETTINGER: Are you meeting

technology-based effluent limits for mercury?

MR. FORT: Object. I don't know if there are any technology-based effluent limits in this category.

MR. HUFF: You're referring to the --

MR. ETTINGER: I'm sorry. I'll withdraw that question. Have there ever been any sort of best professional judgment analysis that would set technology-based limits for mercury for the Citgo plant?

MR. HUFF: For the Citgo refinery, not to my knowledge, no.

MR. ETTINGER: That's interesting. Is the Upper Dresden Island Pool currently listed as impaired by TDS?

MR. HUFF: Not based on the 2004 proposed 303(d) list.

MR. ETTINGER: Should it be?

MR. HUFF: The Agency makes a decision, a determination not only based on the chemical results, TDS in this case, but also on the biology. So you'd have to have impaired biology before one would put a parameter such as

TDS on the impaired list. So I think that question is better asked to the Agency.

MR. ETTINGER: Is the Upper Dresden Island Pool impaired for mercury?

MR. HUFF: I believe it is, yes.

MR. ETTINGER: Would the Lemont Refinery have a problem meeting the Illinois General Use Standard for sulfate?

MR. HUFF: No, sir.

MR. ETTINGER: On pages three and four of your testimony, you describe the very slow process of IEPA's creation of TMDL's. Could you -- could that process be sped up and are you concerned with chloride work with the Agency to advance completion of a TMDL?

MR. HUFF: I do, indeed, think that that would speed up the process with the caveat that you would have to have active participation by the City of Chicago and the Metropolitan Water Reclamation District of Greater Chicago as those would be the largest sources of chloride entering into the waterway.

MR. FORT: Excuse me, Mr. Ettinger. Maybe this is a good place to do this. We've

included as an excerpt to Mr. Huff's testimony a report from the Illinois State Water Survey, but it's only the relevant pages as judged by us. We did bring a copy of the full report that we thought might be appropriate for the Board to have as an exhibit. It's easier to read than trying to find it online.

MS. TIPSORD: Thank you. I have been handed the Sources, Distribution and Trends of Chloride in the Waters of Illinois, Walton R. Kelly, Samuel B. Panno, Keith Hackley, authored March 2012, Illinois State Water Survey, Prairie Research Institute, University of Illinois at Urbana Champagne. If there is no objection, we will mark this as Exhibit 494.

MR. FORT: Thank you.

MS. TIPSORD: Seeing none, it is Exhibit 494.

(Document marked as IPCB Exhibit No. 494 for identification.)

MR. FORT: Mr. Huff, you have reviewed the document we just marked as an exhibit?

MR. HUFF: Yes.

MR. ETTINGER: You said the US EPA issue is now with chloride?

MR. HUFF: With respect to the Lemont Refinery NPDES permits that they objected to, yes.

MR. ETTINGER: What chloride standard is currently applicable to the Chicago Sanitary and Ship Canal?

MR. HUFF: There is none.

MR. ETTINGER: Then how will changing the standard or not changing the standard affect your current situation?

MR. HUFF: I think you just asked that question, that was about your third question, is that the chloride standard if it is adopted at a 500 mg/L as opposed to a 1,500 mg/L TDS is more restrictive as a water quality standard because at 1,500 we have approximately 750 mg/L. So a 500 mg/L water quality standard is the equivalent of a TDS of 1,000.

MR. ETTINGER: Okay. You're saying the grief is about chloride now and not TDS and there is no chloride standard in the Sanitary and Ship Canal?

MR. FORT: Let me interpose a suggestion here. I think we're getting very technical on a complex subject and my understanding is that it is both TDS and chloride, not one or the other.

MR. ETTINGER: I'm sorry. I'm just trying to understand your problems with the regulations that would cause you to oppose or support the standards, changes and -- I think I understand it as well as I can now.

MR. FORT: I think Mr. Huff made it clear that if we have a problem with the 1,500 mg/L TDS, 500 mg/L chloride would be more difficult and we're looking forward and trying to come up with how do we address the issue.

MR. ETTINGER: That's fine. If the Board found -- and I'm down to 12 now. If the Board found that meeting the chloride standard could not be attained in the Chicago Sanitary and Ship Canal and perhaps downstream waters affected by chloride due to manmade causes for a number of years during which a variance might be issued, would that take care of the Lemont Refinery chloride problem?

MR. HUFF: So as I note in my testimony, US EPA has active involvement in this. So any variance, of course, would have to have their full support in order to be improvement as I understand the process today. In addition, the variance granted would have to provide the necessary relief from a refinery and as I understand the Illinois variance process we could get a maximum of five years, but we would have to somehow show our ability to achieve compliance after five years and if you heard Mr. Tischler testify, he thinks meeting 500 mg/L in five years would be very difficult and I certainly concur with that. So I'm not sure a variance by itself is going to resolve this issue.

MR. ETTINGER: Is it your understanding that under the current Illinois variance procedure as opposed to a compliance plan that you have to prove you'll be in compliance at the end of the five years?

MR. HUFF: Yes.

MR. ETTINGER: It says in your testimony you state that in your permitting experience IEPA will impose a limit equal to the

water quality standard on dischargers discharging through a 303(d) listed water. What is your understanding of why IEPA does that?

MR. HUFF: To be placed on the 303(d) list, a stream segment must show biological impairment and an exceedance of one or more of the water quality standards. With this understanding, if there has been a water quality exceedance, then the Agency sets the water quality based effluent limit at the water quality standard. This typically is the most restrictive -- that is more restrictive than the Illinois effluent standards or any of the categorical standards.

MR. ETTINGER: Fourteen. You state that no fishing is allowed in regulated navigation area -- in the regulated navigation area at pages four the five of your testimony. Could the Board remove fish consumption as a designated use and adopt criteria accordingly?

MR. HUFF: I assume that means that the human health standard for mercury would not be included for dischargers to the stretch of the Canal which would eliminate the Lemont Refinery concern.

MR. FORT: Let me just note for the record that I believe the Board has declared that this segment of the Ship Canal is non-recreation.

MR. ETTINGER: That was the crux of my question actually. So, presumably, if we're not going to allow fishing there we're not going to allow people to fish and eat fish from that area, is that correct?

MR. HUFF: Well, then the second part of that is what about downstream? So, again, my same answer is as long as the human health standard does not apply in that zone so the Lemont Refinery would not end up with a 12 ng/L effluent limit, that would resolve the Lemont Refinery concern.

MR. ETTINGER: If we had other standards that were designed to protect fishing in that area or recreation in that area, those shouldn't be applicable to the Lemont Refinery?

MR. HUFF: It seems reasonable to me, yes, sir.

MR. ETTINGER: I'll skip 15. Sixteen. At page six, you suggest flow augmentation to dilute chloride concentrations

during winter. Have you studied how this might affect flooding?

MR. HUFF: So on page 16, I was talking about the likely outcome of a TMDL study. I have not studied that. However, when we have these elevated TDS or chloride levels, they are not at flood stage conditions. My professional opinion is there would be no impact on flooding. This would certainly not exacerbate flooding.

MR. ETTINGER: Can MWRD's discretionary diversion from the Great Lakes remain at current levels in the future?

MR. HUFF: My understanding is that the discretionary diversion that the MWRDGC had was lowered to accommodate additional growth in the Chicagoland area. The discretionary flow is to decline to 101 cubic feet per second beginning in 2015 from the current 270 cubic feet per second. Historically, this discretionary flow has been used to help dissolved levels at low flow periods. With the side stream aeration systems installed and the lower temperatures with the loss of the two electric power plants in Chicago, there should be less need for the diversion going

forward than historically.

If chlorides are such an environmental issue, why not use diversion to help achieve the appropriate levels? Maybe we should also rethink that the growth allocation as well as it is clear the streams will have a very difficult time eliminating additional chlorides. I offer this flow augmentation as an option that could be explored.

MR. ETTINGER: At page nine of your testimony, you suggested imposition of a 500 mg/L effluent limit which would require the Lemont Refinery to use mixing zone -- I can't remit that -- to use distillation. Has distilling -- drop that. Drop the question.

Has distilling the high chloride waste water stream been considered?

MR. HUFF: Yes. On page nine, I refer to a multi-effect evaporator. That is distillation, but it's more energy efficient because you're recovering the heat through multiple evaporation stages.

MR. ETTINGER: How much does that cost?

MR. HUFF: I believe that was referred to on page nine of my testimony. What we came up with in treating the individual chloride streams was $42 million and that was with reverse osmosis and then the evaporation with a multi-effect evaporator on the concentrated stream. The problem with that is when the Ship Canal is over 500 mg/L, we would still not meet an effluent limit of 500 mg/L.

MR. ETTINGER: Now, reverse osmosis isn't the same as distillation?

MR. HUFF: No, it's more cost effective than distillation. So what you're doing is you're concentrating the ions, specifically in this case chlorides, on one side and allowing basically water to pass through a semi-permeable membrane and typically you can concentrate it four to five fold with reverse osmosis. So if you had five million gallons a day, you would still have a one million gallon a day concentrated stream that you have to address and that's where the multi-effect evaporation would come in. That would evaporate that further down and concentrate it to the point that it begins to precipitate as

sludge.

MR. ETTINGER: What are the yearly net revenues of the Lemont Refinery?

MR. FORT: I object to the question as irrelevant, but go ahead.

MR. HUFF: I do not have any information on the net revenue of the Lemont Refinery nor do I believe it's relevant. A better question is a cost benefit perspective of does it make sense spending $21 million in capital costs to reduce the peak chlorides in the Ship Canal by 0.2 percent? The answer to that question in my opinion is clearly no.

MR. ETTINGER: It might become relevant when you apply for your variance, but we'll go on now since you don't know the answer. At pages 12 to 13 of your testimony, you suggest an alternative regulatory approach. What obstacles are there to implementing your suggested approach under current Illinois law and regulations in IEPA practice?

MR. HUFF: The first obstacle would be the belief that we really need a numeric limit on chloride as a water quality standard on the Use

B stream which is what we've proposed here. I think if we can get past that hurtle that we don't need a numeric limit, then I think the rest of it is already in place and I point out like on suspended solids, we don't have a quality -- water quality standard on suspended solids and under the storm water regulations we get at that through best management practices. So this would be taking the wintertime chlorides and applying the same concept as what we already apply under the storm water program for suspended solids and I believe under the Illinois regulations today we regulate storm water that those regulations clearly include snow melt, but we already have a structure and the Illinois EPA already has the authority under the storm water permits, whether they be industrial or the municipal sewer storm water permits, to impose a best management practices on highway deicing practices that are used in these communities.

MR. ETTINGER: Now, my understanding is you want to do away entirely or not enact a chloride standard for Use B waters?

MR. HUFF: A winter chloride

standard.

MR. ETTINGER: A winter chloride standard. And when is winter?

MR. HUFF: I would think you'd want to pick up the snowfalls that occur in November and March. I mean, we've had snowstorms in excess of 13 inches in both November and in April. So my suggestion would be November 15th through April 15th.

MR. ETTINGER: It would be convenient if we wrote water quality standards so that they would never be violated, but my question is is that what you think would be protective of sensitive aquatic life?

MR. HUFF: Sensitive? We're talking Use B waters here. So could you highlight for me which sensitive aquatic life we're referring to?

MR. ETTINGER: I guess that will be my next question. What do you also do with -- we'll talk to the next witness about that. What about the Upper Dresden Island Pool?

MR. HUFF: I'm sorry. What is the question?

MR. ETTINGER: Do you have a

chloride standard in the Upper Dresden Island Pool?

MR. HUFF: I don't think I'm prepared to render an opinion on the Upper Dresden Island Pool. My focus was on Use B.

MR. ETTINGER: Use B. Okay. We heard all of your salt goes all the way to the Gulf of Mexico, is that correct?

MR. HUFF: Yes, sir.

MR. ETTINGER: So, presumably, it also goes to the Upper Dresden Island Pool, correct?

MR. HUFF: Yes, sir.

MR. ETTINGER: Would the Lemont Refinery have any problem with a chloride if we adopted the standards for -- US EPA standards for chloride in the Upper Dresden Island Pool?

MR. HUFF: The US EPA standard? That would be the 230 mg/L chronic and 860 acute?

MR. ETTINGER: Yes.

MR. HUFF: Would the Lemont Refinery have any problem?

MR. ETTINGER: Yes.

MR. HUFF: Well, I guess it would go

back to the interpretation are they causing or contributing to a water quality violation that may get that far downstream? If they're 2/10th's of a percent of the loading where they discharge in, by the time you're down to the Upper Dresden Island Pool, they would be even smaller portions. So how far down are you going to regulate chloride dischargers? Are we going to stop allowing people to buy salt at hardware stores so they can do their --

MR. ETTINGER: That's not a non-point source. So --

MR. HUFF: I'm not understanding the relevance of the non-point source. The major cause of the chloride is in that waterway.

MR. ETTINGER: What I'm attempting to probe is the inconvenience and the cost to the Citgo Refining Company of the chloride standard. That's what I'm asking. And if we take care of your problem in the Use B waters, but you are causing or contributing to a violation in the Upper Dresden Island Pool, we may not have solved your problem and your cost estimates may not be accurate. And that's why I'm asking have you

studied the effect of -- sorry -- have you studied what the chloride standard should be that would be applicable to the Upper Dresden Island Pool?

MR. HUFF: First, I would take disagreement that we would be causing or contributing. I believe the proposal that is outlined in my testimony is to the extent that we are contributing to water quality violations. We are committed to offsetting those through best management practices at which point I believe we are no longer causing or contributing to a water quality violation.

MR. ETTINGER: And that's under your proposed new regulation or -- maybe this question is best addressed to Mr. Fort.

MR. FORT: Well, there are two answers to that. One of them is certainly the regulatory proposal we put forth would deal with that issue as a regulatory change. Mr. Huff's point, though, here in terms of if you're employing certain practices and activities, then you are no longer causing or contributing and it is an offset. It's an offset of an amount. You're no longer causing or contributing to a

violation.

MR. ETTINGER: The Citgo refinery, is it a net adder of chloride?

MR. HUFF: They are indeed, yes.

MR. ETTINGER: I'll skip the rest. I'll go onto the next question.

MR. FORT: Who are you asking questions to?

MR. ETTINGER: Mr. Klocek, would that be good? Page three of your testimony you discuss rotenone collections of fish. Is that the best way to determine what fish are capable of living in a waterbody?

MR. KLOCEK: Yes, actually it is because it samples all the fish. It is just a very harsh way of finding out what is there.

MR. ETTINGER: But if a fish is found dead in the waterbody, obviously it can live there?

MR. KLOCEK: Absolutely, yeah.

MR. ETTINGER: On page nine of your testimony, you refer to sphaerium. I have to correct my Latin. Is that the fingernail clam?

MR. KLOCEK: Yes, sphaerium is the

fingernail clam.

MR. ETTINGER: Are you aware of the work of Dr. Richard Sparks on the fingernail clam in the Illinois River?

MR. KLOCEK: Yes. He did an excellent study.

MR. ETTINGER: And what did he conclude?

MR. KLOCEK: That it was abundant in the Illinois River and it would be a great test organism to use because it is specifically sensitive to different toxins or stressors.

MR. ETTINGER: Did you say the fingernail clam prior to its extirpation in the '50s was one of the keystones or base of the Illinois food chain in the Illinois River?

MR. KLOCEK: Yeah. Because it's so thin shelled all types of fish could eat it as well as a diving waterfowl.

MR. ETTINGER: So it was very important to the Illinois River historically.

MS. TIPSORD: Mr. Ettinger, before we move on, can we get a citation -- you brought it up in your question. Can we get a citation to

that study by Dr. Sparks if there is a published piece?

MR. ETTINGER: Yes, I could look that up.

MS. TIPSORD: Absolutely. You can give it to us later.

MR. ETTINGER: I can get it. This is a very famous study by Dr. Sparks.

MS. TIPSORD: Okay.

MR. ETTINGER: Three in my questions. It appears you used an musculium instead of the fingernail clam because the fingernail clam has not been found in the Chicago Sanitary and Ship Canal. How are musculium similar to the fingernail clam?

MR. KLOCEK: They're in the same family and they look very similar and have similar habits.

MR. ETTINGER: Do they have similar habitat and similar breeding methods?

MR. KLOCEK: Yes.

MR. ETTINGER: Are there differences between the musculium and the fingernail clam that are found -- that enable musculium to live in the

Chicago Sanitary and Ship Canal?

MR. KLOCEK: Yes, lab tests show that musculium is much more tolerant of chloride and probably other stressors compared to sphaerium and the fingernail clam.

MR. ETTINGER: Could ammonia be a factor?

MR. KLOCEK: Yeah. And that's a tough one because the bivalve mollusk -- the clams and mussels are very sensitive to ammonia.

MR. ETTINGER: And question four. How does the GMAV, and I forget what that stands for, for chloride of musculium compare to that of the fingernail clam?

MR. KLOCEK: So --

MR. FORT: Maybe you should define first what GMAV stands for.

MR. ETTINGER: That would be fine.

MR. KLOCEK: GMAV is genous mean acute value and that is kind of like the LC50. So for sphaerium it is relatively low. 1,128 mg/L and for musculium it is 1,930 mg/L. So musculium is a little more tolerant than sphaerium.

MR. ETTINGER: You calculate an

acute value for the Chicago Sanitary and Ship Canal of 991 mg/L and a chronic value of 624 mg/L. I assume that was discussing chloride. How do sulfate and hardness figure into that calculation?

MR. KLOCEK: We didn't take hardness or sulfate into account. We used the Iowa values that were given for the calculation and that's how we derived it.

MR. ETTINGER: It they didn't use -- they didn't -- Soucek didn't use sulfate in calculating his numbers?

MR. KLOCEK: He did and to be honest I don't remember the sulfate value, but the hardness value that he used was 300 mg/L.

MR. ETTINGER: Do you know what the hardness is in the Sanitary and Ship Canal?

MR. KLOCEK: It's about 200 mg/L.

MR. ETTINGER: Do you know whether that would affect the calculation as they were done by Soucek?

MR. KLOCEK: It would, but it would affect it downward by a couple of percent, about two percent.

MR. ETTINGER: Sorry. What do you

mean by downward? Downward from --

MR. KLOCEK: It wouldn't be as high. It would be lowered by about two percent. So I can't do the math in my head right now.

MR. ETTINGER: So you're saying the number should be two percent lower than 991?

MR. KLOCEK: Approximately, yes.

MR. ETTINGER: How do your acute and chronic figures compare with those used in Iowa?

MR. KLOCEK: If we use the Iowa formula to calculate chloride values, our figures are much higher and if we use the Iowa calculation we'd get 536 mg/L for acute values and 375 mg/L for chronic values. So much lower with the Iowa one.

MR. ETTINGER: So what factors cause your acute and chronic figures to be different than those that were calculated for Iowa waters?

MR. KLOCEK: Iowa was looking at a statewide standard. So they have to use a larger group of organisms. So they use 29 species to get their final chronic and acute values. We shaved that down to 23 species based on what we felt was present in the CSSC and came up with different

figures.

MR. ETTINGER: Okay. Mr. Huff, in his pre-filed testimony, expresses concern that US EPA may move to lower its chronic criteria from 230 mg/L to a figure below 200 mg/L. Have you reviewed any of the signs or concerns of US EPA that might cause it to change its chloride standard?

MR. KLOCEK: No, I haven't reviewed any of those documents or data and I've only seen Internet postings on certain organisms that are recently tested. Some of them have very low acute values and that may be what is driving the idea that they're trying to lower the standard, but I don't have specific information or ideas about them.

MR. ETTINGER: Do you want me to now go to Mr. Tyler or does somebody else have follow-up questions?

MR. FORT: I think he has a little more he can say on the difference with this US EPA information you have and what you've seen. You've seen some streams that are being identified or they're locations of these species that are --

MR. KLOCEK: Yes, there was a very sensitive mayfly under the test that has an aquatic larval stage and it is the type of mayfly if it were Illinois it is only known from 18 records and about six or seven different streams. All very high quality. So it's great that these tests are being done. It's just not a mayfly --

THE COURT REPORTER: Mayfly?

MR. KLOCEK: Mayfly.

MR. FORT: You were starting to say it was a mayfly that --

MR. KLOCEK: You wouldn't find in the CSSC ever. You find very rarely only in high quality streams. So it might not be the most appropriate organism to use as a surrogate for all mayflies.

MR. FORT: Can we go off the record?

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

MS. TIPSORD: Back on the record.

MR. ETTINGER: This is to Mr. Tyler. On page seven of your testimony, you state that the treatment options for TDS in the waste water were evaluated to be neither technologically

feasible nor economically reasonable. What were all the treatment options evaluated?

MR. TYLER: In terms of the treatment options, Mr. Huff has touched on this. So I'll yield to him to respond to that.

MR. ETTINGER: You have nothing further to add to this?

MR. HUFF: No. What was in the testimony was what was evaluated.

MR. ETTINGER: What criteria were used to decide if something was technologically feasible?

MR. TYLER: With respect to what criteria was used for technological feasibility, it was an experienced professional engineering judgment that the design intent of potential treatment options were practical and could be reasonably achieved.

MR. ETTINGER: What criteria were used to decide if an option was economically reasonable?

MR. TYLER: With respect to criteria for economic feasibility, it was, again, an experienced professional engineering judgment that

assessed the potential treatment options to not have an excess of magnitude of costs for minute or questionable gain to the Ship Canal.

MR. ETTINGER: What is the annual -- sorry -- what approximately is the annual net revenue of the Lemont Refinery?

MR. FORT: Same objection as before, but he can answer.

MR. TYLER: The Lemont Refinery is not claiming inability to pay for potential treatment options. So providing a revenue estimate doesn't seem appropriate. We hereby respectfully decline to do so.

MR. ETTINGER: I'll just ask my question. Number three, how was it apparent that the TDS levels in the discharge from the Lemont Refinery were not associated with the level in the Ship Canal or at the I-55 bridge?

MR. TYLER: We've already submitted the data in prior variances to the Agency and the Board. I have with me copies of some of this data which Jim Huff has also previously submitted in this proceeding. For ease of reference about this document and submitted for this record, I note

that the Board has already agreed with the conclusion that there is no relationship between the discharge from the refinery and the water quality conditions relating to TDS in its opinion regarding our second notice -- second variance. Sorry.

MR. FORT: This is the document you were referring to in terms of data?

MR. TYLER: Yes.

MR. FORT: Can we mark this as the next one?

MS. TIPSORD: If there is no objection, we will mark Attachment 2 Des Plaines River TDS Sampling I-55 Bridge with the date on the left column, total dissolved solids on the right column as Exhibit 495. Seeing none, it is Exhibit 495.

(Document marked as IPCB Exhibit No. 495 for identification.)

MR. ETTINGER: Mr. Tyler, you're an engineer, not a biologist, right?

MR. TYLER: That's correct.

MR. ETTINGER: You just got out of one question. So all I've got left is number

four. What sampling was done at the I-55 bridge that you referred to?

MR. TYLER: TDS sampling.

MR. ETTINGER: Only TDS?

MR. TYLER: Chlorides were also sampled.

MR. ETTINGER: That net data is available and that's what we just passed out?

MR. TYLER: Yes.

MR. ETTINGER: Was anything else sampled at the bridge as part of the sampling referenced that notes -- I guess it's one of your pre-filed testimony?

MR. TYLER: Repeat your question again, please.

MR. ETTINGER: There was a reference to sampling at the I-55 bridge and I was just wondering whether there was any other information beyond TDS that was available from that sampling?

MR. TYLER: The exhibit also shows sulfate.

MR. ETTINGER: So you looked at sulfate and TDS at the I-55 bridge?

MR. TYLER: And chloride.

MR. ETTINGER: Does the Lemont Citgo refinery have problems with copper?

MR. TYLER: I wouldn't have any information on that.

MR. ETTINGER: Thanks. I'm done.

MS. TIPSORD: All right. With that, let's take a lunch break. We'll come back at 1:30.

(Whereupon, a break was taken after which the following proceedings were had.)

MS TIPSORD: Okay. Let's go ahead and go back on the record. Good afternoon. We'll start with the Illinois Environmental Protection Agency's questions for Citgo PVD.

MS. DIERS: Good afternoon. My name is Stephanie Diers for the Illinois EPA. And I'll start with Mr. Huff, is that okay?

MR. FORT: Go right ahead.

MS. DIERS: I'm going to go to our pre-filed question four since you've answered one, two and three already. You mentioned best management practices on page 12 of your pre-filed testimony. What best management practices do you

envision to address chloride issues?

MR. HUFF: Safety is a top priority at the Lemont Refinery. Safety is a priority at the refinery and personnel that are responsible for deicing fully understand that slips and falls from icy conditions are not an acceptable outcome. This mindset leads to an outcome if a little salt is good, more salt is better. This is the exact same mindset that exists with highway deicing employees and really requires the retraining and safe conditions can exist with the use of less salt. The exact same technologies that are emerging in the transportation sector would be used by the Lemont refinery.

First, training is critical to change the thought process. Second, anti-icing which is applying saturated brine ahead of storms to prevent adhesion of ice to the roadway. That is often combined with beet juice typically in a 90 percent brine, 10 percent beet juice combination. In order to make that brine, a refinery will have to expend capital to install a brine dissolution tank as well as a brine storage tank.

Third, prewriting of the rock salt with the brine solution so that the rock salt doesn't bounce off onto the grass. Fourth, is calibration of the equipment and, fifth, would be improved tracking of storms and pavement temperatures to determine application rates and then applying what you've learned from each storm as you go forward. What has worked, what was not sufficient in the way of applications.

MS. LIU: Can I follow up? Mr. Huff, could you please describe what beet juice is?

MR. HUFF: Sure. So it's an alternative to chlorides. There have been a number of products on the market. The one that is commercially most popular right now is literally carbohydrates that come from the growing of beets and is sold as a product called beet juice, but there are also other carbohydrate products that are on the market similar to that today. And so a lot of work has been done by transportation sectors on looking at complete switching over to beet juice or some combination and what they find with the carbohydrates is when they get above

about ten percent in the anti-icing, it tends to cause slipperiness on the road conditions and so the ten percent seems to becoming rapidly an industry accepted concentration.

MS. DIERS: Number five, if the Agency were to propose a salt reduction goal throughout the watershed, would Citgo be willing to participate?

MR. HUFF: I defer to Mr. Tyler as he is an employee of Citgo.

MR. TYLER: The answer to that would be yes.

MS. DIERS: Number six. If the Board adopted a summer chloride standard of 500 mg/L and opened a new subdocket to address the winter chloride standards, would that remove the concerns for chlorides that you have stated in your pre-filed testimony?

MR. HUFF: Obviously, it would depend on the outcome of such a docket. However, in the interim, the Lemont Refinery has an NPDES permit under appeal and that concern would remain US EPA's -- an integral part of the NPDES permit negotiations. So any delay in addressing chloride

water quality standards would require their sign off on a method forward with the refineries NPDES permits would have to be included before the Lemont Refinery would support such a proposal.

MS. DIERS: That's all we have for Mr. Huff. Do you care which order we go, Jeff?

MR. FORT: No.

MS. DIERS: Is it Mr. Klocek, am I saying that right?

MR. KLOCEK: (Affirmative nod.)

MS. DIERS: I'll start with you in our pre-filed questions then. Question number one, would high chloride concentrations permit some of the more intolerant fish and aquatic life from using the Chicago and Sanitary Ship Canal?

MR. KLOCEK: No, it wouldn't because the fish in general are very tolerant of high chloride. It's the invertebrates that are less tolerant and the very sensitive invertebrates are the types that are present in the CSSC. During the winter, both fish and invertebrates go dormant and their metabolism lowers and the cold actually protects them to a degree from any type of stressor just because their metabolism is low.

But for the invertebrates there are types like the bivalves or snails that burrow into the substrates so they are somewhat protected from spikes in chloride because once they burrow in they become dormant. They cease to actively feed and others like daphnia or rotifers that are very abundant and warm weather go into a type of a resting egg, an overwintering egg, that has a protective coating and those eggs are found in the sediment. So they're protected from a lot of different stressors that could occur during wintertime including chloride.

MS. DIERS: Question two. On page seven, you state that, "The recommended procedure allows deletion of non-resident tested species, if and only if, they are not appropriate surrogates of resident untested species based on taxonomy." Would ceriodaphnia be representative of any resident untested species?

MR. KLOCEK: No, it wouldn't because it's a completely different genus than anything that is found in the Ship Canal and there are daphnia present in the Ship Canal and those were included in the calculation. However, if I could

backtrack a second. There was until very recently just a single report of ceriodaphnia in the Canal from 1978 and the Illinois Natural History Survey had done three years worth of sampling and they didn't publish it yet from 2010 to 2012 and they actually found ceriodaphnia again at their Western Avenue station. So pretty high up in the CSSC and the results were pretty spotty for ceriodaphnia.

So, for instance, in 2010 their June sampling got zero organisms; July, zero organisms; August, 20 organisms in a 90 liter sample; and in October zero organisms. In 2012, they only found ten organisms in 90 liters in the month of July, even though they sampled May, June, August, September and October of that year. Their highest concentration was in 2011 in July again and they actually collected 42 ceriodaphnia at Western Avenue in July.

MS. DIERS: What are you reading from again -- I'm sorry -- for the record?

MR. KLOCEK: I'm sorry?

MS. DIERS: What are you reading from, your notes, so we can identify it for the record.

MR. KLOCEK: The Illinois Natural History Survey did a plankton survey of, oh, gosh, much of the Chicago Area Waterway all the way down the Illinois River to I want to say Havana, Illinois. I may be wrong on that, but pretty far down in Illinois. So I was just looking at their CSSC data and they only had the one sampling station on Western Avenue.

MS. DIERS: Is that document something that we can provide for the record?

MR. FORT: Sure.

MS. DIERS: Is it in your testimony?

MR. KLOCEK: I'm sure we could, but we'd have to ask the Survey if they'd release it.

MR. FORT: This is not published data?

MR. KLOCEK: It's not published data.

MR. FORT: But from this non-published data your review of it is that they found at one station, Western Avenue, and only in July and not in any of the other months?

MR. KLOCEK: But they did find it in June, July, August and September often as a single

specimen in 2011.

MR. FORT: Okay.

MR. KLOCEK: In other years, they found it in just one month.

MS TIPSORD: I would like -- whether it's you guys or you guys you can talk about it off the record that you ask if DNR will release that. They have been involved. We do have them on the record. So if we can get that information on the record it would be very helpful.

MR. FORT: If I can do a follow up just to summarize. But nothing in the winter months?

MR. KLOCEK: No, nothing in the winter, but they didn't really sample in the winter months.

MR. FORT: Would you expect that kind of plankton to be there in the winter months?

MR. KLOCEK: I would not expect it. Even though we're currently looking for it, I would be surprised if we find it.

MR. FORT: And that is why?

MR. KLOCEK: Because the plankton disappears in the winter as soon as the water gets

around 50 the plankton dive back because there is no food source for these types of critters to feed on. They feed on the single cell algae. So when the lighting gets bad, the temperature cools down, photosynthesis stops almost, the algae disappear, then all the plankton disappear and they go into these resting egg states that lie dormant on the bottom all winter for many of the creatures.

MR. RAO: A follow-up related question.

MS. LIU: On page eight of Exhibit B, you state that Huff & Huff collected plankton samples in the CSSC on July 12th, 2013, and the next paragraph on the same page you refer to plankton sampling collected in June of 2013. I want to know if you could clarify the sampling dates.

MR. KLOCEK: The July 12th date is correct. The June 12th date is a typographical error.

MS. LIU: Thank you.

MR. KLOCEK: Which I'm sorry to admit to.

MS. DIERS: Question three. In

Table 9, rainbow trout is listed as one of the species that you are protecting. Is the Chicago Sanitary and Ship Canal a cold water stream that has trout present? Are your calculations in Table 10 based on the removal of the rainbow trout?

MR. KLOCEK: No. Obviously, CSSC isn't a cold water stream and trout are not present, but not just the recalculation procedure, but the criteria calculation requires that a representative of the trout and salmon family be included in the calculations as one of the eight groups that are necessary for calculation.

So we kept the rainbow trout in and originally we were going to take it, but then we found in some of the fish data I think it was 2005 MWRD reported chinook salmon down near the Lemont Lockport area. You know, it was obviously one that had come in from the lake and was making its way wherever. So trout and salmon could be present sometimes.

MS. DIERS: Question four. On page nine, you state that the ceriodaphnia was not retained because it's not present during the

winter. Are you aware of any peer reviewed studies on the absence of ceriodaphnia during cold weather?

MR. KLOCEK: No. No peer reviewed studies and I doubt that there is any literature, gray literature out there either, because the plankton sampling just usually isn't done.

MS. DIERS: Number five.

MR. RAO: Can I ask a follow up?

MS. DIERS: Sure.

MR. RAO: On page ten of Exhibit B, you state "The goal of this analysis is to develop a winter chloride water quality recalculation based on species present in the CSSC during the winter season. Could you please comment on whether the fish and macroinvertebrate data used in your recalculation was focused on what was collected in the winter months or the winter season.

MR. KLOCEK: No. I believe, you know, almost all of the data was collected during late Spring through early Fall for fish and macroinvertebrate data. That is the traditional time such data would be gathered. So that I'm

aware of there is actually very little winter data that was incorporated. Maybe the one November plankton one we did.

MR. RAO: The criteria you came up with in your recalculation, would that be protective of aquatic life year around?

MR. KLOCEK: No, it would strictly be a winter criteria, but you would expect those spikes -- the high spikes in chloride and it would be protective of the more sensitive invertebrates because of the state that they're in, the resting overwintery egg state --

MR. RAO: Okay.

MR. KLOCEK: -- or burrowing. You know, if ceriodaphnia ever became abundant in the CSSC, it would also go through the overwintery egg state. It's not -- I think it's just a visitor there from the lake. Currently, it is not there in any substantial numbers, but it too could survive as the overwintery egg.

MR. RAO: Thank you for that clarification.

MR. FORT: Can I follow up on that question? So the data is collected you said

Spring through Fall because that's a more sensitive time for fish and invertebrates because they're dormant in the winter?

MR. KLOCEK: They're just more abundant, yeah. When they become dormant, they'll tend to hide. So, you know, fish are -- you just wouldn't collect them in the winter.

MR. FORT: So you took the data that was published and available and applied that data for the species, even though you were only looking at a winter criteria?

MR. KLOCEK: Thank you. I should have said that.

MR. RAO: Thank you.

MS. DIERS: Question five. Are you aware of any other water quality derivations, either site specific or statewide, that have removed the ceriodaphnia?

MR. KLOCEK: No, I am not aware of any site specific derivations.

MS. DIERS: Number six. Why is one mussel genera (Villosa) included in the data set, but another mussel genera (Lampsilis) is not included?

MR. KLOCEK: We needed to include a bivalve and the bivalves that are present there are two that are relatively common, the zebra mussel and the Asiatic clam. And the Asiatic clam is closer to -- it's an introduced clam from Asia, but it's closer to our native mussels than the zebra mussel is and it's very tolerant to high chloride. It is actually an estuary organism in southeast Asia and in California at this point, too. So we were looking for a native mussel that had a higher chloride tolerance and Villosa of the two choices was it. It was a few hundred mg/L more tolerant than the Lampsilis mussel was.

MS. DIERS: Seven. Do you know if there are other states that have a winter chloride standard?

MR. KLOCEK: No, I don't know.

MS. DIERS: Have you discussed with US EPA if this recalculation would be approvable?

MR. KLOCEK: We've submitted a recalculation, but we haven't had a formal response returned yet and we, you know, went to fairly great length to follow the proper recalculation procedure familiar with the fauna

through the various studies that have been done over the years. We internally reviewed our recalculation, sent it out for external peer review and gotten informal comments back from US EPA and IEPA all of which were very helpful.

MS. DIERS: And number nine. Page 10 Conclusions and Recommendation: "A winter chloride criteria is proposed (November through April), on a site specific basis for the Chicago Sanitary and Ship Canal that is based on a limited aquatic fauna present in the lower Ship Canal." Why April through November? According to MWRDGC and IEPA data on the Chicago Sanitary and Ship Canal from 2000 through 2010, chloride concentrations above 500 mg/L have occurred only from December through March?

MR. KLOCEK: I think we did that just to give us a breathing space on either side of those two dates. Remembering back to 1970 something, '78, when we had that gigantic snow in Chicago in late April. So it can occur, but I think we're just trying to be, you know, overly cautious.

MS. DIERS: Okay. Thank you.

MR. HUFF: Could I add something?

MR. FORT: Yes.

MR. HUFF: We also submitted as Attachment 2 to my testimony that chloride water intake at the Lemont Refinery which does show values in November that are above the 500 mg/L for chlorides.

MS. DIERS: That's all the questions we have. Do you have follow up?

MR. READ: Yes, we had a follow up and this was to a couple of questions ago about the winter dormancy phenomena. Is the winter dormancy phenomena in the Sanitary and Ship Canal a broad phenomena that would also apply to other waterways like the UDIP?

MR. KLOCEK: Sure. Yeah. Absolutely. Yeah, I was going to equivocate, but I'm not.

MR. RAO: Mr. Klocek, we had a few other clarifications. So I'll ask them now. On page six of your pre-filed testimony, you state Table 6 of Exhibit 2 presents the data and results of 2013 macroinvertebrates sampling. Can you please clarify that you meant Table 6 of Exhibit

B?

MR. KLOCEK: Yes. Absolutely, Exhibit B.

MR. RAO: Okay. And could you also clarify whether this macroinvertebrate sampling was conducted by Huff & Huff?

MR. KLOCEK: It was conducted by Huff & Huff, yes.

MR. RAO: All right. Okay.

MS. LIU: Mr. Klocek, question number two. On page eight, you state, quote, fish and invertebrate data set for organisms found in the CSSC were examined from reports and web-based sources such as INHS collections and reports, MWRDGC collections, US ACE collections, US EPA reports, Limnotech reports and Huff & Huff collections, end quote.

Could you please clarify the aquatic life data you considered included all fish and macroinvertebrate data available for the CSSC in the current rulemaking record?

MR. KLOCEK: Yes. I didn't look at the entire docket because it is such a large body, but I did use what I believe are all the current

and important references that would apply and I'm sure all of them have been utilized before in the CSSC and CAWS reports and I did -- I was selected because some of the MWRD reports go back to the early '70s for fish and invertebrates and water quality and those contain information that is actually superceded by later reports -- reports in the last 10 or 15 years because the number of species, the data set is just richer. The number of species has increased since the '70s for both fish and invertebrates. The numbers of organisms by and large have increased. So I kind of threw out the earlier data just because it is represented by the current data.

MS. LIU: Thank you.

MR. RAO: And by current data, can you identify what -- is that the rotenone?

MR. KLOCEK: I would say probably from 2000 or 2001 on and a lot of the MWRD data is two years behind. So, you know, they're reports for 2010 as the most current thing even though it's, you know, three years later.

MR. RAO: On page eight of your pre-filed testimony, you talk about the species

listed used in your recalculation. You note that 23 of the 29 species in the Iowa list were included in the data set for CSSC. Could you please clarify whether the Iowa list is the one that was derived from Iowa's Department of Natural Resources 2009 Water Quality Standards Reviewed Report?

MR. KLOCEK: Exactly. That is the correct reference.

MR. RAO: Has this list been reviewed by the US EPA or endorsed by US EPA or in some way is US EPA recommending this list to determine the recalculation of the chloride standard?

MR. KLOCEK: I don't know that it is being pushed, but it's certainly being utilized by other states as is because it is a very comprehensive list and it includes -- the text of that would be common and at least midwestern states, if not, you know, the belt across the middle of the United States.

MR. RAO: In your pre-filed testimony, you also mentioned several midwestern states have adopted the new chloride standards and

some of them are in the process of adopting chloride standards. Are they using this list?

MR. KLOCEK: Yes, they're using this list that I'm aware of, the ones that I've seen.

MR. RAO: Would it be possible for you to provide the proposed adopted standards of some of these midwestern states?

MR. KLOCEK: Yes, I believe I have them.

MR. FORT: Mr. Klocek, this is --

MS TIPSORD: Thank you very much. I've been handed a table that is Table of Chloride Criteria For Selected States: Ohio, Illinois, Indiana, Iowa and Missouri. If there is no objection, we will mark this as Exhibit 496. Seeing none, it is Exhibit 496.

(Document marked as IPCB Exhibit No. 496 for identification.)

MR. RAO: And all these standards listed in this exhibit, Exhibit 496, they are all year round standards?

MR. KLOCEK: Yes, all year round and statewide standards and some are not -- some are still in the proposal phase and under

consideration.

MR. RAO: Okay.

MR. FORT: Can I ask a follow up on this line of questions?

MR. RAO: Yes.

MR. FORT: Mr. Klocek, do you know if US EPA is recommending the Iowa approach or is this something that other states have begun to follow?

MR. KLOCEK: I honestly don't know.

MR. FORT: But US EPA did approve the Iowa standard for Iowa?

MR. KLOCEK: Yes.

MS. LIU: Mr. Klocek, based on your recalculation you proposed a winter chloride criteria for the CSSC for the Criterion Maximum Concentration and -- Criterion Maximum Concentration. I was just wondering if you meant chronic concentration of 620 mg/L?

MR. KLOCEK: Absolutely, yes.

MS. LIU: The second part of my question. Currently, the standard proposed by Illinois EPA is a single value standard, 500 mg/L. Could you please explain how you would recommend

implementing the CMC and the CCC in the standards?

MR. KLOCEK: So there would be an acute and a chronic standard as there is for many other criteria and that would be -- I'm missing it. My eyes are going bad here. Acute and chronic standards that we'd find in 302.208(a), (b) and (e) for General Use waters.

MS. LIU: Thank you.

MR. RAO: Mr. Klocek, looking at this chloride standard from other states that you put together for us in Iowa they have proposed these acute and chronic standards, but they're based also on hardness and sulfate. Is there any specific reason they went that route instead of just the way you had proposed the standard?

MR. KLOCEK: Yes. And with Iowa the moderately high chlorides and sulfates are actually protected aquatic life at different temperatures and so it's valuable to have those entering into the calculation here to simplify it and make it very site specific for a particular waterway. We didn't include hardness or sulfate calculations. If we used the Iowa formula as is, we'd come up with much lower calculations for the

given hardness and sulfate levels on the CSSC. So we weren't interested in pursuing that.

MS. LIU: Would it also be because the Iowa standard was for the whole state and this is just a specific body of water?

MR. KLOCEK: Yes, it's a statewide standard. So it used to be all inclusive and perhaps in that sense more restrictive rather than a very site specific standard for an unusual waterbody.

MR. FORT: Excuse me. Unusual waterway meaning the Ship Canal?

MR. KLOCEK: The Ship Canal, yes. Thank you. Sorry.

MR. RAO: That's all we have. Thank you very much.

MS TIPSORD: We'll go back to IEPA then.

MS. DIERS: We'll ask our pre-filed questions for Mr. Tyler and we'll start with number one. You mentioned amending existing mixing zone rules in order to provide relief to the Lemont Refinery, which I think has now been marked as Public Comment 1394?

MS TIPSORD: Yeah. Let me double check. Yes.

MS. DIERS: Could you please explain your proposal?

MR. TYLER: In answer to that, let me reference the proposed rule change document.

MS. DIERS: Have you had any conversations with US EPA to see if such a change to the mixing zone rules would be approvable?

MR. TYLER: Not in the affirmative. Things are very incipient right now, but I can't go any further than that.

MS. DIERS: Number two. On page 13, you state that, "the Board amend the mixing zone rule to provide an opportunity for use of a mixing zone for discharges into waters which exceed applicable water quality standards, if the discharger employs best management practices for that pollutant with an objective of that BMP plan being to offset the amount by which the discharger would discharge that pollutant during times of water quality above the applicable standard." I'll just ask the first part of that question. How would this work?

MR. TYLER: Huff & Huff has been in preparation to draft the BMP document and I'd like to yield to Mr. Huff to explain the key components of the BMP proposal.

MR. HUFF: I think I've already described what is in the draft BMP plan, the six items that we have. I can expand on those if you have specific questions.

MS. DIERS: Is this kind of looking at a training? Is this how you're envisioning this?

MR. HUFF: Well, I think it is consistent with the trading. If we do it internally, I guess I would use the term offset. Normally, my understanding of the US EPA trading policy is when there is an increase in a pollutant that you develop a trading one. In this case, there was no increase in chloride associated with the wet gas scrubber. But if you look at the criteria of the trading policy, you can directly measure the salt consumption, you can directly regulate this as part of the NPDES permit. It seems consistent with the trading policy.

MS. DIERS: No further questions.

Thank you.

MR. RAO: Mr. Huff, a follow up on your response. I think Mr. Tischler mentioned in some of the other states that are doing BMP's they don't quantify the actual amount of offset of the pollutants. Could you explain how that would work if you -- if this is some sort of a trading program?

MR. HUFF: I believe the question Mr. Tischler was -- specifically related to mercury and I fully understand that was mercury. I think chlorides are very different and much like a highway department the refinery purchases deicing salt. They have purchasing records. You know exactly how much is used every year. So you have an excellent database to establish, if you will, a baseline condition and we have at the refinery a good four years of data on how much deicing salt has been used and so what I would envision is that as part of the NPDES permit there would be a special condition that this storm water pollution prevention plan addressed specifically chlorides as part of that and include in there an annual report to the Agency.

And as part of that annual report we would include how much deicing salt was used that year and then a five year running average because we've had two very mild winters prior to this one where salt use was down. You get into a storm -- bad years and the salt usage can literally double because, frankly, it's the number of storms is probably the biggest variable. There are others in there.

So I would kind of gauge the goal, if you will, or this offset on a five year running average where you would try to offset whatever chlorides the refinery is discharging during periods where the Ship Canal is over 500 mg/L in that increment.

MR. RAO: Mr. Huff, in your testimony, and as I think Mr. Tyler touched on this, one of the recommendations involves amending the mixing zone rules to provide opportunity for mixing zones when applicable water quality standards are exceeded and you also -- I think Citgo has given us some proposed language of that concept.

Does Citgo envision that an

amendment to the mixing zone rules would apply throughout the year or only when the seasonal standard recommended by Citgo would apply?

MR. HUFF: I would think throughout the year would be simpler. If you take chlorides as an example, we don't have chloride water quality violations in the summer if you were to adopt a 500 mg/L. So I would argue under the existing mixing zone regulation that the Lemont Refinery would be entitled to a mixing zone for chlorides in the summer months.

So the need for the relief is when you have water quality exceedances, if you will, which is the winter, but I don't know why you would separate and say only in the winter. Just make it whenever these conditions exist.

MR. RAO: Okay. Besides chloride, does Citgo envision this recommendation applying to other pollutants? If so, what pollutants do you think would fall under this?

MR. HUFF: I would anticipate it would also apply to mercury would be the other parameter that I think that would be absolutely applicable for.

MR. FORT: Excuse me, Mr. Huff. This is because you believe there could be mercury violations upstream of the Citgo intake?

MR. HUFF: Yes, sir. Whenever the harmonic flow exceeds the -- whenever the flow exceeds the harmonic mean. That is what our data shows. So 60 to 70 percent of those higher flow periods the mercury is above the 12 ng/L level.

MR. FORT: Excuse me. So the problem is during the high flow conditions, not during low flow conditions?

MR. HUFF: That's correct.

MS. LIU: Mr. Huff, you touched on this next question a little bit. I was hoping you could go into a little more detail to give us a better picture of what you are envisioning.

Your pre-filed testimony suggests that the BMP approach could be rolled into the existing storm water NPDES program. Currently, the Board's NPDES permit regulations under Part 309 do not contain specific requirements for implementing BMP's to offset discharge of specific pollutants.

Could you please explain how

Citgo envisions implementing regulatory requirements to employ BMP's for the purpose of providing an offset in exchange for the entitlement to the mixing zone? Do you think that the BMP should be implemented through the NPDES provisions of Part 309 or in separate IEPA implementation regulations?

MR. HUFF: I'm not sure I've given that a lot of thought. Clearly, I think incorporating this into a discharger to NPDES permit is perfectly appropriate. We already have a requirement that they have a storm water pollution prevention plan and the key elements of that storm water pollution prevention plan I don't believe are in the Board's regulations now. This would be analogous in my mind as to allow some flexibility for the individual dischargers to address what kind of best management practices are really applicable. So I guess that would fall under the agencies implementing the program.

MS. LIU: I know the Agency isn't testifying today, but in post-hearing comments if you could comment on the concept, that would be really helpful. I would appreciate that.

MR. TWAIT: I will answer. I don't know the answer to that. But I'll have to talk to the permit people.

MS. LIU: Thank you. Mr. Huff has already described in his BMP plan some of the ways that it can address chloride, but I was also wondering about sulfates and mercury?

MR. HUFF: I don't believe sulfates are an issue, but mercury I'd be more than happy to for mercury -- collection of the mercury vapor lamps immediately responding to any kind of mercury spills, which would include breaking of the CFL type light bulbs could be an absolute BMP type of thing, identifying a program for replacement of all mercury switches within a facility over a period of time, making sure mercury switches are properly handled when they're removed, identifying any remaining mercury thermometers within a facility and then establishing a program to replace those with non-mercury thermometers with proper disposal again and I think this is one of your questions a collection point promotion of mercury containing devices for the community and its employees and

basically trying to eliminate the maximum extent the mercury that is in the laboratories.

There are still some analytical chemistry methods that have mercury salts that I think there is an opportunity to find alternative chemistry methods for those. A lot of times cleaning the traps on sinks in laboratories there is a common source and there are some industrial sewer lines not necessarily in a refinery that have residual mercury that needs to be cleaned out.

So you can put that in as a potential BMP and then your question also went to the community. Citgo has an annual Earth Day for its employees and its contractors and, in fact, they are already collecting mercury at their facilities from its employees and contractors and then returning those for mercury recycling. I mean, they're really out there and I think there's an opportunity in that same program to establish a residential anti-icing program that we're working on as well to really kind of take anti-icing to the residential houses for people that have to use rock salt it's a very good alternative.

MS. LIU: Could you describe a little bit more about the residential program?

MR. HUFF: Yes, I will tell you that I anti-ice at my house and it is very effective. I have a wife that is handicap. So any snow or ice on the steps she can't get out of the house and so I go out ahead of storms and I basically apply brine solution to those steps ahead of time and you go out in the morning and if there is snow on there it comes right off and there is never any ice on that and I would envision basically almost like a container that would direct the resident how much salt to put in there to make up the saturated brine solution, a way to mix that, and then just like a watering can you would use that to apply that to your sidewalk or whatever area ahead of the storm. I think that would be a very novel program that Citgo is entertaining moving forward with that at its next Earth Day.

MS. LIU: Great.

MR. RAO: Does Citgo envision the recommended BMP's being implemented just onsite or also offsite as long as it could benefit the same waterway?

MR. HUFF: Really a good question. We have outlined what I believe is a very aggressive BMP. I think we need to cut our deicing salts by 50 percent. That would be on about the outer extreme of where the technology is today. I'm anxious to try to implement that and look for refineries moving in that direction. We've also had some very preliminary talks with two of the local communities about a potential offset.

I will tell you the response on the first round was tepid. Maybe because they don't really understand what we're offering them to do that. So I think the answer is we're going to do everything in our power to do it onsite and then if that doesn't look like we're going to be able to achieve the necessary reduction from that we are prepared to go offsite to get some additional offsets.

MS. LIU: Mr. Huff, you suggested adopting the 12 ng/L mercury water quality standard as an annual average, but you expressed concern where a mixing zone could be applied. Would the annual average be a rolling average?

MR. HUFF: I don't think it makes any difference. I think administratively an annual average is superior to the rolling average. I think they would be equally protective.

MS. LIU: So either or?

MR. HUFF: Either or would be fine.

MS. LIU: Could the mixing zone/BMP amendments proposed by Citgo address mercury as well?

MR. HUFF: I believe it could with the caveat that Mr. Tischler indicated quantifying changes in mercury releases would be very difficult and I put in what the net mercury emission is from Citgo on an annual basis. As I recall, it's about 0.075 pounds or something on that order. If we select one mercury switch, we're well over that. So we can take credit for hundreds of times the amount that is discharged, but then you say that's not quite fair. It's apples and oranges. So I think it's a very difficult thing to do, to offset like I would envision for chlorides.

MS TIPSORD: Excuse me. Mr. Read has a follow up.

MR. READ: Matt Read on behalf of ExxonMobil. The mixing zone -- alternative mixing zone approach that you're discussing, could that be used to apply to thermal standards as well?

MR. HUFF: I have to think about that. I have not given that any thought. So you would -- if your BMP's would be in this case the minimized temperature increases somewhere in the refinery in return for being granted the mixing zone in a stream that was basically impaired for mixing zone, sure, I think you could make that work.

MS. LIU: In terms of annual or the rolling average, would you be able to document if either one would be protective of aquatic life?

MR. FORT: Excuse me. Aquatic life for the 12 nanograms or --

MR. RAO: That's a human health standard.

MR. FORT: That's a human health standard. Right.

MS. LIU: So it wouldn't matter.

MR. FORT: I'm sure if we met the 12 nanograms because that is a lot lower than the

acute or the chronic proposed mercury numbers the answer would be yes, but you should answer that question.

MR. HUFF: If you're referring to the chronic standard, I believe the proposed is 650 ng/L and I believe the acute is 1,200 ng/L and there is no issue on the Chicago Sanitary and Ship Canal with either of those numbers.

MR. RAO: I think our final question is about whether Citgo is aware of other state regulations that allow the use of BMP's to offset point source discharges of one or more pollutants as being proposed by Citgo?

MR. HUFF: I would refer to Mr. Tischler's questions and his testimony also specifically with respect to mercury. I will tell you that I'm very active in the transportation sector. We have negotiated successfully with the resource agencies, including US EPA and IEPA, on the building of the Elgin O'Hare expressway a chloride offset program where we're doing the exact same thing.

I am -- will submit this week the I-90 offset for adding the third lane in each

direction there. The tollway believes, again, through implementation of best management practices they can offset that increase in chloride use on lane miles internally through BMP's. In the case of the Elgin O'Hare, we had to go out to the communities and basically fund the brine tanks, the training, the calibration and new equipment to get that offset and we're well on our way of making that happen and they have been issued all the appropriate permits and that project is under construction. So there is precedent here in Illinois on the transportation side for exactly what is proposed here.

MR. RAO: Since you mentioned that you're working with a lot of these transportation agencies, tollway authority and DOT, could you comment on, you know, what do you think about the prospects of these BMP's when using the introduction of chlorides to the CAWS or Lower Des Plaines River in the near future like do you think they will make a significant difference in what is going on?

MR. HUFF: Positively, yes. I'm very active in the DuPage River Salt Creek

Workgroup where we have worked diligently now. We're in our seventh year and there has been a significant reduction in chloride use and improvement in the streams as a result of that work. I will tell you that the training and changing of mindset is the absolute hardest factor. If you're a public works director that has been doing this for 20 years, you know your job depends on having dry pavement in front of the mayor's house.

So you go into these communities and when you have the long-time public works directors that's where we're finding the greatest opposition. Where we have the younger guys who are willing to say, yeah, we can do this and maybe they don't know any better that their job is on the line if they don't have dry pavement and, frankly, you have the same thing and you get into a larger organization like the Department of Transportation or the tollway, there is a lot of layers that you have to go through with this retraining process and I will tell you on the tollway we're well on the way, but we're not there yet.

We still have additional people there that have not totally bought into this because their job depends on making these accident free expressways and the concept to use less salt they believe their job is in jeopardy and we have to train them that there is no correlation between salt use and safe roadways and there are enough studies to clearly document that, but it's a mindset that takes several years to really change that mindset.

MR. RAO: But you are working on it?

MR. HUFF: Yes, sir, I am.

MR. FORT: If it wasn't clear already, you're optimistic of the progress and success?

MR. HUFF: I think I concur with Mr. Tischler if the question is could we in the Use B waterways achieve 500 mg/L through strictly BMP's that is really pushing the envelope. I have no doubt we can get down to fewer exceedances of that 500 mg/L level, but when you get these intense storms and you get the cold weather with the freezing ice and there is no alternative to that point when you're pouring down that rock salt

there will still be exceedances of the 500 mg/L, but I'm optimistic we could in five to ten years reduce those numbers of exceedances by 80 to 90 percent of the time.

MR. RAO: Thank you.

MS TIPSORD: Are there any other questions for Citgo PVD? Mr. Read?

MR. READ: We have a couple of follow-up questions. First, aside from the Sanitary and Ship Canal, do other riverways in the area receive significant contributions of chloride from suburban and urban deicing activities?

MR. HUFF: So I'll interpret the word significant do they exceed the 500 mg/L chloride? The answer is there is probably not a stream in any urban area in the northern part of the country that does not exceed 500 mg/L during deicing events.

MR. READ: So that would obviously include the DuPage River, the Kankakee River and the Fox River?

MR. HUFF: Fox River, that is correct; DuPage River, that is correct; I can't speak about the Kankakee River specifically. That

is much more rural there. I'm not sure that there are exceedances there. I just don't know.

MR. READ: Another follow up. This is actually a follow up from before lunch, but you stated that the Lemont Refinery would not have a problem meeting the General Use standards for sulfate. Does that envision a mixing zone or is that --

MR. HUFF: That is assuming a mixing zone because there is no water quality violation under the proposed General Use standard. That's correct.

MR. READ: One last question. Has there been any quantified reduction in chloride from the Salt Creek program?

MR. HUFF: Yes.

MR. READ: Can you describe that?

MR. HUFF: Not very efficiently. I mean, we send questionnaires out annually to all the public works departments. We get a reasonably good response on 70 to 80 percent and overall there has been reduction and I've not looked at the data in a long time, but I believe they're down 20 to 25 percent since we started doing those

questionnaires as a river basin.

MR. READ: Okay.

MS. GLOSSER: Mr. Huff, I have a question. In looking at alternatives to deicing, one of the areas that seems to be a problem, particularly in the Chicago area, is deicing bridges. Are they looking at alternatives to deicing, taking care of ice on bridges?

MR. HUFF: So almost all communities today are anti-icing the bridges. That is probably the most common application of anti-icing because you can prevent the ice from forming on those bridges and that is what is being used. They continue to look at putting electrical heaters in the bridges themselves. There is some problem with the concrete from doing that and stuff, but that is being researched, but not commercialized is my understanding of where that is at.

MS. GLOSSER: Do you know is the City of Chicago using non-salt alternatives on their bridges?

MR. HUFF: I do not. That's a good question.

MS. GLOSSER: There's a lot of bridges.

MS. LIU: Mr. Huff, just to be clear, can you define anti-icing?

MR. FORT: Good question.

MR. HUFF: So anti-icing is preventing the bonding between the snow or water that freezes and the pavement itself. So by putting down a layer of brine on the surface it prevents that adhesion of ice onto the roadway. So when they talk about black ice and things like that where that ice is literally stuck onto the pavement and they can't scrape it off very successfully so they put copious amounts of rock salt, had they been out there ahead of that storm and anti-iced, then their scraper would have removed snow and not ice ahead of the storm and if it is only a quarter of an inch or a half of an inch of snow, it would have melted before you would have expended the brine that is in the brine solution of salt that is in there.

MS TIPSORD: Mr. Read?

MR. READ: This gets back to the quantification number. You gave 25 percent.

That's in the amount of salt used?

MR. HUFF: Correct.

MR. READ: So that's not an actual concentration in the waterbody that you're looking at?

MR. HUFF: If your question was have we seen a reduction in the chloride concentrations in the stream? The answer is yes to that. That is a much more complicated question because of all the seasonal variations. You may recall we've gone through two very mild winters. So our chlorides were way down the last two winters and I'm not going to tell you that's because of improved deicing practices. I'm going to tell you that's because we put less salt down because we had fewer snow events.

MR. READ: Thank you.

MS TIPSORD: We're making up for it this year. Anything else? Let's go off the record for just a minute.

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

MS TIPSORD: As I indicated off the record if the participants would like to basically

stay this proceeding while negotiating I'd like to see something in writing to the Board and -- actually, you know what, let's direct it to the Hearing Officer. Then it won't require a Board order to set it up. So you can file something with the Hearing Officer before the end of January. If I do not receive anything in writing asking the proceedings to be stayed, we will set a final comment period at that point in time.

Thank you again for all of your willingness to make accommodations today. I know that Mr. Ettinger appreciated it and I appreciate it. Once again your professionalism and your courtesy to one another has been awesome throughout this proceeding so thank you very much and happy holidays.

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

I, Steven Brickey, Certified Shorthand Reporter, do hereby certify that I reported in shorthand the proceedings had at the trial aforesaid, and that the foregoing is a true, complete and correct transcript of the proceedings of said trial as appears from my stenographic notes so taken and transcribed under my personal direction.

Witness my official signature in and for Cook County, Illinois, on this 27th day of December, A.D., 2013.

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